• The only one organisation of compulsory health insurance in Montenegro

• System of health insurance in Montenegro is based on Bizmark’s model

• About 640,000 insured persons:
  – domestic citizens
  – about 18,000 refugees and displaced persons

• Health ID card and electronic records of insurees (database of insurees in HIF)
The Health Insurance Fund ensures exercising rights from compulsory health insurance:

• on health protection
  – treatments in health institutions in public system in Montenegro
  – treatments in health institutions out of the public system in Montenegro and abroad
  – medicaments
  – medical apparatus (orthopedic, orthotic, dental, ...)

• on refundment for salaries during the sick-leave

• on refundment for travel costs related to the exercising of health protection
Health Institutions Network

**Public health institutions:**
- 18 primary health centers – “Dom Zdravlja” (DZ)
- 7 general hospitals
- 3 special hospitals
- Clinical Center of Montenegro (KCCG)
- Institute for Public Health of Montenegro (IJZ)
- Pharmacy institution “Montefarm”

**Contracts:**
- 109 private dental ambulances
Health Institutions Network

Primary Health center “Dom zdravlja”

Medical stations

Distant Ambulances within “Dom zdravlja”

General Hospitals

Special Hospitals

Clinical Center

Nr. of locations in “on-line” mode
- 65 Health care locations
- 50 pharmacies
- 20 subsidiaries HIF
HISTORY OF DEVELOPMENT INTEGRAL HIS

- IS Health Insurance Fund 2000 y.
- IS Pharmacy Institution “Montefarm” 2004 y.
- IS Health Insurance Fund (on-line) 2006 y.
- IS Primary Health Care – pilot (3 DZ) 2007 y.
- IS Dental ambulances 2008 y.
- IS Primary Health Care - Integral 2009 y.
- IS General Hospital in Pljevlja – pilot 2009 y.
- IS Institute for Public Health (part) 2009 y.
- IS General Hospitals - Integral 2009/10 y.
• Started with development in the 2000. with distributed database system in each 20 subsidiary in municipalities
• In 2006. migrate to “on-line” with central servers and administration system
• All business processes are covered with IS
• Fundament for developing Integral Health IS
  – Database of insurees
  – Database of employers (obligate payers)
  – Database of diagnosis (International Clasification of Diseases, revision 10 – ICD10)
  – Database of medicaments (Anatomical, Therapeutic, Chemical - ATC, classification system)
  – Great number of code libraries and parameters
• Developed by Health Insurance Fund in 2003. as project named “Control of distribution and usage of drugs”
• Started in production on 01.01.2004.
• All business processes are covered with IS
  – Software module for central drugstore
  – Point of sale software module
  – Software module for usage of medications
  – ERP software (employees, salaries, finance, etc.)
  – Automatic creation of electronic invoice to Health Insurance Fund
## Expenditures of Medicaments Prescribed on Receipts

<table>
<thead>
<tr>
<th>Year</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>13,406,335.00 €</td>
</tr>
<tr>
<td>2003</td>
<td>11,607,690.85 €</td>
</tr>
<tr>
<td>2004</td>
<td>10,178,050.34 €</td>
</tr>
<tr>
<td>2005</td>
<td>10,920,790.06 €</td>
</tr>
<tr>
<td>2006</td>
<td>13,089,131.17 €</td>
</tr>
<tr>
<td>2007</td>
<td>13,571,857.27 €</td>
</tr>
<tr>
<td>2008</td>
<td>13,858,544.17 €</td>
</tr>
</tbody>
</table>
IS of Primary Health Care (ISPHC)

- 2007. Pilot project named “Information System as support to the reform of the Primary Health Care System in DZ Danilovgrad, Tivat and Rožaje”
- During 2008, implemented over all primary health centers and officially started on the 01.01.2009.
- World Bank credit line for Hardware equipment

**Business Information System (ERP)**
- Human Resource Management
- Finance Management
- Management of fixed assets
- Management of inventory
- Management of Pharmacie
- Salaries (piece work agreement)
- Administration (system profiles, users, user roles, ...)

**Medical Information System (MIS)**
- Central software module (common resources: databases, code libraries, registries, parameters, etc.)
- Chosen Doctor - “Izabrani Doktor” (ID)
  - Choosing the Doctor
  - “CONTACT” – application for the doctor
  - Evidence of services for centers, support centers, special ambulances, etc.
  - refers inside and outside institution
  - electronic receipt prescription and printing
  - evidence of services in stationary health centers in some DZ
- Scheduling
- Immunisation
- Emergency Medical Service
- Invoicing
**Expenditures in Primary Health Care**

<table>
<thead>
<tr>
<th>Invoices for first 6 months of 2009.y</th>
<th>Possible Invoice</th>
<th>19.486.352,80 €</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Realized Invoice</td>
<td>15.994.615,25 €</td>
</tr>
<tr>
<td></td>
<td>Realisation (%)</td>
<td>82,08%</td>
</tr>
<tr>
<td>Comparison with Invoice in first 6 months 2008.y</td>
<td>Invoice - 6/2008.y</td>
<td>18.019.119,09 €</td>
</tr>
<tr>
<td></td>
<td>Difference (€)</td>
<td>-2.024.503,84 €</td>
</tr>
<tr>
<td></td>
<td>Difference (%)</td>
<td>-11,24%</td>
</tr>
</tbody>
</table>
Integral Health Information System

- IS for dental ambulances
  - Evidence of patients
  - Evidence of services
  - Electronic invoice to the Health Insurance Fund

- IS of General Hospital in Pljevlja – pilot project
  - Business Information System (ERP)
  - Administration of patients
  - Evidence of services and usage of medicals

- IS of Institute for Public Health – pilot project
  - Software module for microbiology
  - Notification of contagious diseases

- IS of General Hospitals (in implementation)
Health insurance fund of Montenegro

- Database of doctors
- Database of pharmacists
- Database of employers (obligate payers)
- Database of dentists
- Database of health institutions
- Medical committee
- Software modules for exercising of rights
  - Medical apparatus
  - Sick-leaves
  - Refundments
- Database of insurancees

**BUSSINESS INFORMATION SYSTEM**
- HRM
- Finance management
- Management of material resources
- Management of fixed assets
- Management of inventory, instruments and tools
- Management of the pharmacie
- Salaries

**MEDICAL INFORMATION SYSTEM**
- "Contact" application
- Scheduling
- Evidence of services and invoicing
- Planning of health services
- Immunisation
- Central module

- Database of medicines (positive list) according ATC/DDD
- Database of diagnoses (ICD revision 10)
- Financial management
- HRM
- Medical information system
- Business information system
- Central module
- "Contact" application
- Scheduling
- Evidence of services and invoicing
- Planning of health services
- Immunisation
- Central module
- Database of doctors
- Database of pharmacists
- Database of employers (obligate payers)
- Database of insurancees
APPLICATION “CONTACT”

ENSUREE

- general datas,
- employment status, profession
- personal anamnesis
- social datas
- risk factors and allergies

DOM ZDRAVLJA

Scheduling

- Epizodes
- Anamnesis and physical report
- Reason of visit
- Diagnose (ICD10 / ICPC2)
- Medical service

EHR

- Refer inside institution (DZ):
  - to a specialist
  - support center
  - stationary in DZ
- Refer outside institution (DZ):
  - to a specialist
  - to hospitals or KCCG
  - diagnostics
  - medical consilium
  - first level of medical committee
- Ordering for interventions and procedures
- Electronic receipt prescription
- Sick-leave (medical assignments)
- Confirmations
ELECTRONIC HEALTH RECORD (EHR)

- Patient general datas
- Datas about insurance
- Anamnesis
- Epizodes
- Used Medicaments
- Ampouled medicins
- Interventions and procedures
- Immunisation record
- Risk Factors
- Allergies
- Hospital treatments
From 2004, evidence of all realised receipts in Montenegro

Databases of ensurees (patients), doctors, pharmacists, medicaments, ...

Scanning of 4 bar-codes by the pharmacist

Choose the right diagnose

Processing - 10 sec per receipt
ELECTRONIC RECEIPT

- Generated by the Choosen Doctor
- Printing - according to the law regulations
- Real-time visibility in all pharmacies of “Montefarm” and “Galenika” in Montenegro
- Processing by one scanning and one click ~ 2 sec
- Real-time information for Choosen Doctor about receipt realisation
• World Health Organisation recommendations

• International Classification of Diseases, revision 10 (ICD10)

• The Anatomical Therapeutic Chemical Classification System with Defined Daily Doses (ATC/DDD)

• International Classification of Primary Care, second edition (ICPC-2)
- Workshops in Primary Health Centers 106
- Application software training 2317
- ECDL course 1197
- Medical skills training for chosen doctors 400

- Over 60,000 training hours in total in PHC
BENEFITS

- Electronic Health Record
- Preventive health care
- Electronic Economic Record
- Real time information
- Statistic
- Strategic planning
- Less administrative mistakes
- Academic purposes
RECOGNITIONS

- 2003. – Belgrade, JISA “DISCOBOLOS” for project “Control of distribution and usage of drugs”

- 2007. – Belgrade, JISA “DISCOBOLOS” for project “Information system as support to the reform of Primary Health System”

- 2008. Two letters from the World Bank officials for the successful implementation of IT projects in Montenegro Health System financed by World Bank

- 2008. and 2009. - Budva, “INFOFEST”, Award for the high quality of project solution in Health Information System

- 2009. Nominee on IT@ Networking Awards 2009 organized by The European Association of Healthcare IT Managers
THANK YOU