



## **Annual report**

**Transplant Centre  
University Hospital Zurich**

**2010**

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# 1. The Transplant Centre in its 3rd year

Thomas Fehr - coordinator TPLZ

On the occasion of the realization of the 4<sup>th</sup> International Symposium on Transplant Medicine the Transplant Centre (TPLZ) of the University Hospital Zurich (USZ) could celebrate its 3<sup>rd</sup> birthday. In the course of the recent year, the structures of the TPLZ have been strengthened, still with the emphasis on its interdisciplinarity and interprofessionality. Exactly for this reason it has become a firm contact partner for the hospital direction when the subject of transplantation is concerned.

## 1.1. Retrospect

The year 2010 at the University Hospital was marked by the realization of the *new roof strategy*. Transplantation has been defined as a subject of highly specialized medicine, which is to be promoted systematically by the USZ within the scope of the roof strategy. Therefore the quality parameters (patient- and graft survival) for all transplantation programmes have been systematically compiled in the beginning of 2011 with the support of the TPLZ and officially reported in the USZ quality report 2010. Excellent long term results being above average of the international registers for all programmes could be demonstrated. In the partly fervid discussion regarding the assignation of heart transplantation this disclosure of long term results has significantly contributed toward the maintenance of the heart transplant programme in Zurich (see also chapter 4.3.).

With regard to transplantation numbers the TPLZ has developed quite pleasantly in 2010. Numbers of transplantations for all solid organs have remained essentially stable compared to the previous year. The increase of allogeneic stem cell transplantations from 34 in the previous to 54 in the reporting year, however, is impressive.

The year 2010 has again been marked by an intensive discussion on the local and national level regarding organ donation. Fortunately the number of multiorgan donors at the USZ has increased (from 1 in the previous to 7 in the reporting year). At the same time the number of donors from the Zurich network was regressive. This can, however, be partly explained by the fact that Lucerne has left the Zurich network and founded its own network. The supervision of the Zurich network in the future, however, will have to be re-discussed in 2011.

The organ shortage has also accentuated the question of allocation of available organs. The TPLZ has actively contributed to the discussion with the organization of the 4<sup>th</sup> international symposium on the subject „Solid organ transplantation 2010 – medical and ethical challenges“. The question whether an organ should be allocated to the recipient who is most critically ill or to the recipient with the best outcome has been addressed from a medical and ethical point of view and discussed in an ensuing podium discussion.

On the occasion of this symposium transplantation awards of the TPLZ were conferred for the first time. The science award went ex aequo to 3 studies from the Clinics of Visceral Surgery, Thoracic Surgery and Nephrology (for details see attachment 5.7.). The merit award was conferred to the Foundation for Diabetes Research, which over 10 years has collected several 100'000 Francs for the Zurich islet transplantation programme and has thus enabled the establishment of the latter. The foundation was represented by its foundation president Albin Murer.

The year 2010 has also brought about several staff changes in the TPLZ. Structurally the representatives of the autologous stem cell transplantation were incorporated into the board of directors (Stenner) and the board of trustees (Renner). Furthermore a representative of psychiatry (Jenewein) was newly admitted to the board of directors. For the rest of staff changes see attachment 5.1. Sandra Limacher, who had been responsible for the administration of the TPLZ for 1.5 years, has left us in 2010. We hereby want to thank her for her excellent contributions.

## 1.2. Outlook

The project LEAD of the hospital direction, which as part of the roof strategy aimed at a complete restructuring of the hospital with the creation of newly defined medical sectors, has been realized in 2010. As far as possible, thematically related clinics were grouped together in these medical sectors, and the sectors were provided with new leading organs (i.e. triumvirates consisting of a medical, a nursing and an operational leader). However, how centres like the TPLZ, which function explicitly on an interdisciplinary and interprofessional level, can be integrated in this structure, remains unclear until today. The subsequent overview clearly demonstrates that the clinics which are directly or indirectly connected with transplantation are disseminated over essentially all medical sectors (Fig. 1).

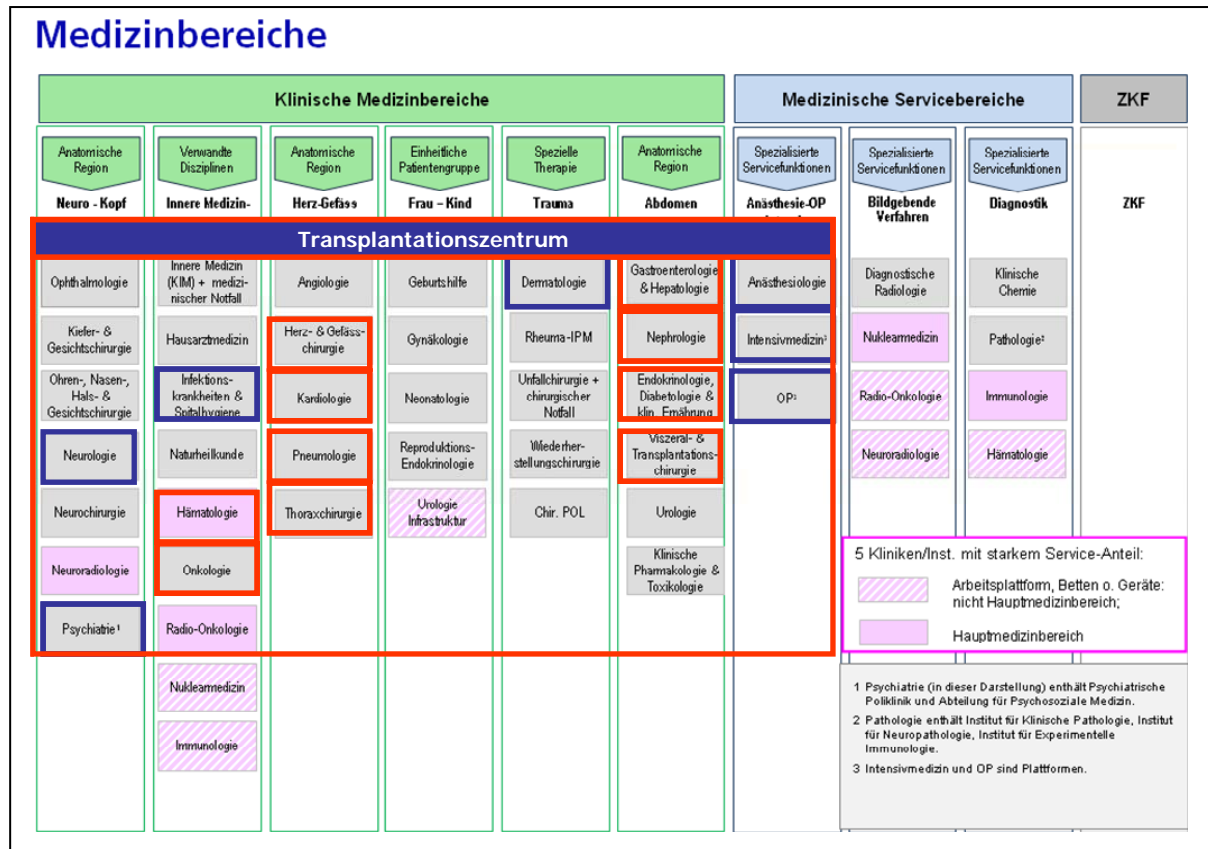


Fig. 1: Hospital restructuring as from 2010

It will therefore be a task for 2011 to find a reasonable form of integration of the TPLZ in the existing hospital structure, and the TPLZ is ready to actively participate in this discussion.

Several activities are planned for 2011 on the subject of organ donation: (I) In the early summer there will again be organized a public symposium for the promotion of organ donation; (II) In collaboration with the communication department of the USZ a strategy for activities in favour of organ donation will be elaborated for the next 3 years; (III) The Zurich programme for organ transplantation from donors after circulatory arrest (so-called "non heart beating donors") will be restarted in 2011; (IV) The supervision of the Zurich hospital network will be put on a new basis.

As far as continuing education and advanced training in the field of transplantation are concerned, the successful monthly TNT seminar will be continued. The autumn symposium 2011 will be dedicated to the topic "Living donation", and thus living organ donation will be a subject in the coming year as well. Finally an advance at the ESOT will be made in order to organize one of the next Hesperis Courses in Zurich.

## **2. Centre specific and integrative functions**

### **2.1. Transplantation coordination**

Werner Naumer – Head transplantation coordination

The supervision of a total of 23 network hospitals is running very well, and we were able to offer 2 further trainings per year in almost all hospitals. In addition a day course for the local coordinators (LC) has been organized this year for the first time by Markus Béchir and me and conducted in Zurich in collaboration with Swisstransplant. The interest was considerable, and 13 participants from the network attended. In the future this course will be organized annually.

In addition we have been able to offer 2 EDHEP (European Donor Hospital Education Programme) courses. The interest was so enormous, that it was not possible to consider all the applications, and as a consequence we are planning 3 courses for the next year.

Among others we had to accomplish 130 evaluation plans for living kidney donation, deceased donor liver transplantation and living donor liver transplantation. The workload is constantly increasing and the tasks become more comprehensive. Altogether we have coordinated transplantation of 174 organs.

The collaboration with the other disciplines is excellent, which facilitates the procedures. The 50% coordination position has been filled again. The initial on-the-job training in this field is very extensive and requires at least 6-9 months. Unfortunately, one position was not filled anymore, which may presumably lead to shortages in the coordination of organs in the future.

### **2.2. Interdisciplinary HLA typing laboratory**

Barbara Rüsi – Head interdisciplinary HLA typing laboratory

The medical direction of the HLA typing laboratory consists of representatives of the Clinic of Nephrology (Prof. Thomas Fehr), the Clinic of Haematology (PD Dr. Georg Stüssi) and the Clinic of Visceral and Transplantation Surgery. The existing vacancy from the Clinic of Visceral and Transplantation Surgery could be filled by PD Dr. Jens Brockmann per October 1<sup>st</sup>, 2010. At the same time PD Dr. Brockmann took over the disciplinary supervision of the HLA typing laboratory.

The objective to obtain the laboratory accreditation according to EFI (European Federation of Immunogenetics) standards could unfortunately not be realized in 2010. The reconstruction activities in connection with the laboratory space extension turned out to be more complicated than expected, and therefore the planned EFI Accreditation had to be postponed.

With regard to the accreditation, the HLA typing laboratory has created new HLA forms in the KISIM in cooperation with the CISTEC Company and Mr Hubert Hauschild (application manager KISIM USZ). These have been released in September 2010. At the same time the project "EELO" (electronical registration of organ donors in the KISIM) has been concluded. With the realization of these two projects it is now possible to record all results of laboratory analyses (blood group, virology, serology, etc) of a donor in the KISIM. The query is made by entry of the ST number (Swisstransplant number e.g. ST20100202) as the patient number. In addition the donor specific HLA antibodies in an organ recipient can now be computed based on the donor typing "at the push of a button". These innovations enhance the standard of quality and security, and in addition the automated computation of DSA (donor specific antibodies) allows for a faster allocation of organs.

### **2.3. Research in the Transplant Centre**

Rolf Graf – research representative

The clinics associated with the Transplant Centre have published more than 50 publications in the fields of diagnostics, imaging and complications on the subject of transplantation. Clinical studies reach from the psychological care of organ recipients over skin diseases under immunosuppression up to the microbiological analysis of lung infections after transplantation. Again, the subject of organ allocation is ad-

dressed as well. In kidney transplantation tolerance induction and the alloresponse are in the focus of interest. Besides these clinical studies various topics from the field of basic lab research have been published. In the lung as well as in the kidney new experimental transplantation models in mice were presented.

With the Swiss cohort study for transplantation sponsored by the SNF data of about 1000 patients are available now. This unique, multicenter research data- and biobank allows for the clarification of questions concerning all transplanted organs. Therefore our special thanks go to the organizers of the cohort study.

The publications of the current year are summarized in the attachment 5.6.

## 2.4. Continuing education

Nicolas Müller – member organizing committee TNT

Thanks to notable international, national and local speakers the seminar *Hot Topics in Transplantation* was again extremely successful. Apart from more organ specific topics such as new immunosuppressive concepts after heart transplantation (referee: Prof. Zuckerman, Vienna), the programme was enriched by subjects of general interest such as pregnancy after transplantation (Prof. Zimmermann, Clinic for Obstetrics, USZ) or problems of medicinal adherence after transplantation (Prof. De Geest, University of Basel). It has to be emphasized hereby that the generous sponsoring by 'unrestricted grants' of all companies taking a relevant interest in transplantation (Astellas Pharma AG, Essex Chemie AG, Genzyme GmbH, Novartis Pharma Switzerland AG, Roche Pharma (Switzerland) AG, Wyeth Pharmaceuticals AG) is the prerequisite that each year an exciting programme can be put together. We hereby want to thank the sponsors for their generous support.

The detailed programme of the year can be found in the attachment 5.8.3.

## 2.5. Swiss Transplant Cohort Study (STCS)

Nicolas Müller – President of the scientific committee STCS

The STCS has reached another milestone in the reporting year: The Swiss National Science Foundation has decided to continue with the financing of the STCS for 3 more years. Last but not least this is also due to the Zurich centre, since 36% or 494 (December 12, 2010) of all enrolled patients are from here (Fig. 2). Soon we will be able to note the 1000<sup>th</sup> sample (DNA, cells, and plasma) which is processed by the HLA typing laboratory. Fourteen scientific projects, in part with considerable participation of Zurich, have been accepted by the Scientific Committee. The challenge will consist in bringing these to a successful conclusion. Our special thanks go to all who have contributed to the success!

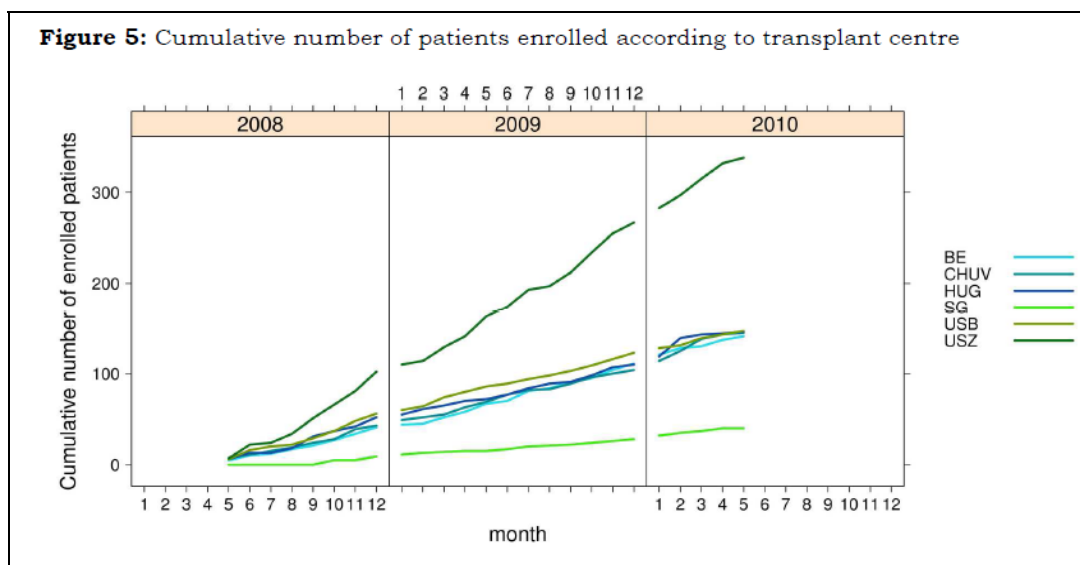


Fig. 2: Enrolment of patients in the STCS according to centre

## **3. Patient care in the Transplant Centre**

### **3.1. Donor monitoring**

Markus Béchir – Intensive care

#### **Staff**

After 25 years at the USZ Prof. Reto Stocker has left the University Hospital Zurich. He was committed in many different ways to transplantation medicine. Among other things he was a member of the national committee for organ donation CNDO (Comité national de don d'organes) as well as the head of the Zurich transplantation network. During his long-standing activity he rendered outstanding services to transplantation in particular at the USZ. As his successor I wish him all the best for his further activities and on behalf of the network want to thank him for his great commitment.

#### **Donors**

Until mid-December 2010, 10 multiorgan donors could be recruited in the entire network, whereof 7 at the USZ, which represents a significant increase in comparison to the last year. Particularly in the first half of the year the number of donors was quite satisfactory, whereas in the second part of the year a significant decrease of donors was observed over the entire country. The reason for this is unknown and is currently being investigated. Nevertheless the achievement of the network was remarkable; the quality is under continuous control and corresponding continuing education is organized with the partner hospitals through the entire year. Interesting is the fact that nationwide more than 50% of organ donors are no longer recruited from the university hospitals, but from the "smaller" network hospitals. This clearly illustrates the significance of these networks and undoubtedly justifies the resources invested in them.

#### **Outlook**

There is still a lot that needs to be done; no rest allowed as yet: public relations, collecting of quality data, process analysis, implementation of improvements, intensifying of collaboration and last but not least the daily commitment of everybody involved for the common cause. The "Non heart beat donation" might lead to an increase of donor numbers. In 2010 a respective project has been launched at the USZ and will soon be concluded. The implementation is planned for 2011. The future will demonstrate the influence of such a programme on transplantation numbers and mortality on the waiting list.

### **3.2. Anaesthesiologic aspects of transplantation**

Marco Zalunardo - Anaesthesia

Anaesthesia for transplantation is often referred to as so-called "king discipline" in the field of anaesthesiology. The professional challenge particularly in lung-, heart- or liver transplantations is in fact considerable. In these interventions the anaesthesiologist is confronted with the pathophysiology of organ systems, complex airway management or vitally threatening hemodynamic and hemostatic disturbances. Therefore already the young assistant doctors are interested in the additional standby for emergency duties of the transplantation team.

The total number of anaesthesias for transplantation in the year 2010 was about the same as in 2009. On the other hand the trend towards more resource-consuming and complex cases has clearly increased. Often the liver recipients came directly from the intensive ward to the OP, already under ventilation and frequently with circulatory instability. In 2010, again, there were lung recipients who were brought to the OP connected to the heart-lung machine (ECMO) and often had to be returned to the intensive ward with it. A very special case in this patient group was a child with severe pulmonary hypertension which was brought to the USZ for possible lung transplantation in a very bad condition and connected to the heart-lung machine. This case was quite challenging not only from a medical point of view, but also a proof of the excellent function of the interdisciplinary exchange and collaboration within the lung transplant team. No less than 13 specialists of different areas met at the USZ on a Saturday morning in order to discuss and decide on the procedure in this particular case. The transplantation was successful. According to recent information several months after the transplantation the child at present is fine and definitely much better than before the intervention.

From the scientific perspective various ongoing as well as concluded investigations have to be mentioned. The study on postconditioning with Sevofluran in liver transplantations could be advanced (Prof. Dr. D. Beck Schimmer, Dr. J. Bonvini). Twenty of a total of 45 liver recipients were included in 2010. The study

on the influence of reperfusion on the heart function in liver transplantations, an investigation with intraoperative transesophageal echocardiography, could be concluded in 2010 (PD Dr. M.P. Zalunardo, PD Dr. D. Bettex). The retrospective study on the influence of preoperative right-ventricular function and intraoperative administration of thrombocytes on the outcome after lung transplantations has been published in the European Journal of Cardiothoracic Surgery (PD Dr. M.P. Zalunardo).

### **3.3. Interdisciplinary transplantation ward E OST III**

Alf Corsenca – Clinical attending physician on the transplantation ward

Also in 2010 the interdisciplinary ward has been the central local and organizational element for the post-operative patient care in our transplant centre. Almost all freshly transplanted patients (after kidney-, kidney/pancreas-, liver and lung transplantation) as well as living organ donors for the kidney have been treated postoperatively on this ward. The patients benefited from a highly qualified and comprehensive medical care, which among other things was achieved by the close interdisciplinary collaboration with the special disciplines. Here the clinical senior physician acting on the ward has fulfilled an indispensable key function, since due to his broad medical knowledge and his closeness to the patients and the care team he was able to keep track on the individual patient's history, the initiated therapies and the state of health of each individual patient. Based on weekly rounds with the colleagues from other clinical specialties (infectiology, diabetology, nephrology, hepatology) given recommendations could directly be implemented in the patients treatment.

As a consequence of the structural changes in the team of visceral surgery, the transplantation team could profit from the availability of two assistant physicians, so that the advanced training of the young colleagues could be optimized. In the position of chief physician PD Dr. med. Ph. Dutkowski has been appointed team leader of the transplantation team. PD Dr. M. Müller has left us – he was appointed chief physician at the Cantonal Hospital Frauenfeld. As his successor PD Dr. med. J. Brockmann (previously in Oxford UK) has been elected.

The domain of instruction of our freshly transplanted patients (patient education with self-monitoring programme, see annual report 2009), which had been an extremely important focus already in the previous year, could be consolidated thanks to the enormous commitment of our care team. Modifications and optimizations were identified and will be implemented in the course of 2011.

For organizational reasons three beds on EOIII were blocked in September and only released for emergency entries in case of possible transplantation. The consequence of this was that some individual "regular" patients had to be attended to on a different ward of visceral surgery after transplantation with the result that neither on the medical nor on the nursing side an optimal care could be guaranteed. In addition the care team had to rearrange itself and organize a standby service. For this additional input utmost gratitude has to be expressed to the care team of EOIII (under the supervision of Margret Soback).

Finally Dr. med. A. Corsenca has left the transplantation team and thus the ward EOIII at the end of the year due to professional reorientation. His position has been taken over by Dr. med. Marco Bonani from February 2011. We wish him all the best in his challenging new function.

### **3.4. Inpatient nursing care in the Transplant Centre**

Beatrice Biotti – Nursing representative

Due to the new formation of medical sectors, since September all patients summoned up for transplantation are directly admitted to the ward of the transplant centre and prepared for the operation. Hence patients are being attended to on the same ward before and after the transplantation.

From the point of view of the care team of the transplant centre the year 2010 has been stable, so that we have been able to work on the consolidation of individual care-relevant aspects in order to maintain the high competence and the professional meetings with the transplanted patients and their families.

A difficult course of disease or the demanding attitude of family members in everyday life are particularly challenging even for the attendants, who are accustomed to the contact with transplanted patients, and may in the long run lead to weariness and to "sense questions". Multiple and domino transplantations



along with the often extremely critical health status of patients at the time of transplantation represent additional challenges for the care staff in professional as well as in emotional respects. For this reason regular meetings have been called with the ethical specialist PD Dr. Tanja Krones in order to being able to find professional answers to the partly difficult ethical questions of care persons in everyday life.

### **3.5. Infectious disease consult service of transplanted patients**

Nicolas Müller – Infectious disease specialist

In 2010 more than 1000 infectious disease consultations have been documented by our consult service in patients in connection with transplantation. This emphasizes the high significance of infectious disease treatment and prevention in recipients of a new organ or of stem cells or islets. In addition to this service on call all new patients on the waiting lists for kidney, pancreas or islet cells are routinely examined with regard to their serology and past infections. The regular participation in the weekly visit of stem cell transplanted as well as freshly kidney- or pancreas transplanted patients ensures a continuous attendance and close cooperation. For the kidney transplanted patients a completely revised version of the guidelines “Prophylaxis and treatment of Infections in recipients of renal transplants” has been issued in 2010.

### **3.6. Dermatological follow-up of transplanted patients**

Günther Hofbauer - Dermatology

Recipients of solid organs and also of bone marrow/stem cells are seen in the specialized consultation for immune suppressed patients of the Clinic of Dermatology. Under the guidance of PD Dr. Günther Hofbauer more than 1'600 consultations were held in the year 2010. The main focus of this consultation is on prophylaxis, early detection and treatment of the white skin carcinoma (spinocellular skin carcinoma), which represents the most frequent malignant tumour as consequence of long-term immunosuppression. On one hand existing tumours are detected and removed within the scope of the pre-transplant assessment. On the other hand transplanted patients are advised of the risk of white skin cancer and are taught prevention by appropriate behaviour, clothing, application of sunscreen and early detection.

As one of the largest of several centres worldwide, synthetic alpha MSH has been applied as internal sunscreen for the first time in Zurich in 2009. In the meantime far more than 30 recipients of solid organs have been included in this study, and within 2 years an assessment will be possible on whether a reduction of the risk of skin cancer by increased tanning and thus an increased sun protection of the skin can be obtained. Soon the effect of a superior sunscreen product against white skin cancer will be tested. The recruitment should be concluded in 2011.

In experimental works in collaboration with Prof. Gian-Paolo Dotto (Lausanne and Boston) ATF3 has been identified as transcription factor, which is selectively upregulated in keratinocytes by calcineurin inhibitors. This upregulation of ATF3 inhibits p53 and hence natural senescence, which advances the development of cancer. These experimental findings are expected to lead to an improved treatment of transplanted patients in the midterm.

### **3.7. Psychosocial mentoring of transplant patients**

Josef Jenewein and Lutz Götzmann - Psychiatry

Until the end of 2009, the psychiatric-psychotherapeutic mentoring of transplant patients, donors and family members was conducted by the Division of Psychosocial Medicine (PSM) of the USZ. After the refilling of the Chair of Psychosocial Medicine (formerly held by Prof. Buddeberg) had been suspended by the University, the direction of the chair was assumed by Prof. U. Schnyder (Clinic of Psychiatry and Psychotherapy, University Hospital Zurich) from February 1, 2010. Furthermore the hospital direction of the USZ has decided on the structural integration of the Division of Psychosocial Medicine in the Clinic of Psychiatry and Psychotherapy (PSY). The psychiatric-psychotherapeutic mentoring of transplant patients of the USZ has been conferred to the Division of Consultant and Liaison Psychiatry of the PSY (Direction: PD Dr. Josef Jenewein) from May 1, 2010.

#### **Care assignment and supply**

The psychiatric care in the transplant centre includes:

- outpatient clarification, mentoring and treatment of patients and their family members before and after heart-, lung-, liver-, kidney, pancreas- or stem cell transplantation as well as of potential living donors in the scope of kidney or liver transplantation
- inpatient care, respectively clarification of patients before or after transplantation when they are hospitalized for evaluation before transplantation, for transplantation or within the scope of medical follow-up

The psychiatric care includes a broad treatment spectrum of psychiatric interventions (e.g. with regard to anxiety- and depressive disorders, psychical stress reactions or postoperative deliria) and in a closer sense of psychotherapeutic interventions (e.g. psychical coping with the transplantation and its psychosocial consequences, support in the handling of the disease and in the compliance behaviour). A further field of activity consists in the mentoring and treatment of family members and in the interdisciplinary – clinical as well as scientific – collaboration with the medical care teams in the transplant centre of the USZ.

In total over 300 patients and donors, respectively, have been treated or clarified in 2010, and more than 1300 consultations have been held.

### **Organization of the team**

The team consists of three senior physicians with a medical specialist degree in psychiatry and psychotherapy (job extent in total 180%) and one psychologist (60%). Each senior physician is responsible for a particular transplantation programme and has a replacement person who acts as contact in the absence of the responsible person. The psychologist assumes clarifications of donors and psychological supervisions of inpatients and outpatients. In acute psychiatric emergencies such as delirious conditions or suicidality, the emergency physicians of the PSY may also be called. The team is supervised by the senior physician PD Dr. Lutz Götzmann.

## **4. The individual transplantation programmes**

### **4.1. Allogeneic stem cell transplantation**

Urs Schanz – Haematology

The year 2010 has revealed a pleasant development with regard to allogeneic stem cell transplantation. The number of transplantations was increased by 59% from 34 to 54. Never before had so many transplantations been performed at the USZ, and along with the autologous transplantations the Zurich stem cell transplantation programme is now the largest in Switzerland. After a break of several years umbilical stem cells could be successfully transplanted again as well. In addition, haploidentical transplantations have been further developed. Hence the USZ offers all internationally current therapies.

The increase in transplantation numbers involved a minor reduction of the length of hospitalizations. The transplant-associated mortality (day 100 2.5%, 1 year 6.3%), however, still remains lower compared to international registries, which also leads to an excellent overall survival rate.

### **4.2. Autologous stem cell transplantation**

Frank Stenner – Oncology

In the year 2010 65 patients have been treated by means of autologous stem cell retransfusion after high dose chemotherapy. The principal indications were multiple myeloma and recurrent lymphoma, as well as recurrent germ cell tumours. Two patients received an autologous stem cell transplantation due to an autoimmune disease. In the case of multiple myeloma a trend towards a single transplantation instead of double transplantation becomes apparent. This is in conjunction with the new substances that are now available for treatment of this disease and which show a higher efficiency in the pretransplant phase (induction therapy), as well as to some extent with their use as consolidation therapy in the posttransplant phase, which has reduced the relapse rates and thus has improved progression-free survival. The mortality of the autologous transplantation programme at the USZ was with 1% significantly below the worldwide reported average of around 5%.

In 2010 the stem cell programme, i.e. the autologous and allogeneic transplantation, has been accredited as centre by JACIE, which impressively demonstrates the high quality standard of stem cell transplantation at the USZ. Therapy success and classification numbers of the autologous transplantation have been documented in 2010 in two publications (PMID: 21079406 and PMID: 20706722) of international journals.

### 4.3. Heart transplantation

Markus Wilhelm – Cardiac surgery

The heart transplantation programme could be successfully continued also in 2010. In the reporting year approximately one third of all heart transplantations in Switzerland have been performed in Zurich. Thus the total number of heart transplantations in Zurich since the start of the programme in 1985 has increased to 367. The survival rates are above the international average (Fig. 3).

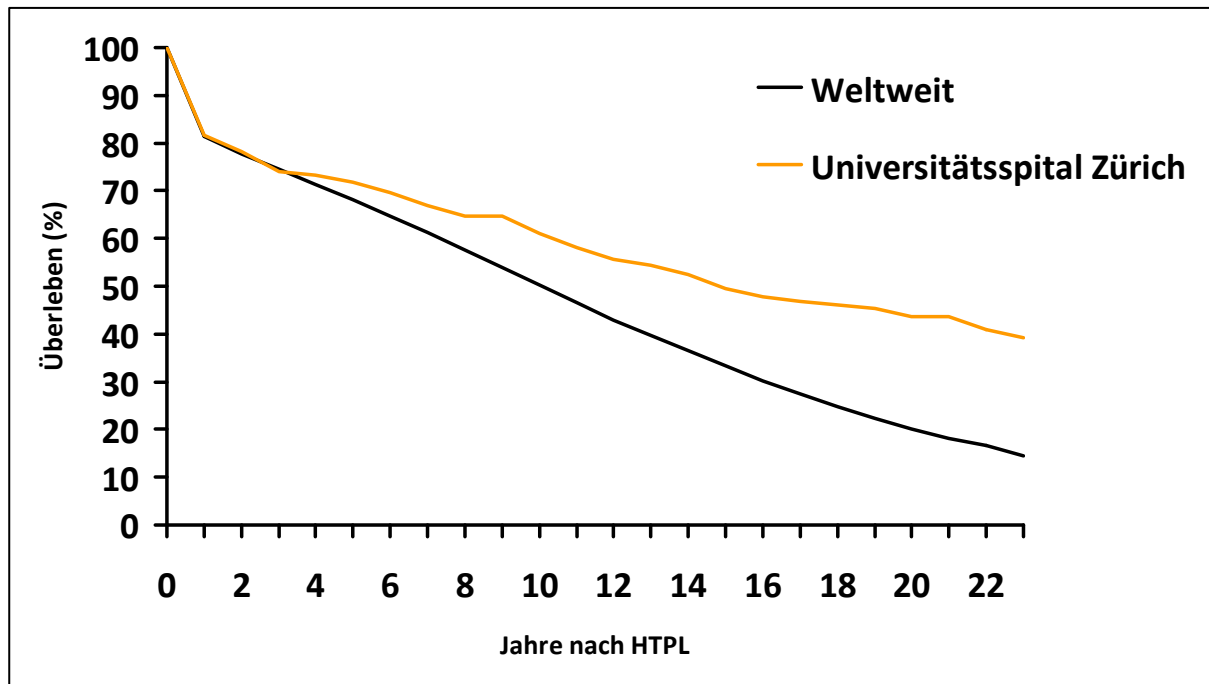


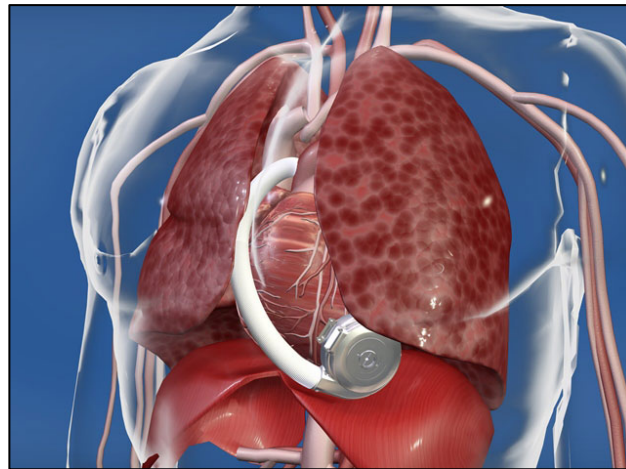
Fig. 3: **HTPL ZÜRICH by international comparison**  
Survival rate after HTPL-Zurich 1984-2010 (Kaplan-Meier)  
International survival rate after HTPL 1982-2008 (Kaplan-Meier)

The severity of disease of the patients on the waiting list is demonstrated by the fact that five of the twelve transplanted patients (42%) had been supplied with a heart support system ("artificial heart"), before heart transplantation was performed. All patients have been successfully transplanted. The number of artificial heart implantations has increased compared to previous years. Altogether nine patients had been supplied with an artificial heart in the reporting year. In seven patients a biventricular heart support system was implanted. Two patients received a left heart support system. For this purpose we have used the currently most up-to-date system, the so-called HeartWare® (Fig. 4). It belongs to the left heart support systems of the third generation, which consist of an implantable miniaturized centrifugal pump. This system is also appropriate for long-term support of patients with severest cardiac insufficiency and contraindications for heart transplantation ("destination therapy"). A further focus in the therapy of patients with severe progressive heart insufficiency was on the therapy with biventricular cardiac pacemakers ("cardiac resynchronisation therapy" (CRT)).

The wide experience with different therapy approaches in cardiac insufficiency (medical therapy, mechanical and electrical support systems, heart transplantation) has been passed on to colleagues and the public in continuing educations (in the frame of the continuing educations of the "Zurich Heart House"). The basis of the successful work is the long-established, excellent collaboration between the various disciplines and professional groups, among which are cardiologists, cardiac surgeons, cardiac anaesthesiologists, psychotherapists, infectiologists, care persons of the intensive wards, divisions and polyclinics, cardiotechnicians and physiotherapists.

In the field of clinical research, studies on the impact on cyclosporine-induced arterial hypertension after heart transplantation and on the monitoring of cyclosporine in the long-term course after heart transplantation have been published.

4a.: Position in the body



4b.: In relation to the size of a golf ball



Fig. 4: Left heart support system „HeartWare®“

#### 4.4. Lung transplantation

Macé Schuurmans - Pneumology, Sven Hillinger – Thoracic surgery

In the reporting year 2010 we have been able to perform 26 lung transplantations as in 2009, again a considerable number of transplantations, which due to the advanced state of disease of the recipients had to take place under extremely demanding conditions. Eighteen patients have been transplanted at the ECMO. Preoperatively three patients already required extracorporeal support (1x Novalung, 2x ECMO). Since the implementation of the central organ allocation SOAS, as already reported in 2009, the increased organ allocation to recipients in heavily reduced condition due to most advanced lung disease at the time of transplantation was again continued in 2010.

Besides the fact, that patients can often not be transplanted until the very last moment (if at all), because of the change to central allocation, also a change in the a priori distribution of indications on the waiting list can be observed, although the indications of the actually transplanted patients have not changed so far. Thus the numbers of patients with lung emphysema on the waiting list have significantly increased (to 40% of all waiting).

The transplant team within the Clinic of Thoracic Surgery was further consolidated. Dr. Kestenholz and PD Dr. Inci are practically independent in the performance of allocation and transplantations. This additional expertise has allowed the simultaneous bilateral transplantation of one single donor lung to two recipients shortly before the end of the year. At this both superior lobes could be implanted in one recipient, in the other one the right middle and inferior as well as the left inferior lobe. The postoperative courses in both recipients are excellent. The two X-rays show the first postoperative image for each patient (Fig. 5).

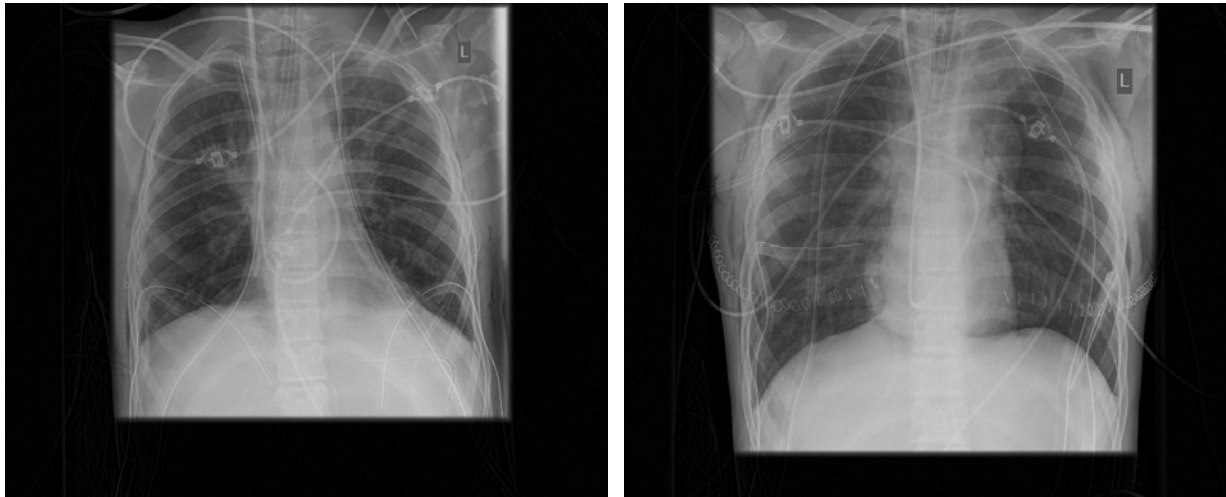


Fig. 5: One donor, two recipients: left image 2x superior pulmonary lobe; right image right inferior and middle pulmonary lobe, left inferior pulmonary lobe

Dr. Peter Kestenholz has been elected vice president of the lung working group of Swisstransplant (STALU). In this function regulations with regard to the new transplantation law as well as donor questions are decisively co-determined among other things.

The pneumology team has been completed by Dr. Gregory Fretz. A temporary change in the team will be caused by the one-year sabbatical of Prof. Annette Boehler, who will spend this period for professional education in Toronto (Canada). The supervision tasks will be assumed by Prof. E. Russi.

Cost pressure and economy measures in addition to various restructurings have considerably complicated the medical work in the pre- and posttransplant phase. The restructuring of the 42 clinics and institutes of the USZ into 9 medical sectors did not only yield positive changes for the medical supervision of the patients before and after lung transplantation. For example, as a consequence of inadequate allocation of beds on the pneumology ward during 8 months, the hospitalization and treatment practice had to be changed. The performance of intravenous outpatient therapies had to be increased and only the most critically ill lung transplanted patients could be hospitalized – and unfortunately often too late. In spite of regular information by the medical director and the hospital director an increased mortality of lung transplanted patients compared to previous years had to be observed during this period. This concerned recently transplanted patients as well as patients who had survived far more than a decade after lung transplantation. This situation could be improved as from the second half of the year. The treatment of the lung transplanted patients is increasingly hampered due to the reduced willingness of sponsors to bear the medication costs for individual approved medical therapies, which significantly enhances the administrative burden because of the numerous special requests to health insurance companies. In many cases we are forced to change medications due to financial reasons and thus to switch to products with different effect-, side effect- and interaction behaviour. Due to the described developments our international leading role in the post-treatment after lung transplantation with excellent long-term results is threatened.

We are pleased to report that Prof. Annette Boehler has been appointed Head of the Scientific Assembly in "Thoracic Surgery and Transplantation". Furthermore she has been appointed Associate Editor for the field "Endstage lung diseases" of the journal "Respiration". The surgical and medical team has been present with scientific contributions in several international congresses and is actively involved in scientific societies and boards.

The specialized ward of the transplant centre E Ost III is still working very professionally and excels in high care competence. After the closing of the central emergency admission ward the recipients before transplantation are now also admitted to ward E Ost III. Thus a higher competence is available on the care side. However, three beds remain permanently blocked ever since and are therefore no longer available for post-transplant patient transfers from the intensive care unit. This has sometimes presented a considerable problem, as patients from the intensive care unit could not be transferred to the regular ward for several days.

Within the scope of the TNT seminar on March 29, 2010, we had the opportunity to welcome Prof. Stig Steen, one of the pioneers of lung transplantation research, from the University of Lund, Sweden, as principal referee. He spoke on the topic "Ex vivo perfusion to expand the donor pool", a field in which we are performing research as well.

The focus of the autumn symposium of November 5, 2010, was on technical and ethical challenges within the scope of solid organ transplantation. On the subject of the lung we have been able to get Prof. Walter Klepetko from Vienna to report on his wide experience on the use of extracorporeal membrane oxygenation (ECMO) as a bridge to transplantation. Furthermore Prof. Prof. Dirk van Raemdonck from Leuven, the representative of lung transplantation in our international advisory board, has presented an excellent survey lecture on the difficulties of preoperative risk assessment for recipients and donor/recipient combination, respectively. Both referees have criticized the central allocation in the modified transplantation law (which does not seem practicable in Switzerland with two active centres for lung transplantation), against the background of a basically different national donor regulation (consent regulation in Switzerland vs. contradiction regulation in Austria and Belgium).

The ardently discussed subject of non-heart beating donors has been of great relevance also in the reporting year, since some practical obstacles in the legislation (short warm ischemia tolerance) have still to be overcome. With regard to the lung, however, all reservations could be cleared and from 2011 donors of the category III for lung transplantation may officially be considered. We are currently involved in a research project on the subject "Reconditioning of category 3 non-heart beating donor lungs insulted to gastric aspiration: Utilization of ex vivo lung perfusion system".

PD Dr. Wolfgang Jungraithmayr has obtained a grant from the Swiss National Science Foundation for his research project „The role of CD26/DPP IV and SDF-1 in pulmonary ischemia injury in mouse lung transplantation“.

Lung transplantation still remains one of our main focuses in clinical as well as in experimental research, which in 2010 resulted in 18 predominantly international publications and scientific presentations.

#### **4.5. Liver transplantation**

Philipp Dutkowski – Visceral surgery, Andreas Geier - Hepatology

In the year 2010 45 liver transplantations have been performed (vs. 50 transplantations in the previous year). Thus the number of liver transplantations still exceeds those of previous years before the change of the allocation policy in Switzerland (July 2007) by more than 50%. The median MELD (Model for End stage Liver Disease) score at the time of transplantation in 2010 was at 21.0 (range 4-40), in 2009 at 20.5 vs. 13.5 previous to July 2007 ( $p=0.003$ ). The median length of stay in the intensive care unit was at 4 days (range 1-47), the length of hospitalization at 25 days (range 2-82). The one-year survival rate was at  $87.5 \pm 5\%$  in 2010 vs.  $81.2 \pm 5\%$  in 2009 (Kaplan Meier). The overall mortality was at 11 % (5/45) in 2010 vs. 20% (10/50) in 2009. The survival rates are thus comparable to the data of the ELTR (European Transplant Registry) and UNOS (United Network for Organ Sharing). One-year survival rate 87% and 82%, respectively (Gastroenterology 2010; 138:802-809).

The actual organ allocation system in Switzerland has therefore not led to a decline of the survival rate, in spite of the significantly poorer health state of the organ recipients. On the other hand, the mortality on the waiting list (prior to transplantation) has decreased by 12% (25 vs. 13%,  $p=0.04$ ), since the allocation takes place according to the severity code of the liver disease. Mortality on the waiting list was significantly increased with increasing MELD score (Fig. 6: shaded columns). A survival benefit (difference between mortality after and prior to transplantation) thus existed for all MELD groups from MELD 20 (fig. 6: red bars). These results will be published in the journal "Liver Transplantation" 2011.

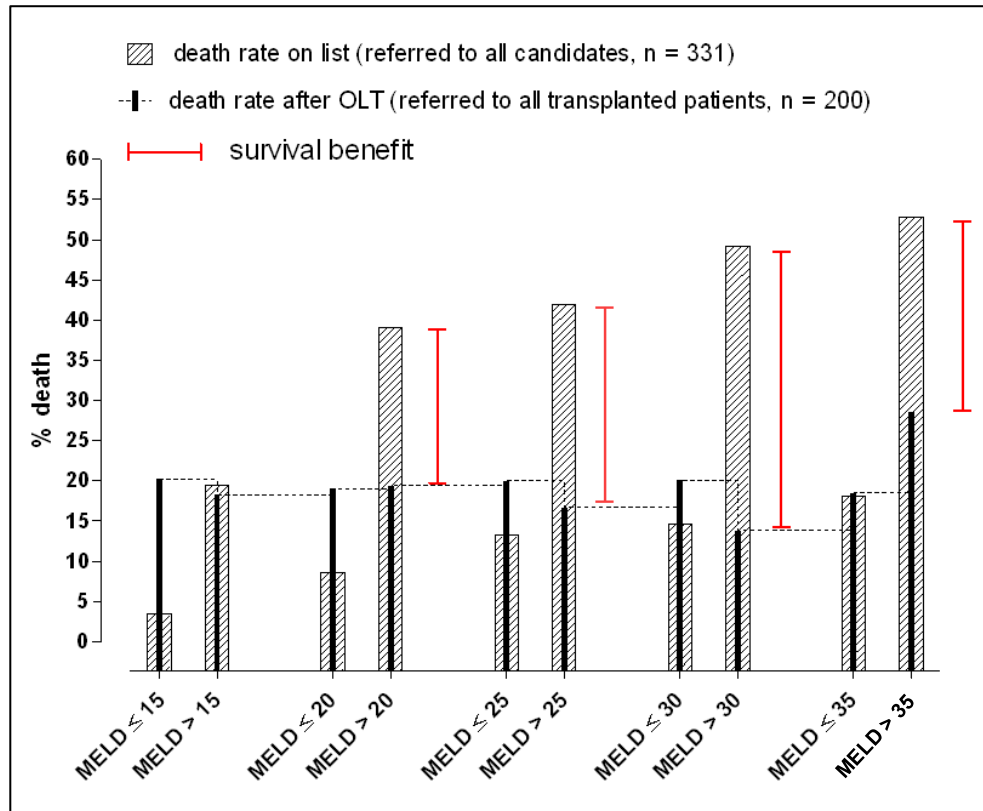


Abb. 6: Survival benefit after liver transplantation

#### 4.6. Renal transplantation

Marc Schiesser – Visceral surgery

##### Clinical activities

In 2010 totally 88 kidneys were transplanted at the Transplant Centre of the UniversityHospital Zurich. 9 of the 88 kidneys were transplanted in combination with a pancreas and in 30 patients the organs came from living donors. Within the scope of the ABO-incompatible transplantation programme we have been able to perform the 20<sup>th</sup> transplantation in this year. After the definitive implementation of the desensitization programme we have also been able to successfully transplant the first highly sensitized patient in the reporting year. Furthermore the successful double-kidney transplantation in an elderly patient has to be mentioned. In addition we have been able to perform a splenectomy in a patient with persisting humoral as well as T-cell mediated vascular rejection reaction (despite of plasmapheresis), which had a positive effect on the rejection as well as on the course of disease.

##### Staff

After the leaving of PD Dr. M. Müller, PD Dr. J. Brockmann from Oxford could be recruited. PD Dr. M. Schiesser has been appointed new STAN president in October 2010.

##### Research activities

In collaboration with the University of Basel a protocol for the reduction of steroid dosage has been developed within the scope of the ABO incompatible kidney transplantation programme. Moreover several clinical studies in connection with the kidney transplantation programme have successfully been published, among which the study of Dr. S. Riethmüller on donor specific antibodies and their determination methods and effects on humoral rejection, which has been published in the journal *Transplantation*, as well as the study of Dr. R. Schorn on chronic norovirus infection in kidney transplanted patients, which has been published in the journal *Clinical Infectious Diseases*, and furthermore the study by Dr. K. Lehmann, which has investigated the treatment strategies of ureteric complications in kidney transplanted patients and has been published in the journal *Clinical Transplantation*. Finally we would like to mention



that within the framework of the non-heart-beating donor working group great efforts are currently being made in order to re-implement this programme in the course of the next year.

#### 4.7. Pancreas transplantation

Jens Brockmann – Visceral surgery

9 simultaneous pancreas-kidney transplantations (SPK) have been performed in the year 2010. This raises the total number of this specialized type of transplantation at the USZ to 196.

Fortunately no patient on the waiting list has died in the reporting year. The mean waiting period for the SPK recipients transplanted in the years 2007-2010 was 13.5 months (404 days). The patient- and pancreas transplant survival within the same period is mentioned in Table 1.

| 2007-2010  | 1- year patient survival | 3-year patient survival | 1- year pancreas transplant survival | 3- year pancreas transplant survival |
|------------|--------------------------|-------------------------|--------------------------------------|--------------------------------------|
| SPK (n=33) | 100%                     | 100%                    | 87,3%                                | 87,3%                                |

**Table 1: 1- and 3-year patient- and pancreas transplant survival**

In the summer the proposal submitted together with Swisstransplant to the attention of the Federal Commission of Indemnification for the performance and compensation of whole-organ pancreas transplantations alone was positively decided. Therefore the internationally established methods of pancreas transplant alone (PTA) and pancreas after kidney (PAK) transplant are also available as therapy options. SPK is presumably the best and most cost efficient option for most patients, although the worldwide organ shortage increasingly necessitates living kidney donation for patients with diabetic nephropathy regardless of whether they require a pancreas transplant. Patients with a GFR of less than 50–60 ml/min/1.73 m<sup>2</sup> require kidney transplantation simultaneously with or after pancreas transplantation. Due to the high mortality on the waiting list, a living kidney donation ought to be performed before pancreas transplantation in type I diabetics in case of long waiting period (> 2 years) in order to reduce mortality and dialysis obligation. The advantage of SPK and PAK consists in the shorter waiting period and the option of living donation with elimination of uraemia. PTA is recommended for patients with hypoglycaemia unawareness, stable kidney function and minor proteinuria. The 10-year survival rate of pancreas- and kidney transplanted diabetics is by 60% higher than in kidney transplanted alone.

#### 4.8. Islet cell transplantation and diabetologic attendance of transplanted patients

Roger Lehmann – Endocrinology and diabetology

The year 2010 is remarkable for islet transplantation in Switzerland. The Federal Office of Public Health has consented to the proposal to accept all types of islet and pancreas transplantation as liable for indemnification by health insurance companies, which had been in preparation over several years, as per July 1, 2010. Here we would also like to express our thanks to the Foundation for Diabetes Research, which was established by Dr. Albin Murer and has supported the islet cell transplantation at the USZ over 10 years. For this commitment Albin Murer has received the award for special merits of the Transplant Centre 2010, which has been assigned for the first time.

In the year 2010 9 islet transplantations have been performed and for the first time since 2000, all islet isolations (except for one case which was crossmatch-positive) could be transplanted as well. Also in this year offers of appropriate donor pancreata have significantly decreased and thus many offers had to be declined for medical reasons in spite of optimized isolation technique.

Within the scope of the reorganization of the transplant centre and the creation of medical sectors all islet transplant patients are now admitted to the interdisciplinary ward E-Ost 3.

With regard to research we had the opportunity to participate in a multicentric international islet transplantation study coordinated in Edmonton (NN2211-3619), which will demonstrate the effects of a GLP-1 therapy in the isolation of islets and in patients with islet transplantation only. For the first time in Switzer-

land the induction therapy in islet transplantation will be conducted by means of Alemtuzumab (Campath).

The results of the production of pseudo islets of defined size by means of a technique pertaining to stem cell research with a newly developed disk (the patent of which is pending) could be confirmed in a larger quantity of human and rat islets and presented in international meetings (ADA). Currently we are aiming at significantly improving the survival of islets in the liver and thus the results of islet transplantation by means of these disks.

Diabetological attendance and the organization of the rounds with representants of Visceral Surgery, Nephrology, Infectiology and Endocrinology/Diabetology on the new interdisciplinary ward have again proved themselves as very efficient in 2010, and blood glucose control of transplanted patients could be significantly improved. The interdisciplinary collaboration with respect to clinical kidney-pancreas transplantation works fine, and from October 1<sup>st</sup> with PD Dr. Jens Brockmann an excellent pancreatic surgeon could be recruited for the Clinic of Visceral Surgery in order to strengthen the existing team.

In the beginning of 2011 a new immune suppression protocol for combined islet-kidney and pancreas-kidney transplantation will be presented, where steroids are supposed to be largely eliminated and also Rapamune in islet transplantation is supposed to be replaced.

## 5. Attachments

### 5.1. Staff of the Transplant Centre

|                          | Board  | Curatorship  |
|--------------------------|--|--|
| Management               | <b>Coordinator</b><br>Prof. Thomas Fehr  | <b>Chairman</b><br>Prof. Pierre-Alain Clavien                                |
| Heart                    | Prof. Georg Noll (till 04-30-10),<br><i>Prof. Frank Ruschitzka (from 05-01-10)</i><br>PD Dr. Markus Wilhelm                                  | Prof. Thomas Lüscher<br><br>Prof. Volkmar Falk                               |
| Lung                     | Prof. Annette Boehler (a.i. till 03-31-10)<br><i>Dr. Macé Schuurmanns (from 04-01-10)</i><br>PD Dr. Sven Hillinger                           | Prof. Annette Boehler<br><br>Prof. Walter Weder                              |
| Liver                    | PD Dr. Andreas Geier<br>PD Dr. Philipp Dutkowski   | PD Dr. Beat Müllhaupt<br>Prof. Pierre-Alain Clavien                          |
| Kidney                   | Prof. Thomas Fehr<br>PD Dr. Marc Schiesser   | Prof. Rudolf Wüthrich<br>Prof. Pierre-Alain Clavien                          |
| Pancreas and islet cells | Prof. Roger Lehmann<br>PD Dr. Markus Müller (till 03-31-10),<br><i>PD Dr. Jens Brockmann (from 11-01-10)</i>                                 | Prof. Giatgen Spinaz<br>Prof. Pierre-Alain Clavien                           |
| Stem cells               | PD Dr. Urs Schanz<br><i>NEW: PD Dr. Frank Stenner (from 02-01-10)</i>  | Prof. Markus Manz<br><i>NEW: Prof. Christoph Renner (from 02-01-10)</i>      |
| Consultant services      | PD Dr. Nicolas Müller, Infectiology<br>PD Dr. Günther Hofbauer, Dermatology<br><i>NEW: PD Dr. Josef Jenewein, Psychiatry (from 12-01-10)</i> | Prof. Claus Buddeberg (till 01-31-10),<br>PD Dr. Urs Schwarz (from 02-01-10) |
| Anaesthesiology          | PD Dr. Marco Zalunardo   | Prof. Donath Spahn   |
| Care                     | Béatrice Biotti  | Carmen Oggier  |
| Transplant coordination  | Werner Naumer  |  |
| Research                 | PD Dr. Rolf Graf   |  |
| Data manager             | Uschi Schäfer  |  |
| Clinical manager         | Andreas Käser  |  |
| Dean                     |  | Prof. Klaus Wilhelm Grätz  |

| International Advisory Board                |   |
|---|---|
| Heart                                       | Prof. Ernst Wolner, Vienna, Austria               |
| Lung  | Prof. Dirk van Raemdonck, Leuven, Belgium         |
| Liver                                       | Prof. Xavier Rogiers, Ghent, Belgium              |
| Kidney                                      | Prof. Ulrich Frei, Berlin, Germany                |
| Pancreas and islet cells                    | Prof. Peter Friend, Oxford, Great Britain         |
| Stem cells                                  | Prof. Bob Lowenberg, CA Rotterdam ZH, Netherlands |
| Anaesthesiology and intensive care medicine | Prof. Christian Putensen, Bonn, Germany           |

| Advisory Board of the Transplant Centre |                       |                         |
|---|-----------------------|-------------------------|
| Bellinzona                              | Ospedale San Giovanni | Prof. Claudio Marone    |
| Chur                                    | Kantonsspital         | Dr. Walter Brunner      |
| Chur                                    | Kantonsspital         | PD Dr. Adrian Wäckerlin |
| Frauenfeld                              | Kantonsspital         | Dr. Markus Hugentobler  |
| Gais                                    | Klinik Gais AG        | -                       |
| Lachen                                  | Spital                | Dr. Andreas Hirlinger   |
| Luzern                                  | Kantonsspital         | Dr. Claudia Hirschi     |
| Münsterlingen                           | Kantonsspital         | PD Dr. Thomas Neff      |
| St. Gallen                              | Kantonsspital         | PD Dr. Tim Gerlach      |
| Winterthur                              | Kantonsspital         | Dr. Thomas Kistler      |
| Zollikerberg                            | Spital Zollikerberg   | Dr. Jörg Bleisch        |
| Zürich                                  | Kinderspital          | Prof. Bernhard Frey     |
| Zürich                                  | Klinik Hirslanden     | Dr. Marianne Stiner     |
| Zürich                                  | Stadtpital Waid       | Prof. Patrice Ambühl    |

## 5.2. List of network hospitals

|                             |
|-----------------------------|
| GZO Spital Wetzikon         |
| Hirslanden Klinik Aarau     |
| Kantonsspital Chur, Samedan |
| Kantonsspital Frauenfeld    |
| Kantonsspital Glarus        |
| Kantonsspital Münsterlingen |
| Kantonsspital Schaffhausen  |
| Kantonsspital Winterthur    |
| Kantonsspital Zug           |
| Kinderspital Zürich         |
| Klinik Hirslanden Zürich    |
| Klinik im Park              |
| Kreisspital Männedorf       |
| Spital Bülach               |
| Spital Lachen               |
| Spital Limmattal            |
| Spital Luzern               |
| Spital Schwyz               |
| Spital Uster                |
| Spital Zimmerberg           |
| Spital Zollikerberg         |
| Stadtspital Waid            |
| Stadtspital Triemli         |

## 5.3. Transplantation activities 2008-2010

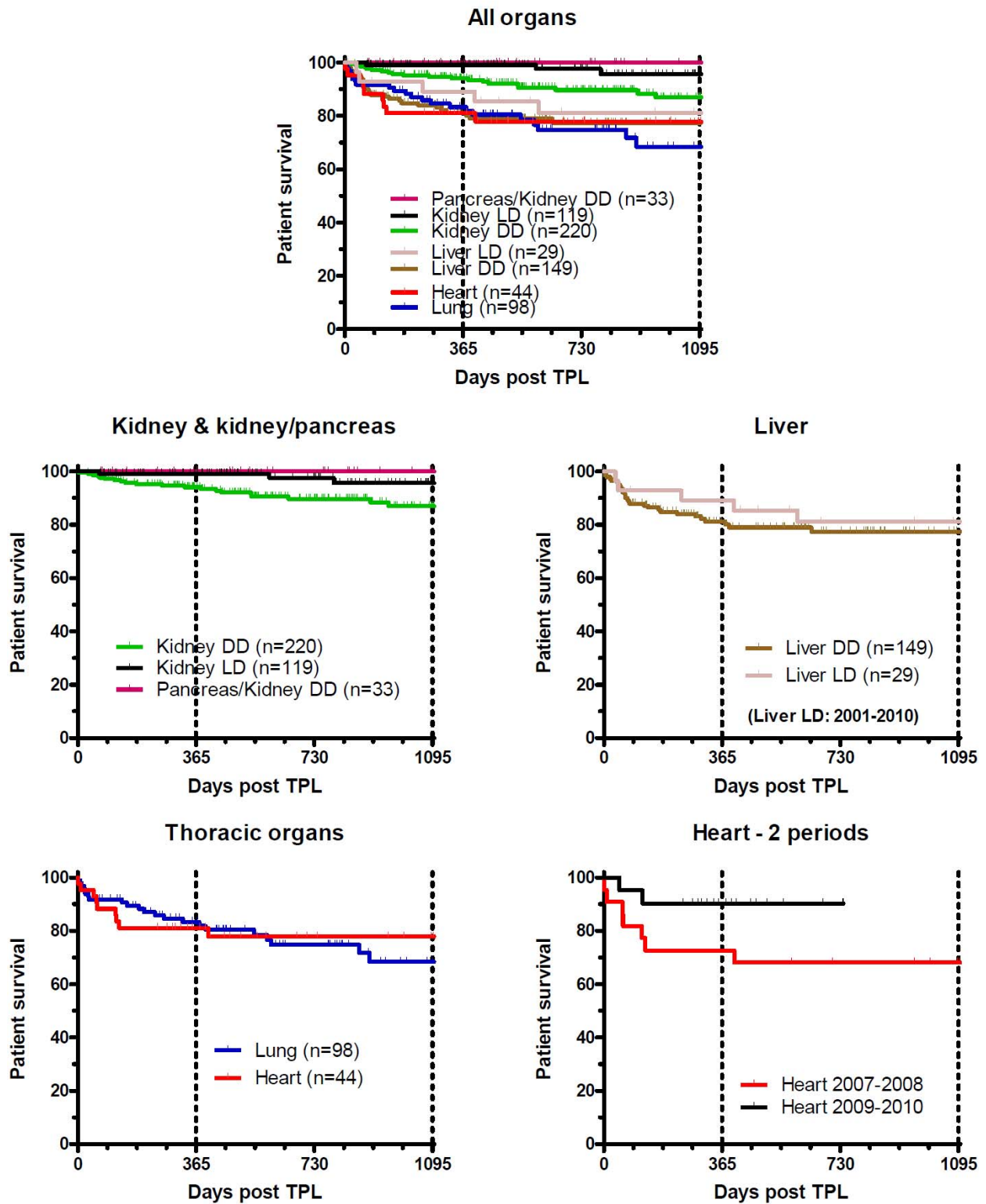
| Organ                    | 2008          | 2009          | 2010 |
|--------------------------|---------------|---------------|------|
| <b>Heart total</b>       | 10            | 9             | 12   |
| - Heart and kidney       | 1             | 0             | 0    |
| <b>Lung total</b>        | 25            | 26            | 26   |
| <b>Liver total</b>       | 28            | 50            | 45   |
| - NHBD single-liver      | 23            | 44            | 41   |
| - Living donor liver     | 4             | 4             | 2    |
| - Liver and kidney       | 1             | 2             | 2    |
| <b>Kidney total</b>      | 83            | 85            | 88   |
| - NHBD single-kidney     | 42            | 47            | 44   |
| - Living donor kidney    | 29            | 29            | 30   |
| - Kidney and pancreas    | 10            | 7             | 9    |
| - Kidney and islet cells | 0             | 0             | 3    |
| - Kidney and heart       | 1             | 0             | 0    |
| - Kidney and liver       | 1             | 2             | 2    |
| <b>Pancreas total</b>    | 10            | 7             | 9    |
| <b>Islet cells total</b> | 7             | 5             | 9    |
| <b>Stem cells total</b>  | -             | -             | 119  |
| - autologous             | (not at TPLZ) | (not at TPLZ) | 65   |
| - allogeneic             | 36            | 34            | 54   |

| Multi-organ donations at the USZ | 2008 | 2009 | 2010 |
|----------------------------------|------|------|------|
| Donors from USZ                  | 8    | 2    | 7    |
| Donors from network hospital     | 7    | 10   | 3    |

## 5.4. Outcome organ transplantations 2007 – 2010

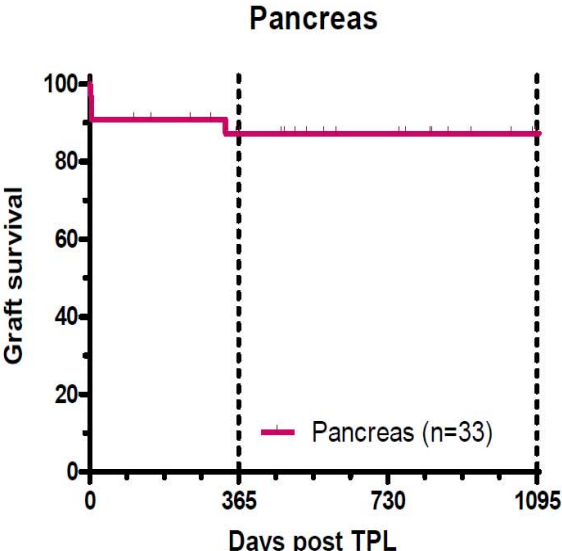
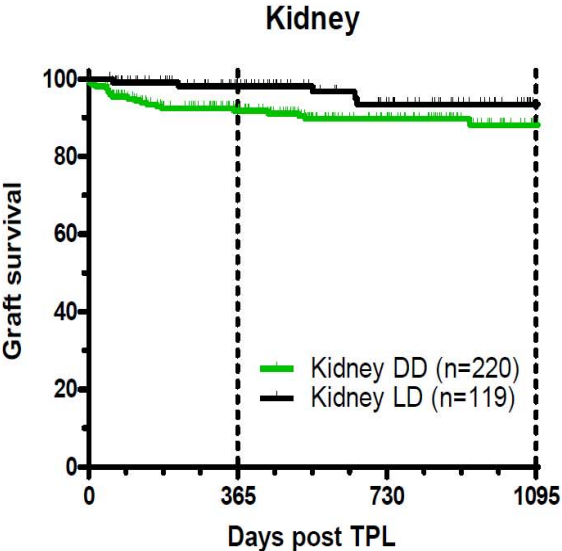
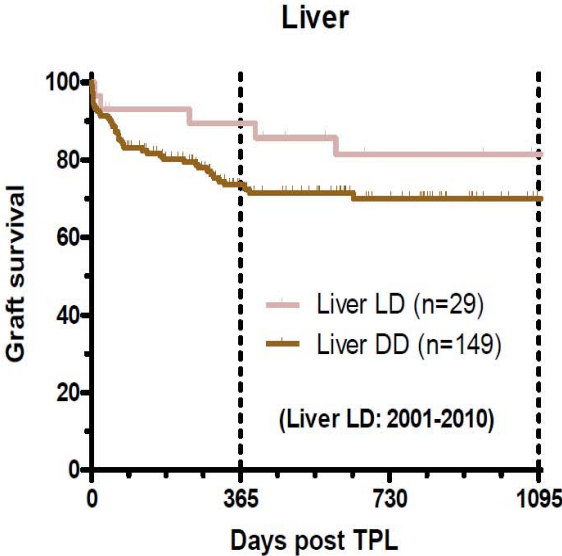
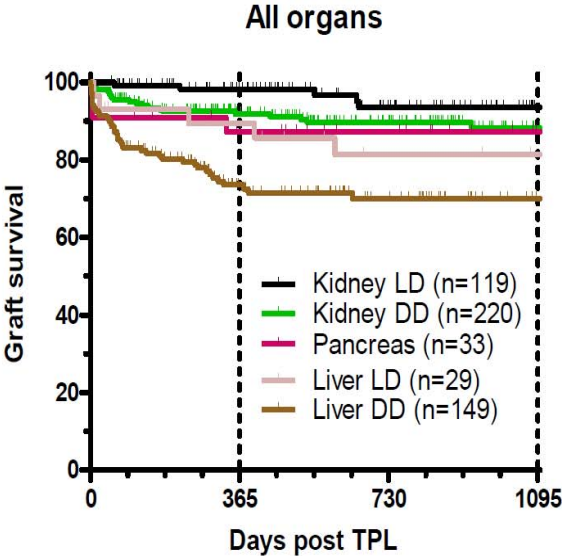
Thomas Fehr and Uschi Schäfer

### 5.4.1. Patient survival



LD: living donors  
DD: deceased donors

5.4.2. Death-censored graft survival



LD: living donors  
DD: deceased donors

## 5.5. International Advisory Board (IAB) Meeting

Thomas Fehr – coordinator TPLZ

In preparation of the 4th international autumn symposium on November 4th, 2010, a meeting of the international advisory board of our centre took place in the tower of the University of Zurich. The subsequent members were present:

*on behalf of the IAB:* Ulrich Frei, Christian Putensen, Dirk van Raemdonck, Xavier Rogiers, Ernst Wolner (excused: Peter Friend, Bob Löwenberg)

*on behalf of the TPLZ:* Pierre-Alain Clavier (chairman), Thomas Fehr (coordinator), Volkmar Falk, Sven Hillinger, Beat Müllhaupt, Frank Ruschitzka, Rudolf Wüthrich

As an introduction Thomas Fehr (coordinator TPLZ) presented the events, numbers and facts of the year 2010 as basis for discussion. The ensuing discussion was conducted by Pierre-Alain Clavier (chairman). The following subjects were addressed:

### *Heart transplantation programme*

Ernst Wolner (representative “heart” and member of the committee for highly specialized medicine) has emphasized that the existence of a heart transplantation programme at a TPLZ like Zurich has its justification because it has to be integrated into a modern heart failure management, which also includes modern cardiac failure therapy along with ICD/CRT and LVAD programmes. This is actually the case in Zurich, which is also confirmed by the present representatives of the Zurich HTPL programme (Falk, Ruschitzka). Moreover it would be essential that also academic achievements (i.e. publications) in the field could be demonstrated. In general it is noticed that all these conditions are fulfilled in Zurich, however, the corresponding facts and results are not yet communicated efficiently enough. This ought to be systematically improved in the years to come.

### *Promotion of organ donation*

The low number of multiorgan donations at the USZ is recognized as a major problem and discussed. In active votes by Christian Putensen, Ulrich Frei and Xavier Rogers the subsequent proposals are made in order to improve the situation:

- A separation between the intensive medical care of potential organ donors and the transplantation coordination is recommended, i.e. discussions with family members with regard to organ donation should be conducted by specifically trained coordinators instead of ICU physicians.
- A systematic survey and documentation on possibly missed organ donors should be performed, namely on the ICU's and on the emergency unit.
- A compensation of the ICU's for the additional work connected with an organ donation (“gift project”) ought to be considered; generally everything should be done in order to improve the “image” of the teams involved in organ donation.
- A compensation of the network hospitals for their expenses in connection with a multi organ donation ought to be implemented in the amount to cover at minimum the real costs.

### *Non heart beating donor (NHBD) programme*

Dirk van Raemdonck inquires why the NHBD programme has still not been put into action after it had already been discussed in the previous year. Thomas Fehr explains the legal frame conditions which have led to the stop of the programme, but which are supposed to be resolved in the current year 2011. However, a working group elaborating the internal guidelines for NHBD under the supervision of Markus Béchir has already started its activities in 2010. Upon receipt of the green light on the legal part they should thus be ready on time to restart the programme in 2011.

## 5.6. Scientific publications 2010

1. **Benden C, Faro A, Worley S, Arrigain S, Aurora P, Ballmann M, Boyer D, Conrad C, Eichler I, Elidemir O, Goldfarb S, Mallory GB, Mogayzel PJ, Parakininkas D, Solomon M, Visner G, Sweet SC, and Danziger-Isakov LA.** Minimal acute rejection in pediatric lung transplantation does it matter? *Pediatr Transplant* 14: 534-539.
2. **Benden C, Inci I, Weder W, and Boehler A.** Size-reduced lung transplantation in children--an option worth to consider! *Pediatr Transplant* 14: 529-533.
3. **Bolinger B, Engeler D, Krebs P, Miller S, Firner S, Hoffmann M, Palmer DC, Restifo NP, Tian Y, Clavien PA, and Ludwig B.** IFN-gamma-receptor signaling ameliorates transplant vasculopathy through attenuation of CD8+ T-cell-mediated injury of vascular endothelial cells. *Eur J Immunol* 40: 733-743.
4. **Breitenstein A, Stumpe K, Gnannt R, Fehr T and Etter Ch.** Calcineurin inhibitor-induced pain syndrome after kidney Transplantation – a rare but disabling condition. *NDT Plus*: 63-66.
5. **Clavien PA, Oberkofler CE, Raptis DA, Lehmann K, Rickenbacher A, and El-Badry AM.** What is critical for liver surgery and partial liver transplantation: size or quality? *Hepatology* 52: 715-729.
6. **Copley JB, and Wuthrich RP.** Therapeutic management of post-kidney transplant hyperparathyroidism. *Clin Transplant* 25: 24-39
7. **de Rougemont O, Dutkowski P, and Clavien PA.** Biological modulation of liver ischemia-reperfusion injury. *Curr Opin Organ Transplant* 15: 183-189.
8. **Dutkowski P, De Rougemont O, Mullhaupt B, and Clavien PA.** Current and future trends in liver transplantation in Europe. *Gastroenterology* 138: 802-809 e801-804.
9. **Dziunycz P, and Hofbauer GF.** Immune phenotype of peripheral blood cells and skin squamous cell carcinoma in organ transplant recipients. *Expert Rev Clin Immunol* 6: 359-362.
10. **Fehr T, Lucas CL, Kurtz J, Onoe T, Zhao G, Hogan T, Vallot C, Rao A, and Sykes M.** A CD8 T cell-intrinsic role for the calcineurin-NFAT pathway for tolerance induction in vivo. *Blood* 115: 1280-1287.
11. **Feldmeyer L, Benden C, Haile SR, Boehler A, Speich R, French LE, and Hofbauer GF.** Not all intravenous immunoglobulin preparations are equally well tolerated. *Acta Derm Venereol* 90: 494-497.
12. **Fischer MA, Nanz D, Reiner CS, Montani M, Breitenstein S, Leschka S, Alkadhi H, Stolzmann P, Marincek B, and Scheffel H.** Diagnostic performance and accuracy of 3-D spoiled gradient-dual-echo MRI with water- and fat-signal separation in liver-fat quantification: comparison to liver biopsy. *Invest Radiol* 45: 465-470.
13. **Fritzsche FR, Tutic M, Opitz I, Hunziker R, Kristiansen G, and Montani M.** Pulmonary Kaposi's sarcoma after heart transplantation: a case report. *J Med Case Reports* 4: 206.
14. **Gerber B, Schanz U, and Stussi G.** [Autoimmune hemolytic anemia]. *Ther Umsch* 67: 229-236.
15. **Gianella S, Haeberli L, Joos B, Ledergerber B, Wuthrich RP, Weber R, Kuster H, Hauser PM, Fehr T, and Mueller NJ.** Molecular evidence of interhuman transmission in an outbreak of *Pneumocystis jirovecii* pneumonia among renal transplant recipients. *Transpl Infect Dis* 12: 1-10.



16. **Goetzmann L, Irani S, Schwegler K, Stamm M, Bricman R, Buddeberg C, Schmid C, Benden C, Klaghofer R, and Boehler A.** Distress and alexithymia in lung recipients - psychosocial strains and associations with chronic allograft dysfunction. *Swiss Med Wkly* 140: 382-387.
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53. **Thalhammer C, Aschwanden M, and Amann-Vesti BR.** "The seagull cry": a sign of emergency after renal transplantation? *Circulation* 121: e25-26.
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55. **Zalunardo MP, Thalmann C, Seifert B, D'Cunja J, Weder W, Boehler A, and Spahn DR.** Impact of preoperative right-ventricular function and platelet transfusion on outcome after lung transplantation. *Eur J Cardiothorac Surg*. 39: 538-42.

## 5.7. Transplantation awards 2010

In 2010 awards of the Transplant Centre Zurich have been assigned for the first time. Of 9 submissions for the science award and 3 proposals for the merit award the following awardees have been elected in a two-step selection process:

### TPLZ science award 2010: 3 awardees ex aequo

- *PD Dr. Ilhan Inci*, Clinic of Thoracic Surgery, for his work „Prevention of primary graft dysfunction in lung transplantation by N-acetylcysteine after prolonged cold ischemia“ *J Heart Lung Transplant* 29: 1293-1301.
- *Dr. Christian Oberkofler*, Clinic of Visceral and Transplantation Surgery, for his work „Model of end stage liver disease (MELD) score greater than 23 predicts length of stay in the ICU but not mortality in liver transplant recipients“ *Crit Care* 14: R117.
- *Dr. Sebastian Riethmüller*, Clinic of Nephrology, for his work „Donor-Specific Antibody Levels and Three Generations of Crossmatches to Predict Antibody-Mediated Rejection in Kidney Transplantation“ *Transplantation* 90: 160-167.

### TPLZ merit award 2010

*Foundaton for Diabetes Research at the University Hospital Zurich* for the successful implementation of islet cell transplantation at the USZ.

The foundation was represented by *its foundation president Albin Murer*.

## 5.8. Continuing education programme 2010

### 5.8.1. Spring Symposium „Non heart beating donation“

### 5.8.2. Autumn Symposium „Solid organ transplantation 2010: medical and ethical challenges“

### 5.8.3. Monthly seminar “Hot topics in transplantation (TNT)

## Allgemeine Informationen

### Veranstaltungsort

UniversitätsSpital Zürich  
Grosser Hörsaal OST  
(Ausschilderung beachten)

## Referenten

### Franziska Beyeler

Nationale Koordinatorin  
Swisstransplant Bern

### Prof. Dr. Daniel Candinas

Chefarzt und Co-Direktor  
Universitätsklinik für Viszerale  
Chirurgie und Medizin  
Inselspital Bern

### PD Dr. Philipp Dutkowski

Leitender Arzt  
Klinik für Viszeral- und  
Transplantationschirurgie  
UniversitätsSpital Zürich

### PD Dr. Franz Immer

Direktor  
Swisstransplant Bern

### Dr. Ilhan Inci

Oberarzt  
Klinik für Thoraxchirurgie  
UniversitätsSpital Zürich

Verantwortlich für die Planung und Durchführung:



UniversitätsSpital  
Zürich

## Organisation

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Leitender Arzt  
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Koordinator Transplantationszentrum  
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Ehemaliger Abteilungsleiter  
Chirurgische Intensivmedizin  
UniversitätsSpital Zürich

### Susanna Wälchli

Nationale Koordinatorin  
Swisstransplant Bern

### Prof. Dr. Markus Weber

Mitglied der Spitalleitung  
Chefarzt Chirurgie/  
Departement Operative Disziplinen  
Kantonsspital Schaffhausen



**Organspende.  
Und ein Leben geht weiter.**

**Einladung  
Symposium Organspende**

## «Non Heart Beating Donation – medizinische, ethische und rechtliche Dimensionen»

Liebe Leserin  
Lieber Leser

Die Transplantation von Organen, Geweben und Zellen hat sich als erfolgreich praktizierte Behandlungsmethode etabliert. Viele Menschen verdanken ihr eine Verbesserung ihrer Lebensqualität, wenn nicht ihr Leben. Doch noch immer gibt es zu wenige Organspenden und viele Betroffene warten auf ein Spenderorgan.

Grundsätzlich gibt es zwei mögliche Typen von Organspendern. Einerseits Patienten, die primär einen Hirntod erleiden, andererseits Patienten, die primär an einem Herzversagen sterben, die so genannte «Non Heart Beating Donation» (NHBD). Die NHBD ist dabei auf die Organe Niere, Leber und Lunge fokussiert. Mit Inkrafttreten des nationalen Transplantationsgesetzes im Jahr 2007 wurden die bestehenden Programme zur NHBD an den Schweizer Spitälern ausgesetzt. Dies aufgrund von Unklarheiten in der Formulierung des Gesetztextes und Unstimmigkeiten zwischen dem Gesetztext und den Richtlinien zur Transplantationsmedizin der Schweizerischen Akademie für Medizinische Wissenschaften. Um mehr Spenderorgane transplantieren zu können, startete Swisstransplant im Jahr 2008 ein Projekt zur Wiedereinführung der NHBD-Programme in der Schweiz.

Im Rahmen dieses Symposiums informieren und diskutieren Expertinnen und Experten am UniversitätsSpital Zürich über medizinische, ethische und rechtliche Dimensionen der NHBD. Ziel dabei ist, sachlich und umfassend über den momentanen Stand der NHBD zu informieren und Ängste, Zweifel und Verunsicherungen im Zusammenhang mit diesem sensiblen und emotionalen Thema abzubauen.

Wir freuen uns auf Ihre Teilnahme. Eine Anmeldung ist nicht nötig.

Freundliche Grüsse



Markus Béchir  
Leitender Arzt Intensivstation



Werner Naumer  
Leiter Transplantationskoordination

Donnerstag, 24. Juni 2010, 13.30 bis 17.30 Uhr  
UniversitätsSpital Zürich, Grosser Hörsaal OST

Der Eintritt ist frei.

### Programm

- Teil 1:**
- 13.30 Uhr **Grundlagen Non Heart Beating Donation (NHBD)**  
Chairman Thomas Fehr, UniversitätsSpital Zürich
- Begrüssung**  
Dank an Reto Stocker und Claus Buddeberg  
Thomas Fehr, UniversitätsSpital Zürich
- 13.45 Uhr **NHBD: medizinische Herausforderungen**  
Daniel Candinas, Inselspital Bern
- 14.15 Uhr **Stand NHBD in der Schweiz (Rechtliche Aspekte und Allokation)**  
Franziska Beyeler / Susanna Wälchli / Franz Immer, Swisstransplant
- 14.45 Uhr **Ethische Aspekte und Todesfeststellung**  
Reto Stocker, Klinik Hirslanden
- 15.15 Uhr **Kaffee-Pause**
- Teil 2:**
- 15.45 Uhr **Angehörigenbetreuung und Resultate**  
Chairman Reto Stocker, Klinik Hirslanden
- Betreuung und Kommunikation mit Angehörigen im Rahmen einer Non Heart Beating Donation**  
Markus Béchir, UniversitätsSpital Zürich
- 16.15 Uhr **Resultate der Organtransplantation nach NHBD**  
Niere: Markus Weber, Kantonsspital Schaffhausen  
Lunge: Ilhan Inci, UniversitätsSpital Zürich  
Leber: Philipp Dutkowski, UniversitätsSpital Zürich
- 17.15 Uhr **Non Heart Beating Donation – Chancen und Risiken**  
Roundtable und Diskussion  
Moderation: Nicole Westenfelder,  
Moderatorin Gesundheitssendung Puls, Schweizer Fernsehen
- 17.45 Uhr **Apéro Riche**

 **UniversitätsSpital  
Zürich**



Organ donation.  
The gift of life.

# 4<sup>th</sup> Annual Symposium of the Transplant Centre Zurich “Solid organ transplantation 2010: technical and ethical challenges”

Friday, November 5<sup>th</sup>, 2010, 13.30–18.00 Uhr  
UniversityHospital Zurich, Grosser Hörsaal Ost



UniversitätsSpital  
Zürich

# Solid organ transplantation 2010: technical and ethical challenges

Friday, November 5<sup>th</sup>, 2010

University Hospital Zurich, Grosser Hörsaal Ost

from 12.15 Warm Lunch (Dick & Davy)

13.30–13.40 **Welcome addresses**  
Pierre-Alain Clavien, Zurich  
Klaus W. Grätz, Zurich

13.40–13.55 **The Transplant Centre Zurich in its 3<sup>rd</sup> year**  
Thomas Fehr, Zurich

## Part I: Technical challenges – Assist devices and organ support as bridges to transplantation

Chairmen: Christian Putensen and Markus Wilhelm

13.55–14.20 **Heart:** Left ventricular assist devices as a bridge to transplantation  
Jan Gummert, Bad Oeynhausen

14.20–14.45 **Lung:** ECMO as a bridge to transplantation  
Walter Klepetko, Vienna

14.45–15.10 **Liver:** Current state of the art for artificial liver support  
Eric Hoste, Gent

15.10–15.45 Coffee Break (Dick & Davy)

15.45–16.00 **Awards Zurich Transplant Centre**  
*Sponsored by Astellas Pharma (AG) Switzerland*  
Marc Schiesser, Zurich





## Part II: Ethical challenges for transplantation of high risk patients

**Medical dilemma:** Pre-transplant evaluation of high risk patients  
Chairmen: Xavier Rogiers and Sven Hillinger

16.00–16.30 **MELD score and risk assessment for liver transplantation**  
Philipp Dutkowski, Zurich

16.30–17.00 **Risk assessment for lung transplantation**  
Dirk Van Raemdonck, Leuven

**Ethical dilemma:** Transplantation as the only survival chance  
Chairmen: Peter Friend and Günther Hofbauer

17.00–17.30 **Allocation of a rare good – do the sickest patients or the patients with best outcome deserve transplantation?**  
Alberto Bondolfi, Geneva

17.30–18.00 Roundtable Discussion  
**“Transplantation of high risk patients: for the good or the bad?”**  
Moderation: Peter Friend, Oxford and Pierre-Alain Clavien, Zurich

18.00 Apéro (Dick & Davy)

---

## Speakers

Prof. Dr. Alberto Bondolfi  
Associate Professor in Ethics, Faculty of  
Theology, University of Geneva

PD Dr. Philipp Dutkowski  
Division of Visceral and  
Transplantation Surgery  
UniversityHospital Zurich

Prof. Dr. Thomas Fehr  
Coordinator, Transplant Centre Zurich  
Division of Nephrology  
UniversityHospital Zurich

Prof. Dr. Jan Gummert  
Clinic of Thoracic and  
Cardiovascular Surgery  
Heart and Diabetes Center  
Nordrhein-Westfalen, Bad Oeynhausen

Prof. Dr. Eric Hoste  
Department of Intensive Care Medicine  
Ghent University Hospital

Univ. Prof. Dr. Walter Klepetko  
Division of Thoracic Surgery  
Medical University of Vienna

Prof. Dr. Dirk Van Raemdonck  
Department of Thoracic Surgery  
University Hospital Leuven  
*Member of International Advisory Board*

PD Dr. Marc Schiesser  
Division of Visceral and  
Transplantation Surgery  
UniversityHospital Zurich

## Chairmen

Prof. Dr. Pierre-Alain Clavien  
Division of Visceral and  
Transplantation Surgery  
UniversityHospital Zurich

Prof. Peter Friend  
Oxford Transplant Centre and  
Department of Surgery  
University of Oxford  
*Member of International Advisory Board*

Prof. Dr. Klaus W. Grätz  
Dean of the Medical Faculty  
University of Zurich

PD Dr. Sven Hillinger  
Division of Thoracic Surgery  
UniversityHospital Zurich

PD Dr. Günther Hofbauer  
Division of Dermatology  
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Prof. Dr. Christian Putensen  
Clinic for Anaesthesiology and Surgical  
Intensive Care, Rheinische Friedrich  
Wilhelms University of Bonn  
*Member of International Advisory Board*

Prof. Dr. Xavier Rogiers  
Chairman of the Transplantation Centre  
Ghent University Hospital and  
Medical School  
*Member of International Advisory Board*

PD Dr. Markus Wilhelm  
Division of Cardiac and Vascular Surgery  
UniversityHospital Zurich



| Datum      | Topic                | Thema   | Referent      |   | Host                    |
|------------|----------------------|---|---------------|---|-------------------------|
| 25.01.2010 |                      | (Fällt aus)   |               |   |                         |
| 22.02.2010 | Herz                 | Neue immunsuppressive Konzepte in der Herztransplantation                           | A. Zuckermann | Allgemeines Krankenhaus Wien                      | G. Noll (Th. Fehr)      |
| 29.03.2010 | Lunge                | Ex vivo Perfusion to expand the donor pool  | S. Steen      | University of Lund, Sweden                        | S. Hillinger (I Inci)   |
| 26.04.2010 | Infektiologie        | Urinary tract colonization in renal transplant recipients: To treat or not to treat | C. van Delden | Hôpital Universitaire de Genève                   | N. Müller               |
| 31.05.2010 | Onkologie            | Posttransplantäre Lymphome  | C. Renner     | Klinik für Onkologie UniversitätsSpital Zürich    | G. Stüssi               |
| 28.06.2010 | Pflegewissenschaften | Adherence in Transplantation: The Missing Link in Improving Long-Term Outcomes?     | S. De Geest   | Universität Basel                                 | L. Götzmann (N. Müller) |
| 30.08.2010 | Gynäkologie          | Schwangerschaft nach Transplantation  | R. Zimmermann | Klinik für Geburtshilfe UniversitätsSpital Zürich | G. Stüssi               |
| 27.09.2010 | Niere                | Therapeutic monitoring for immunosuppressive drugs                                  | T. van Gelder | Erasmus Medical Center, Rotterdam                 | Th. Fehr                |
| 25.10.2010 | Basic Science        | The Role of NK Cells in Liver Transplantation                                       | J. Seebach    | Hôpital Universitaire de Genève                   | M. Schneider            |
| 29.11.2010 | Leber                | mTOR pathways and its anti-cancer effects   | E. Geissler   | Universität Regensburg                            | J. Brockmann            |

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PD Dr. Nicolas Müller  
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