Cancer Center Zürich

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Introduction

The University Hospital of Zürich decided 2010 to establish certified organ-based centers of excellence as a first step of building a network of certified centers under one umbrella - the Cancer Center Zürich (universitäres Tumorzentrum Zürich).

The standard operating procedures of the German Cancer Society (Deutsche Krebsgesellschaft) were chosen as agency for the certification. The process started with the Skin Cancer Center (Hauttumorzentrum) and the Thoracic Oncology Center (Lungen- and Thoraxonkologiezentrum) which were both certified in 2011.

Figure 1: Organizational structure of the Cancer Center Zürich

Figure 2: Rolf Stahel, Chair Cancer Center Zürich, Michael Weller, Deputy Chair Cancer Center Zürich
The Prostate Cancer Center (Prostatakarzinomzentrum), which independently started the process in 2009, was integrated in the overall process in the same year. Over the ensuing years the Breast Cancer Center (Brustzentrum), the Gynecological Cancer Center (Gynäkologisches Tumorzentrum), the Brain Tumor Center (Hirntumorzentrum), the Head and Neck Tumor Center (Kopf-Hals-Tumorzentrum), the Sarcoma Center (Sarkomzentrum), the Colorectal Cancer Center (Darmtumorzentrum) and the Center for Hemato-Oncology (Hämato-Onkologisches Tumorzentrum) were added. By now, the Cancer Center Zürich consists of 10 centers of excellence and is thus representing the largest certified institution in Switzerland involved in multidisciplinary cancer treatment and care. Today, all major cancers subtypes in addition to more rare cancers are covered offering a comprehensive cancer care within a certified network of excellence.

Organization

The overall organization of the Cancer Center Zürich is depicted in Figure 1. Its role is to integrate the activities of the organ-based centers of excellence, to provide a lead in strategy and marketing and to guarantee the tumor documentation and the quality assurance mandated by the certification process. Since April 2016 Prof. Rolf Stahel and Prof. Michael Weller are the chair and the deputy chair of the Cancer Center Zürich (Figure 2). Together with the board they are responsible for the representation of the Cancer Center Zürich, integration of the work of the individual centers of excellence within the overall structure and the establishment of common structures and projects. Specific emphasis in 2016 include the establishment of a structured multidisciplinary bi-weekly teaching course in oncology for physicians in training, joint seminars between hematology, radio-oncology and medical oncology, and the set-up of a common infrastructure to assist clinical investigators of the Cancer Center Zürich by facilitating their contracting and negotiations and by providing support in data management.

Quality assurance

The certification system of the Deutsche Krebsgesellschaft helps us to ensure a continued, structured and systematic improvement of processes and services for the diagnosis, treatment and care of patients with cancer and other malignancies to the highest professional level. Professional certification mandates the routine use and living of an established system for quality management in all aspects of cancer care. We are following the quality management system after the specification of ISO 9001:2008, audited and certified by the TÜV Süd Management Service GmbH. The quality assurance system follows the entire process from diagnosis, treatment and follow-up and puts an emphasis on the multidisciplinary interaction. The process is ensured and the results are documented by a team of 8 data managers with the support of the quality assurance managers of the centers of excellence. Our clinical cancer register includes the individual course of disease of all primary cases, defined as patients receiving the entire care from diagnosis on under the lead of a center of excellence, based on a standardized specification of the Deutsche Krebsgesellschaft and the Arbeitsgemeinschaft Deutscher Tumorzentren. Emphasis is placed on the function, documentation and adherence to decisions of the individual multidisciplinary tumor boards which take place weekly (Table 1).

Patients

A key to quality assurance is a fully annotated dataset including follow-up of all primary cases. All new patients whose diagnosis and treatment is primarily based in one of the centers of excellence are – with their approval – registered in our database. As a larger volume has been correlated with better outcomes in many indications, the

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Deutsche Krebsgesellschaft mandates a minimal number of new patients and procedures for certification to be reached. Figure 3 depicts the number of primary cases over the last 5 years for the three centers of excellence (Prostate Cancer Center, Thoracic Oncology Center and Skin Cancer Center) which were certified first and documents our case load well above the minimum mandated to maintain certification.

The availability of outcome data over time will allow us to benchmark the results of the individual centers of excellence with publicly available data according to tumor stage. As an example the outcome stage by stage of 991 patients registered as primary cases with non-small cell lung cancer is depicted in Figure 4. Although admittedly less mature, our data appears to be numerically superior to the results published in the International Association for the study of Lung Cancer (IASLC) proposal for the seventh edition of the TNM Classification of non-small cell lung cancer.7

Activities across diseases

Genetic counselling, the advent of personalized medicine and the new therapeutics advances in immune-oncology are common themes among the different organ based centers of excellence and thus are given priority by the Cancer Center Zürich.

Genetic counseling should be considered in case of familial clustering of cancer, especially in colorectal and breast cancer. Genetic counseling serves the assessment of facts from family history and personal disease history and provides information about the resulting cancer risk and the necessary precautionary measures. It has been introduced as a service of the department of oncology 15 years ago. With the advent of multigene panel testing and next generation sequencing the scope of genetic counselling needs to be expanded and its service made available to questions arising from molecular testing.

Personalized medicine depends on the identification of molecular tumor characteristics and the availability of anticancer medicines which can successfully act upon these characteristics and thus provide a benefit for the patient. While certain molecular alterations are tested routinely in the context of a certain disease, there are an increasing number of circumstances, when molecular testing is performed and yields unexpected results which are in need of laboratory and clinical interpretation. To answer this need, a molecular tumorboard has been established within the framework of the Cancer Center Zürich, a collaboration of the Labor for Systempathologie of the Institute for Pathology with members of the department of oncology and the department of hematology. Further collaboration with the ETH Nexus Platform is being prepared.

The advent of immunotherapy will influence all aspects of cancer diagnosis and care. In Switzerland, immune checkpoint inhibitors have been approved for melanoma and for non-small cell lung cancer and many indications
are likely to follow. While generally better tolerated than chemotherapy, new side effects necessitating prompt and diligent care and new questions on optimal management arise. Additionally, immunotherapy opens the windows for new strategies of combining systemic and local treatment, e.g., stereotactic radiotherapy or surgical resection. As these issues are important across different diseases, the Cancer Center Zürich has decided to establish an immunoncology tumorboard to provide expert knowledge to referring physicians and patients.

Innovation and research

The centers of excellence of the Cancer Center Zürich are proud to provide patients access to innovations and new opportunities through the participation in a large number of clinical studies. All current clinical trials, arranged according to indication can be found on our web page: http://www.tumorzentrum.usz.ch/forschung/klinische-studien/Seiten/default.aspx

Exchange of information on basic and translational cancer research occurs in collaboration with the University of Zürich/Cancer Network Zurich. The Cancer Network Zurich (CNZ) was established in 2001 upon initiative of basic and clinical cancer researchers from the University of Zürich and the ETH Zurich. The mission of the CNZ is to facilitate collaboration and innovation between clinicians and research scientists in matters concerning diagnosis, prognosis, therapy and prevention of cancer. The CNZ is an academic communication platform, organized via an elected steering-committee, headed by Prof. Markus G. Manz, Chair of Hematology and the Center of Hemato-Oncology at the University and University Hospital Zurich. The coordinating office of the CNZ is supported by the Medical Faculty of the University of Zurich. Currently, the CNZ consists of more than 80 principal investigators. Members of the CNZ are also members of the structured Cancer Biology PhD Program of the Life Science Zurich Graduate School through which they are able to recruit their PhD students and that hosts more than 100 PhD students. The CNZ is furthermore an accredited network within the Hochschulmedizin Zürich, fostering the collaboration within the two Universities, UZH and ETHZ (http://www.hochschulmedizin.uzh.ch/de.html). The CNZ organizes monthly seminar series, the «Joint Cancer Meetings» during which each three researchers from basic, translational and clinical research present and discuss their current work. All relevant information on the CNZ can be retrieved from the CNZ webpage (http://www.cnz.uzh.ch/index.html).

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