



# **Thomayer University Hospital**

&

## **Clinical – Pharmacology Unit (CPU)**

*Jiří Škopek, Head of CPU, feasibility management*

*Prague, 2/2022*



# Content

## **Thomayer University Hospital (TUH)**

- *Organization, QA*

## **Clinical-Pharmacology Unit (CPU)**

- *Volunteers, Patients*
- *Staff, Facilities, Equipment*
- *Experience in clinical studies*

## **Cooperation of CPU with other departments**

# Thomayer University Hospital ...

*\* 1928...\*1954...*

**Public hospital, funded by  
Ministry of Health of the Czech R.**

**Catchment area: 400,000 people**



## Main activities

**In-patient and out-patient care  
in all areas of medicine**

**Education and training**

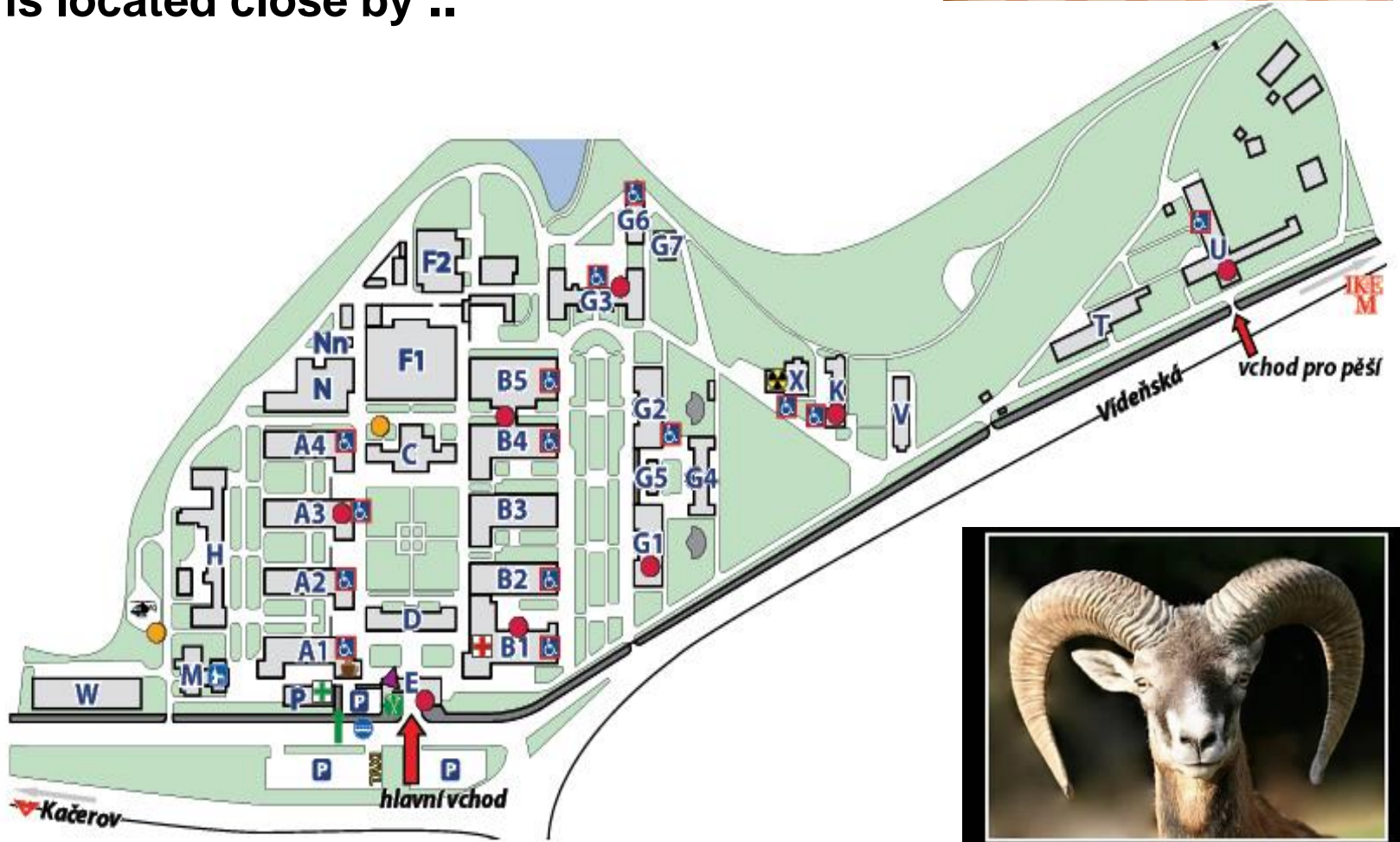
**Clinical research**

**Drug testing**

# Thomayer U. Hospital .. grounds

**IKEM** (*Institute of experimental medicine, leading in transplantation and invasive heart medicine*)

is located close by ..



# Thomayer University Hospital

## Departments and Clinics

Internal Medicine

Rheumatology and Rehabilitation

Gynecology and Obstetrics

Neurology

Urology

Infectious Diseases + Inoculation Centre

Geriatrics and Long-term follow up

Pediatric Neurology, Pediatric Psychiatry

Neonatology, National Centre for Breastfeeding

Ophthalmology; Otorhinolaryngology; Stomatology

Hygiene and Epidemiology

Psychology

Oncology

Surgery

Pulmonary (+Onco-pneumology)

Anesthesiology and Resuscitation

Pediatric Surgery and Traumatology

Clinical – Pharmacology Unit (CPU)

## Supplement

Clinical Biochemistry, Immunological Lab

Pathological and Molecular medicine

Clinical Hematology, Transfusion dept.

Medical Genetics, Clinical Microbiology

Radiodiagnostics (Xray, CT, MRI,..)

# Thomayer University Hospital

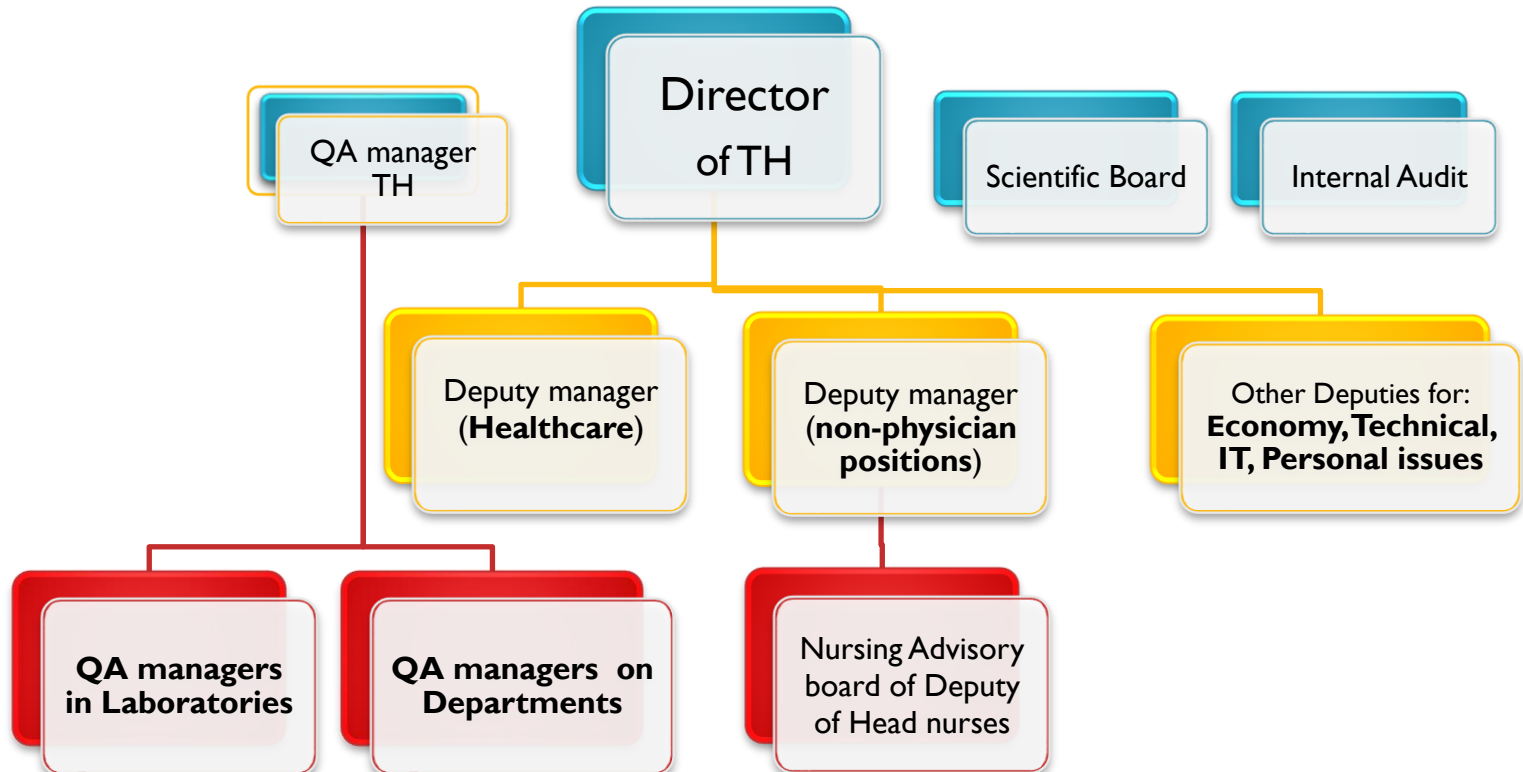
- State (public) ownership
- Number of employees:  
2 170 (Y2014)
  - 350 MDs,
  - 860 nurses ...
- Annual turnover in EUR  
81 mil EUR (Y2014)

<b>Beds – total number</b>	820
intensive care units	81
In-patients	33 664
- on ICU	1 257
<b>Number of patient days</b>	200 674
Average length of stay	5.8 days
Beds occupancy	69.7%
<b>Out-patients</b>	672 303
<b>Long – term care beds</b>	215
Admissions	1 680
Average length of stay	49.6 days
Beds occupancy	95.8%

# Quality management system in TH

## General task:

- To meet customer's requirements and satisfaction  
(patients, volunteers, regulatory authority, sponsor..)
- Sustainability and improvement



# QA system status in TH

## **ISO 9001:2015 or ISO 15189 - Accredited departments:**

- Dpt. of Biochemistry/pharmacology
- Department of Hematology
- Department of Microbiology
- Department of Central Sterilization
- Department of Medical Genetics
- Department of Transfusion
- Department of Pathology
- Department of Immunology
- **Clinical - Pharmacology Unit (CPU) since 2010**

## **National Accreditation Committee (Clinical Depts)**

- NASKL and SEKK (providing continuous quality control)

## **International Authorities**

Instand e.V. (Germany), Referenzinstitut für Bioanalytik (Germany)

**RA (SUKL)**, EC requirements are being implemented as they come



# Thomayer Hospital – quality and safety



# Thomayer Hospital – quality and safety

DNV·GL

## MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 287327-2019-AQ-C2S-RvA Initial certification date: 25 June 2010 Valid: 23 June 2019 - 23 June 2022

This is to certify that the management system of

**Thomayer Hospital  
Clinical - Pharmacology Unit**  
Videňská 800, 140 59 Praha 4, Czech Republic

has been found to conform to the Quality Management System standard:  
**ISO 9001:2015**

This certificate is valid for the following scope:  
**Clinical evaluation of drugs, medical devices and other substances and devices including food supplements and other matters in phase I – IV. Bioavailability & Bioequivalence studies, comparative and other types of clinical trials.**

Place and date:  
Praha, 31 May 2019

For the issuing office:  
DNV GL – Business Assurance  
Thåskovvej 4, 160 00 Praha,  
Czech Republic

Maria Lichnerová  
Management representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render the Certificate invalid.  
ACCREDITED BODY: DNV GL Business Assurance s.r.o., Tordensvej 1, 2004 J.S. Sønderhoj, Sønderhoj, DK, +45 33262488, www.dnv.com/business

DNV·GL

## CERTIFIKÁT SYSTÉMU ŘÍZENÍ

Číslo certifikátu: 287327-2019-AQ-C2S-RvA Datum původní certifikace: 25. června 2010 Platnost: 23. června 2019 - 23. června 2022

Tímto se potvrzuje, že systém řízení společnosti

**Thomayerova nemocnice  
Klinicko-farmakologická jednotka**  
Videňská 800, 140 59 Praha 4, Česká republika

byl shledán shodným s požadavky normy systému managementu kvality:  
**ISO 9001:2015**

Certifikát je platný pro následující rozsah:  
**Klinické hodnocení léčiv, zdravotnických prostředků a ostatních látek či potřeb včetně potravních doplňků a dalších látek ve fázi I. až IV. Bloekvivalentní studie, studie dostupnosti léčiv, srovnávací a další typy studií.**

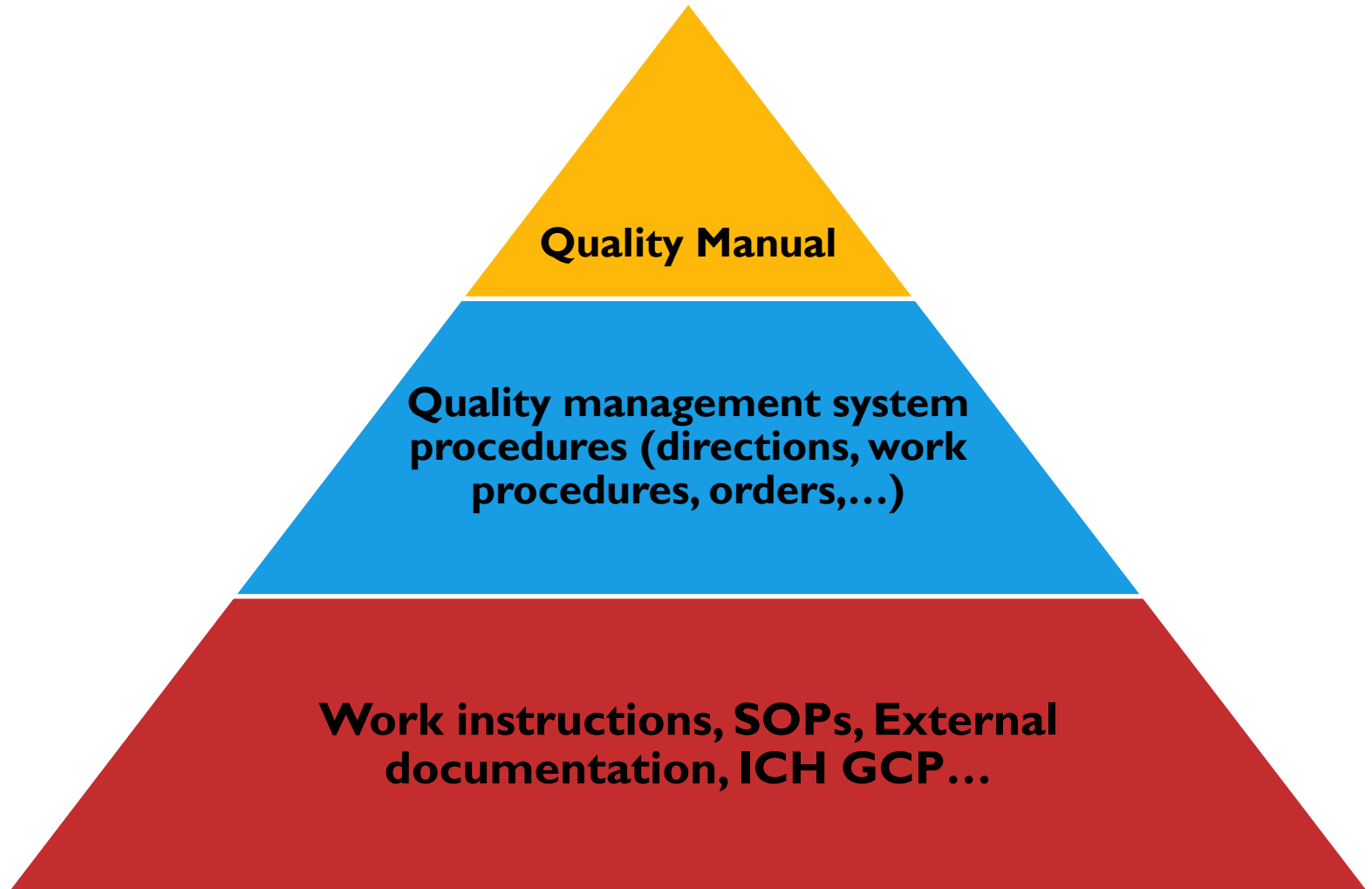
Místo a datum vystavení:  
Praha, 31. květen 2019

Ze vystavujícího oddělení:  
DNV GL – Business Assurance  
Thåskovvej 4, 160 00 Praha,  
Česká republika

Maria Lichnerová  
Předsedající vedoucí

Neplněním certifikačních podmínek uvedených ve smlouvě může vést k zrušení certifikátu.  
AKREDITOVANÁ TĚLO: DNV GL Business Assurance s.r.o., Tordensvej 1, 2004 J.S. Sønderhoj, Sønderhoj, DK, +45 33262488, www.dnv.com/business

# Quality management system documentation hierarchy



## QA – Evaluation, checks

- **Evaluation of services** - *Volunteers (questionnaires,..), CROs & pharma-companies, suppliers of services for CPU*
- **Management review** (*annually*)
- **Evaluation of Staff** (*periodic, education/trainings*)
- **Control of documents, devices/measures**

## QA - Audits & monitoring

- **Internal & External audits (ICH GCP; ISO 9001; periodic audits)**
- **External study Monitoring (all studies)**
- **RA, ECs (SUKL inspections periodically)**

# Clinical – Pharmacology Unit (CPU)

- **One of the Hospital departments**
- **Clinical research Unit to:**
  - run phase I. to IV. Studies (IMP, MD)
  - support of realization of studies in other departments

## Recruitment:

**Healthy volunteers & patients studies**

# Recruitment ..

## Database of healthy volunteers

- **Highly motivated HV – safety and compensation**
- **Previous studies**
- **Advertising (newspaper, magazines etc.)**
- **Recommendation from subjects...**
- **Web registration gate**

**E-database of healthy volunteers in our CPU**

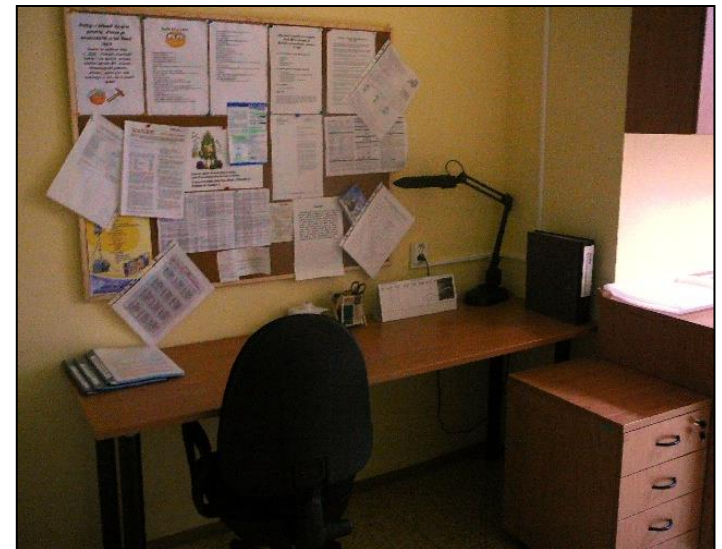
*(quickly searchable, currently over 400 volunteers)*

# Recruitment .. Database of Patients

- Previous studies (diabetics, obese patients, RA,..)
- Departments in TH (oncology, pulmonary, neurology..)
- Recommendation from external docs (nephrology,..)
- Web registration gate, email
- Via GPs / specialists
- Collaboration with hospitals – IKEM Prague, FN KV

*..although internal list of patients previously involved in studies exists,  
we are always in contact with specialist taking care of the patient*

# Facilities





# CPU - personnel

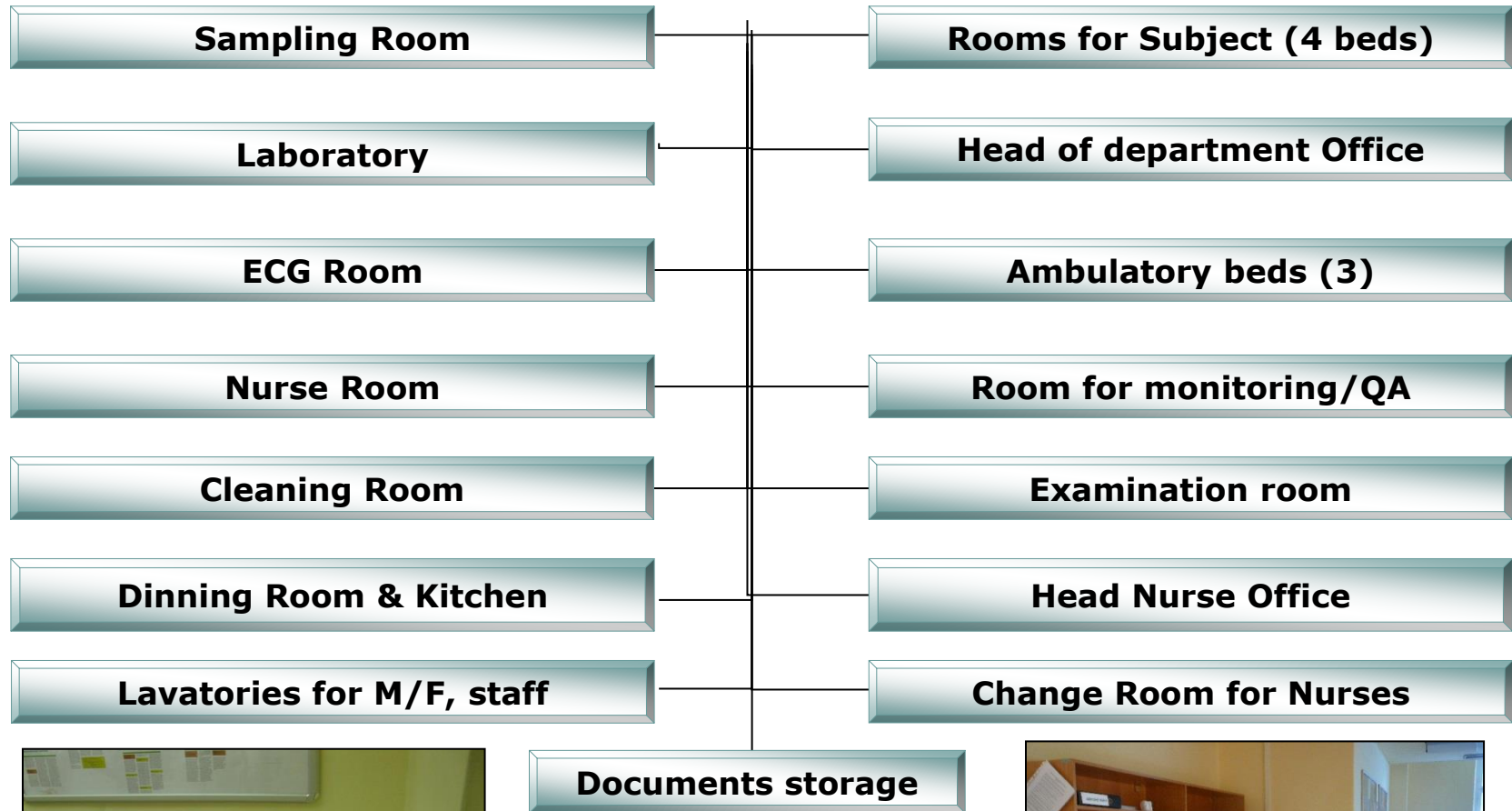
- **Head of the CPU** - CPU management, Investigator - PI/SI, QA
- **Head nurse** - Clinical/administrative responsibilities
- **Physicians** - Highly qualified, different departments
- **Study nurses** - Highly qualified, ICU and other dpt. of TH



# Physicians routinely in CT with CPU

<b>Rheumatology</b>			<b>Pulmonary</b>		
T. Philipp	PI	RA, AS	M. Sterclová	PI	IF
M. Sedláčková	PI	RA, SA	M. Vašáková	PI	IF, NSCLC
P. Kopsa	PI	RA, AS, SA, LE	M. Cernovská	PI	NSCLC
L. Zouharová	SI	RA, AS	L. Heribanová	PI	COPD, Asthma
<b>Internal medicine</b>			<b>Oncology</b>		
T. Adámek	PI	DVT, lipids, renal	T. Buchler	PI	Multiple solid.tu
P. Kohout	PI	IBD	E. Kubala	PI	Multiple solid.tu
Z. Antoš	SI	IBD	<b>Neurology</b>		
G. Puškárová	SI	IBD	J. Marková	PI	MS, migrene
J. Brotánek	PI	Cardiology, lipids	M. Grünermelová	SI	MS, migrene
M. Lejsková	SI	DM II, renal.	R. Rusina	PI	Neurodegen.d.
T. Simciková	SI	Lipids, renal			

# Facility



# CPU - Equipment

- **Blood Draw Stations**
- **Defibrillator/oxygen**
- **Refrigerated Centrifuges**
- **Refrigerated Drug Storage, air-conditioned drug storage room**
- **Programmable Deep Freezer (-86°C) and freezer (-35°C)**
- **ECG, Vital signs devices, spirometer**
- **Small medical devices**
- **Flood, fire alarm system**
- **High Speed Internet in all rooms**
- **Other equipment: X-Ray, MRI, CT & DEXA Scanners linked to PACS, etc. are available within the Hospital**
- **Fully monitored beds – available on ICU (B3)**



# Experience in Clinical Research

## Thomayer Uni. H.

Phase II, III, IV., Academic projects (grant system)  
**TUH studies in 2018:** 44 IMP, 15 Grants, 1 Med.device

## CPU

### 2020-2021

- 3 Covid-19 IIT studies
- 1 Phase I. HV study (inhalation)
- 1 Phase I onkology study
- 5 Pulmonary Phase II-III (IPF, asthma)
- 2 UC/CD (Ph.2, 3); collaboration on over 20 oncology studies ph.II-III

### 2008 – 2019

- 12 Phase I (3 Pilot CTs(8, 16, 24 healthy subjects), 3 Renal/elderly, 2 MD, 1 Onco, 1 Nutrition, 1 RA, 1 renal study with healthy)
  - 9 Diabetic Studies, phase II. and III.,
  - 6 IBD (UC, CD)
  - 13 RA, Ankylose spondylitis, Osteoporosis studies (Ph. II-III)
  - 14 Pulmonary studies (Asthma, COPD, oncology, I. fibrosis, Ph. II-III)
  - 14 Oncology studies (2 phase I, Ph. 2, 3, with Oncology dept, NSCLC)
  - 2 Phase 4. study (surgery, oncology)
- **Extensive PK sampling, special cohorts** of patients with extensive monitoring or follow up with other technology (MRI, xRay, Holter BP..)
  - **Complicated projects** – logistics, procedures, involving more departments to collaborate..

# Why to choose our Unit..?

## Quality

- QA system fully developed and maintained (SOP, QM).
  - Audits from independent Auditors, regular internal auditing, sponsor auditing
  - RA (SUKL) GCP audit in 2009, 2013, 2018 (CPU)
  - ISO 9001:2008 certification in 2010, re-certified: 2013, 2016 and 2018 (9001:2015)
- 
- **Flexible, professional cooperating teams**
  - **Pool of subjects (healthy, patients)**
  - **Commitment to timelines**
  - **Cost effectiveness**
  - **Stability** - public (state) hospital
    - strong support from management
  - **Future development**

# Cooperation of CPU with other depts

- **Hospital Pharmacy**
- **Laboratory base of TN**
- **Department of Radiology**
- **Department of Anesthesiology and Critical Care**
  - Use of staff and facilities
  - Aannouncement of any first administration
- **Science and Research Department**
  - Contract negotiations
  - Sharing staff and facilities if needed
- **IT – services of Thomayer Hospital**

# Hospital Pharmacy





## For outpatients

### Dispensary of:

- Drugs (Rx, OTC)
- Supplements
- Medical devices



## For outpatients

### Patient counseling service

- individual consultations of drug related problems
- thematic days

Extended open hours (nights, weekends)



## For hospital

### Supply of medical drugs

Registered  
incl. infusions  
Non-registered  
IMP



### Supply of medical devices

## For hospital

### Compounding:

(individual preparation of drugs

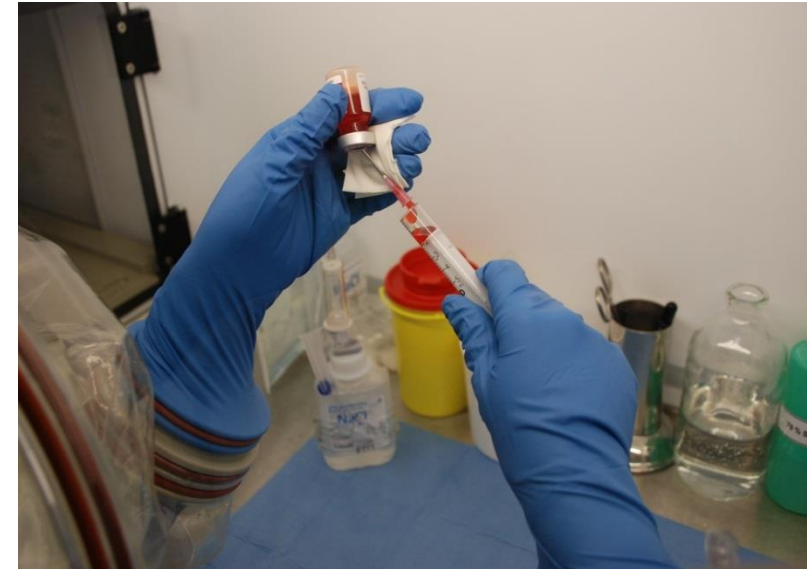
- cps, susp, ung, supp, gtt oph. ...)



## For hospital

### Clean services

- Cytostatic preparation
- IMP preparation



## For hospital

### Preparation of steril drugs

p.e. nutrition (all-in-one), inj, inf



## For hospital

- **Diagnostic's Preparation**
  - buffers, dyes, diagnostic solutions etc.
- **Analytical laboratory**
  - assay, identity check, purity of substances
- **Calibration of thermometers**



## For hospital

- Information service for healthcare professionals
- Positive list of drugs for ambulatory use
- Active cooperation in the clinical trials



## Teaching

## Practice

- pharmaceutical assistants (technicians, students of VOŠ)
- Pregradual education (students of the Faculty of Pharmacy, UK)
- Postgradual education (specialization internship)

# Laboratory base of Thomayer H.

- Department of Biochemistry and Pharmacology
- Department of Immunology
- Department of Hematology
- Department of Pathology and molecular biology (genetics)
- Department of Microbiology
- Laboratory of Transfusion Dept.

***Active participation in clinical studies***

***Introduction of new examinations and evaluations***

## Department of Biochemistry and pharmacology

### Specificity of the lab:

- Provides basic and special assessments of biological material, consultations concerning indications and interpretations of assessments (1000 samples/day, 24/7)
- **Statim lab (86 methods), routine lab (179 methods), Urine lab, Immunochemical lab (cancer, thyroid markers, bone metabolism, hepatitis,..), liquor and morphology lab, electrophoresis lab and analyzers on other departments**
- From 2007 – accredited for teaching in the field of specialized educational practice
- From 2009 – certified according to ISO 9001:2008.
- System of external quality evaluation - 2x year (EHK) SEKK.

## Clinical Pharmacology

### Specificity of the lab:

- Therapeutic drug monitoring (TDM) – analysis and PK interpretation of the drug levels in serum, plasma, urine. **The goal is to assure the best dose – regime for a patient, e.g. to choose the dose and dose intervals.**
  - vitamines D, B12, digoxin, vancomycin,..
- The interpretation is a crucial part to help the patient. to optimize the therapeutic effect and minimize the risk of toxicity.

# Laboratory of Immunology

## Specificity of the lab:

- Assessment of Autoantibodies, infectious immunity (Borrelia, HSV, Helicobacter, Chlamydia, Toxoplasma, VZV, Mycoplasma, CMV, EBV, FSME, HHV-6, TAT,
- Detection of Respiratory, food and other allergenes
- CD3+, CD4+, CD8+, CD19+, NK, HLA-DR, C4/C8
- HLA-B27 screening
- IgE, IgA, IgD

## Department of Hematology

### Specificity of the lab:

- Provides hematological (morphology) and coagulation assessments
- Examinations allowing to diagnose hypo-hyper coagulation situations
- Blood counts, differential blood counts (analyzer, manual), reticulocytes, platelet counts, hemoglobin, hematocrit, Coagulation – antitrombin III, PTINR, aPTT, Fibrinolysis, retraction, D dimers, LMVH (monitoring) and Sternal puncture
- From 2006 – accredited for teaching in field of specialized educational practice
- From 2009 – certified according to ISO 9001:2008, Lab norm. 15189
- System of external quality evaluation - 2x year (EHK) SEKK.

### Equipment:

5 automatic hematological analyzers to analyze blood counts, differential counts of leukocytes (Coulter LH755, Coulter Gen-S, Celltac F MEK8222, Celltac MEK6400J/K). Coagulation lab. Is equipped with automatic multi-test coagulation analyzer (STA Compact).

## Dept. of Pathology and molecular biology

### Autopsy part and Laboratories:

- Bioptic, Necroptic, National referential lab of prion diseases
- Neuropathology lab, Immunological lab, Molecular-genetic lab

### Equipment:

Sequenator, PCR real time, PCR cyclers, centrifuges, freezers(-20°C, -80° C), paraffin unit, biohazards, coloring automat, microtomes, electrophoresis, bio imaging system, spectrophotometer, microscopes, thermostats, water,scales, pH meter, cryostat, tissue processor-autotechnikonetc.

### Service:

- **Diagnostic activity, teaching** activities for physicians, lab.Assistants pathological anatomy
- **Differential diagnostics of prion and neuro-degenerative diseases** for the whole Czech R.
- **Bioptic and cytology** diagnostics done in a short time, using also the contracted labs (lymphoma specification, bone or soft tissue cancer specification)
- International certificate ISO 9001:2001 (since 2008), 9001:2008 (since 2009)

# Department of Microbiology

## Specificity of the lab:

Complex diagnostics of bacterial, myco-bacterial diseases.

Variety of virologic, parasitological and serological examinations.

- Providing **culture medium and liquidation of infected material**,
- Aerobic and anaerobic cultivation,
- Pathogens determination,
- Detection of respiratory viruses by molecular methods,
- ASLO, Clostridium dif. toxin,
- TBC, rotaviruses, tularemia, listeria, mononucleosis,
- Yeasts, Molds and Mycotoxins
- Antibiotic centre – detection of resistances to antibiotics

## Equipment:

- 2 automatic **hemo-cultivation** analyzer
- **Anaerobic station** for cultivation of highly difficult anaerobic bacteria
- **Aparatus GeneXpert** - direct diagnostic of pathogens (multiplex real time PCR)



## Laboratory of Transfusion Dept.

### **Specificity of the lab:**

- Irregular anti erythrocytes antibodies, Rh factor,
- Blood group determination
- Infectious marker (HIV, hepatitis, syphilis),

# Department of Radiology

## Specificity of the department:

- 24/7 service
- Wide range of imaging modalities

## Equipment:

- **Radiology Ultrasound (systems)** - Toshiba Aplio, Phillips LQ
- **Computed tomography (CT)** using a 64-multislice whole-body Siemens scanner including CT angiography in children and adults
- **Magnetic resonance imaging (MRI)** using a General Electric (GE) 1.5 T system
- **Breast Screening and Diagnostic Center**
- **MRI-Guided Focused Ultrasound Center** EXAblate 2000

# Department of Anesthesiology and Critical Care

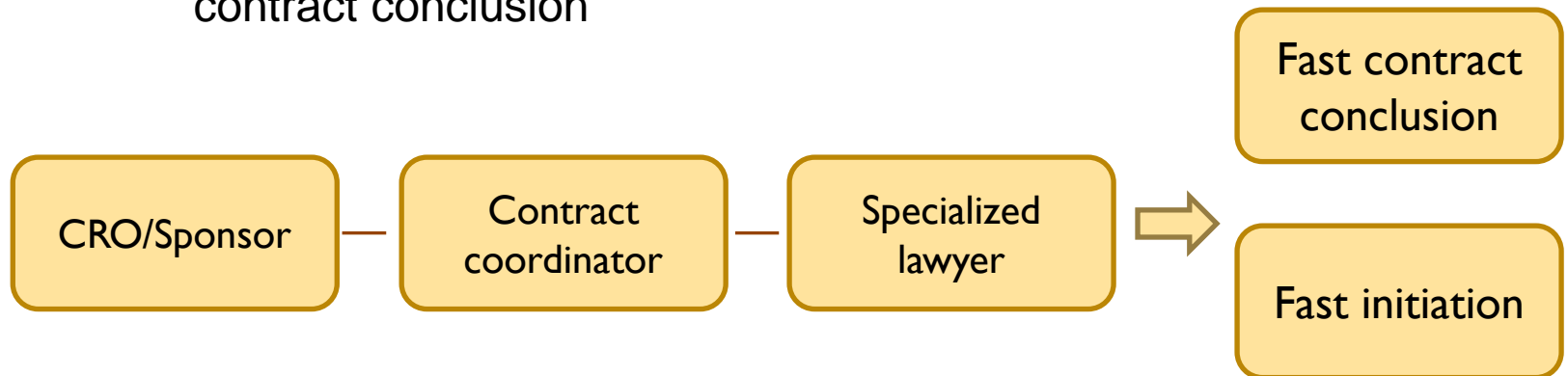
## **Specificity of the department:**

- 24/7 resuscitation counseling medical service to all departments
- 12-bed ward for adult patients experiencing imminent failure of vital functions requiring life support and other intensive medical interventions
- Intensive/invasive monitoring of patients in the critical hours after major surgery

# Science and Research Dept.

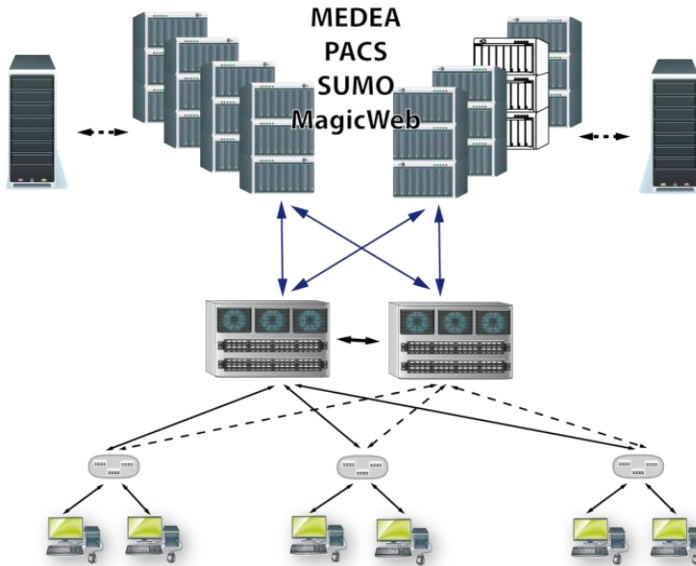
## Specificity of the department:

- Conclusion of a contract with CRO/Sponsor
- Standardized contract features, standardized procedure of contract conclusion



- Phase I - Support coordination ,recruitment and pre selection of healthy volunteer upon the given criteria, planning and organization of first visit of CPU
- Study coordination and personnel back-up
- Multicentric Ethics Committee

# Thomayer hospital - IT systems



Electronic system = support and convenience

Not source data (Pt. data in Health care/clinical trials)

**MEDEA** Clinical Information System (Lab. results, patients charts, insurance codes..)

**SUMO** Managerial and economic informatics system, ordering of material/equipment

**AMIS\*PACS** Image Archiving and Docommunication system (X-ray, CT, NMR)

**FAMA+** one module of a modern CAFM (Computer Aided Facility Management) system

**KIS** A clinical information system that provides doctors with timely, accurate, and comprehensive patient information.

**APOTHEKE, INFOLAB**

# Development – TUH CPU

## Increase R&D activities

- **Early/late stage** of drug and medical device development
- **Biotech products (Biologicals; originals/biosimilars)**  
*trend of current medicine; Oncology, Pneumo-oncology, Rheumatology, Gastroenterology, Neurology,...*
- **Scientific/RnD projects** - Academic fields, Investigator initiated, to be part of development process

## „Strategic“ partners - long-term relationship

- to use an expertise and support to deliver the best product
- to be a clinical base to increase efficacy and speed of drug and device development

## Strengthen the „strong points“ and to enhance „weaker points“

- To be a „wanted“ partner with the highest level of systems, tools, procedures, administration support ...