

# Provision of laboratory services to hospitals in Slovakia and Germany

Ing. Jozef Gavlas, MSc.

Director of the Laboratory Division of **MEDIREX**  
**GROUP**  
**SLOVAKIA**



# Evolution of Laboratory Diagnostics

- 1996 - 2004: foundation of the first private laboratories - greenfield development, privatization of existing state laboratory
- 2005 - 2008: outsourcing of large hospital laboratories - the origin of the first laboratories networks - the formation of dominant players
- 2009 - today: stabilization by acquisition activity of large networks, laboratory outsourcing even in small and medium sized hospitals



# Funding

- 1994 - issue of the list of medical procedures with points values - price of 1 point 0.2 - 0.25 SKK
- 2003 -2008 - price of 1 point 0.23 SKK
- 2008 - price of 1 point reduced by 5%
- 2010/2011 - price of 1 point reduced by 5%
- 2014, 2017 - price of 1 point reduced even more
- Defined amount of funds - LIMIT - 2012 reduced by 5%, 2014 reduced by 2.5%
- Nowadays, the price is between 0.16 and 0.19 SKK - total reduction of 15-27%



# Funding regulation

- Prescription regulation for medical expertise
- Prescription regulation for diagnoses
- Definition of examination periodicity or examination group per patient
- Issue of the list of similar examinations (former amount of 30 examinations has changed to more than 350 - each having its own point value)
- List of directly reimbursed procedures

The laboratories accept regulations positively and try to explain those rules to physicians.



# Evolution of provided services

- The Laboratory was among the “better” wards in a hospital - MYTH - the profit was seldom reinvested into the laboratory medicine
- The profitability depended on the age of the hospital and the composition of procedures
- Underfunding of the laboratory medicine caused the deficiency in some types of procedures



# Organizational changes

- Reduction of personnel by about 50% due to the automatization - natural reduction
- Significant reduction of laboratory premises in favour of other wards
- Specialization of human resources
- Laboratories have more experts in one area - not just one
- Mutual consultations among experts from competitive laboratories
- Laboratories replaced by collection services where possible



# Economy of an examination

- Centralization facilitates filling of a examination machine - the examination costs are reduced
- Savings in collective purchases of technology and consumables
- Better conditions for technology service



# Benefits from market structure change

- Rapid growth of investments into laboratory diagnostics (about 50 million EUR)
- Extension of portfolio of provided services
- Innovations in the field of computerization
- Innovations in methodical processes
- Improvement of the quality of services
- Long-term education



# Automatization a computerization

- New technology enables new methodical processes
- Makes the process of analytical phase faster
- Minimizes individual errors
- Shortens the time between blood collection and beginning of the treatment
- Improves data flow
- Divides testing panels - urgent cases are done in the place, the rest in large laboratories
- Most of the parameters are examined from the primary test tube
- Unifies types of blood collection material - compatibility with analytical systems
- Automatic aliquotation
- Automatic archiving





- ✓ Biological material examined at one place = quality improvement
- ✓ Availability of all branches and their cooperation = effectivity
- ✓ Connection of areas (medicine + mathematics = biostatistics) = education is essential
- ✓ Shift from manual methods towards automatization = technological progress, investments

## World trends





The Doctors Laboratory London  
11 Floors for laboratory, app 30 000 samples/day



DASA - Sao Paulo

- More than 200,000 samples per day
- Over 1,000,000 tests performed on a 24 hour period



Pathcare is the largest Private Laboratory  
Service Provider in **Cape Town**, South Africa



# Limbach Gruppe Heidelberg



5,500 customers including 500 hospitals

50,000 biological samples per day

9000 m<sup>2</sup>

Stralsund, Schwerin, Berlin, Lehrte, Münster, Essen, Dortmund, Mönchengladbach, Aachen, Bonn, Magdeburg, Dessau, Cottbus, Kassel, Leipzig, Erfurt, Dresden, Suhl, Hofheim, Schweinfurt, Heidelberg, Nürnberg, Karlsruhe, Ludwigsburg, Passau, Ulm, Freiburg, München, Ravensburg, Rosenheim



# Czech Republic

- Conditions in Czechia are more complicated:
  - > 10 individual laboratory companies
  - Complicated consolidation
  - Each hospital has its own laboratory often divided by branches, located at different parts of the hospital
  - Hospital management thinks that it is a profitable part of the hospital - anachronism
  - Ambulatory laboratories do only - with 2 or 3 exemptions - routine high-volume examinations
  - Panel discussion will be joined by our colleague Martin Radina, the director of SPADIA LAB laboratory, who has experience in cooperation with hospital laboratories



**WE ARE INVISIBLE TO THE PATIENT  
BUT IRREPLACEABLE FOR THE  
PHYSICIANS**



## MEDIREX GROUP: compound of diagnostic laboratories under one roof



15-20 thousands of patients per day  
200-250 thousand of results per day



Clinical biochemistry

Haematology

Bacteriology

Mycology

Clinical immunology

Medical genetics

Parasitology

Ecological microbiology

Cytology

Biopsy/histology

Virology, serology and molecular biology



## We run the most modern and largest laboratories in Central and Eastern Europe

- 2 central laboratories in Bratislava (4 500 m<sup>2</sup>) and Košice (3 300 m<sup>2</sup>)  
12 hospital laboratories
- 30 health centre laboratories
- 3 biopsy-cytological or histological-cytological laboratory
- 6 microbiological laboratories



## We operate the most modern and largest laboratories in Central and Eastern Europe

- Cooperation with over 3,500 private hospitals and specialized health centers in Slovakia
- Cooperation with the largest hospitals in Slovakia
  - ✓ **Bratislava University Hospital**  
Bratislava UH Antolská, Bratislava UH Mickiewizova, BA UH Podunajské Biskupice, BA Ružinov UH, BA UH Kramáre (microbiology)
  - ✓ **Košice University Hospital**
  - ✓ **Children Teaching Hospital Košice**
  - ✓ **Košice Oncology Institute**
  - ✓ **The Brothers of Saint John of God University hospital and Health Centre in Bratislava**
  - ✓ **University Hospital J.A. Reiman, Prešov**



# Laboratories of Medirex Group

- Laboratories with 17 years of experience in Slovakian healthcare became the TOP employer in this area
- Member of the Limbach Gruppe network - one of TOP 5 laboratory networks in Europe
- Employing almost 1,000 people in Slovakia in laboratories, of which 89 are doctors and 170 graduated from an university
- We have our own sophisticated system for transport of samples
- **Client zone** - online interface for clients enabling them to access the laboratory results (since 2006) + unique interface for doctors and patients
- **Computer applications** - functional interconnection of hospital information systems and laboratory information system (LIS)
- **Digitalization of the transfer of data and work automatization** - request forms scanning and automatic transfer to the LIS
- ISO 15189 accreditation, ISO 9001:2009 certification of quality management system



# Model Case

- Bratislava UH - Sv. Cyril a Metód Department
- Bratislava UH - Staré Mesto Department
- Bratislava UH - Ružinov Department
- Bratislava UH - Podunajské Biskupice Department



# Model Case

## Space requirements

Hospital	Yr. 2004/2005	Now
Sv. Cyrila a Metóda Department	693.10 m <sup>2</sup>	363.04 m <sup>2</sup>
Staré mesto Department	378.80 m <sup>2</sup>	116.25 m <sup>2</sup>
Ružinov Department	805.99 m <sup>2</sup>	226.67 m <sup>2</sup>
Podunajské Biskupice Department	420.54 m <sup>2</sup>	54 m <sup>2</sup>



# Model Case

## Personnel requirements

Hospital	No. of employees 2004/2005	No. of employees Now
Sv. Cyrila a Metóda Department	27	15
Staré mesto Department	15	9
Ružinov Department	37	22
Podunajské Biskupice Department	9	2



# Model Case

## Technology requirements

Blood panel analyser	2 x
Coagulase analyser	2 x
Immunochemical analyser	2 x
Acid-base analyser	2 x
Urine analyser	1 x
Small glucose analyser	2 x
Osmometer	2 x
Dilutor	1 x
Centrifuge	4 x
Microscope	3 x



# Model Case

## Extent of provided haematology tests at hospital

---

Hematology

---

Complete blood panel

---

Prothrombin time

---

APTT

---

Anti - Xa

---

D-dimer

---

Fibrinogen

---

Thrombin time

---

Factor V

---

Factor VIII

---



# Model Case

## Extent of provided biochemical tests at hospital

Biochemics	Oestradiol in serum	Interleukin 6	Myoglobin in serum
Acid-base balance	Phosphor in serum	Creatinine in plasma, in urine	NTproBNP in serum
Alaninaminotransferase	Gamaglutamyltransferase	Creatinine enzymat.	Osmolality in serum, in urine
Albumin in serum	Gentamycin in serum	Creatinine clearance	Progesterone in serum
ALP alkalic phosphatases	Glucosis in serum, in urine	Creatinine kinase	Procalcitonin in serum
Ammoniac	Glycem., glycozur. profile	Uric acid in serum	Sodium in serum
Amylases in serum, in urine	Oral glucose tolerance test	Lactate in plasma	Sodium in urine
Aspartataminotransferase	Magnesium in serum	Lactatedehydrogenase	Faeces - blood
Bilirubin total	Humane choriogonadotr. hormone	Luteinising hormone	Theophylline in serum
Bilirubin conjugated	Chlorides in serum	Liquor	Triacylglycerols in serum
C - reactive protein	Chlorides in urine	Liquor - ery, Le mono, poly	Troponin T cardiac high intensity
Total proteins	Cholesterol	Methaemoglobin	Vancomycin in serum
Digoxin in serum	Cholesterol HDL in serum	Urea in serum, in urine	Calcium in serum
Potassium in serum, in urine	Cholesterol LDL in serum	Urine chemically	Ionized Calcium
Drugs screening	Cholinesterasein serum	Urine sediment	Iron in serum

# Model Case

## Extent of tests at central laboratories

Area	No. of performed parameters
Biochemistry	340
Haematology	91
Serology	281
Bacteriology	95
Mycology	37
Parasitology	28
Genetics	250
Immunology	160 + 600 allergens
Cytology	14
Biopsy	100

Laboratory performs 7,109 variants.



# Model Case

## Benefits for a hospital

- Does not struggle with lack of personnel
- Does not struggle with purchase of expensive technology (lengthy procurement)
- Does not struggle with purchase of material, procurements or auctions
- Does not struggle with acquiring accreditation
- Gains vacant premises
- Gains faster response because the laboratory does only immediate examinations
- Gains a broader portfolio of methods
- *ALL THAT GUARANTEED BY A STRICT COOPERATION AGREEMENT*



- ✓ Examinations at one place = less blood taken, faster results
- ✓ Higher reliability and availability of uncommon examinations
- ✓ New methods and examinations

## Benefits of centralization for PATIENTS



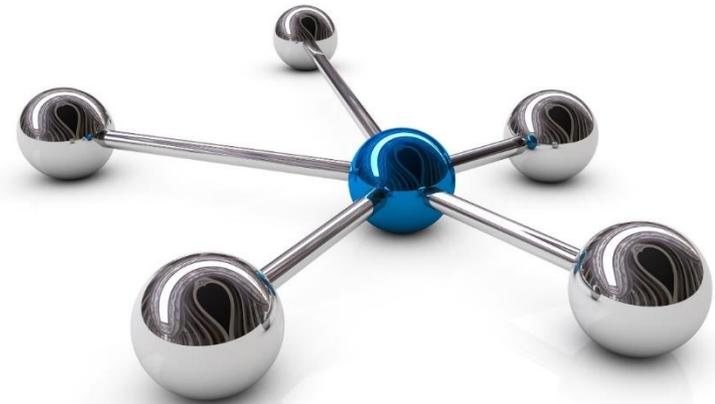
- ✓ Speed and quality of diagnostics = timely and optimal treatment
- ✓ Professional consultations
- ✓ Continual education (even about legislative changes and indication restrictions)
- ✓ Biostatistics
- ✓ Electronical connection of Laboratory and Hospital Information System

## Benefits of centralization for PHYSICIANS



- ✓ Comprehensive diagnostics and innovations, the availability of new medical examinations
- ✓ Economical effectivity
- ✓ International comparison
- ✓ Education of new laboratory diagnostics experts
- ✓ Electronical connection, prescription check, reduction of duplicate examinations

## Benefits of centralization for HEALTHCARE





**MEDIREX GROUP**

Líder v laboratornej diagnostike

Thank you for your  
attention!

