Implementation of oncologic patient pathway management in practice

Authors: *Gyula Király*, Hospitaly Kft.
Strategic Manager
Dr. Mariann Moizs, Somogy County Kaposi Mór Training Hospital,
Director General
Dr. Ágnes Ruzsa, Clinical Oncologic Centre, Somogy County Kaposi Mór Training Hospital,
Head of Department, Chief Physician
Dr. Zsolt Cselik, Health Centre, University of Kaposvar
Radiation Oncologist, Clinical Specialist in Oncology
Dr. Zoltán Völgyi, Clinical Oncologic Centre, Somogy County Kaposi Mór Training Hospital, Specialist in Oncology
Prof. Dr. Imre Repa, Health Centre, University of Kaposvar,
University Professor, President of Centre

Introduction

The Central Statistical Office (KSH) data show that malignant tumour disease was included as a cause of death for 32 748 persons in Hungary in year 2013[1]. This is the second most frequent cause of death after circulation system diseases. Number of new cancer cases exceeds 80 thousand annually, so there are near 300 thousand cancer patients living in Hungary now. Hungary is in the first place in the world as regards total standardized number of deaths caused by tumour and the deaths caused by lung cancer. Increasing number of cases results in increasing demand for attendance and we need to spend more and more sources on the development of health care system assets aiming to treat these diseases. In order to improve epidemiological data and use the assets and sources effectively, the team started to implement such oncologic patient pathway management system in which the optimal model of operation is shaped by the medical-professional, process organizing and information technology specialists jointly and helping each other. In the following, we will describe this work and the results achieved so far.

The team led by Prof. Dr. Imre Repa created the OnkoNetwork system, implemented the oncologic patient pathway management system to the present process of medical attendance and developed the methodology of coordination of professional activity as well. From the team, we would like to emphasise Dr. Mariann Moizs, Dr. Ágnes Ruzsa, Dr. Janaki Hadjiev, Dr. Zsolt Cselik, Dr. Zoltán Völgyi, Prof. Dr. Tamás Dóczi, Dr. János Strausz, ErikaVilhelm and the colleagues of the Somogy County Kaposi Mór Training Hospital and University of Kaposvár working in the field of oncology. The information technology solution is designed, developed and operated by the management and staff of Hospitaly Ltd led by Gyula Király.

The problem became even more relevant with the government decree 124/2015. (V. 26.) coming into effect on 1st June 2015, 32/A. § (1) of which states that: „in case of clinical suspicion of a malignant tumour diagnosis, the CT, MRI health service provider will be bound to perform the necessary image forming diagnostic examinations in 14 days from issue of referral."[2].

The present situation

Capacity of oncologic attendance can only be determined with capacity of several specialities taken into account. From the patients going to the family doctor's or the specialist's surgery which can be visited without a referral, only the patients assigned to by the family doctor or specialist will visit the oncologic health centre. Usually one or several (laboratory and/or image forming) diagnostic examinations are necessary for making the diagnosis. So the patient will visit the oncology health centre with several diagnostic examinations requested by the specialist already done and having the findings of these. It may happen that in the knowledge of the diagnostic (mainly radiation) examinations the specialist sends the patient to the surgeon's consulting room as well, for a conference of doctors. Depending on the capacity of the institutions, these doctor-patient meetings and examinations require significant amount of time. In accordance with the availability of diagnostic capacities, numerous examinations can only be used by booking in most cases, so the patient looses too much time until he/she can visit the oncologist.

When the oncology specialist views the medical record of the patient in the oncology health centre, he/she faces the fact that the requested examinations are of insufficient scope, or do not cover all organs concerned. So the repeated or new diagnostic examinations require additional valuable time until the final decision is made. Repeated examinations do not only mean loss of time, but make the work of overcrowded diagnostic health centres more difficult. The waiting time and booking administration increase, number of surplus doctor-patient meetings grows, the patient has to go to the examination again, wait for the finding, and health expenditures increase unnecessarily. Analysis of the relevant data of the Somogy County Kaposi Mór Training Hospital seen in Figure 1 shows that even 6 months' waiting time passed till the professional decision of the OnkoTeam can be said frequent.

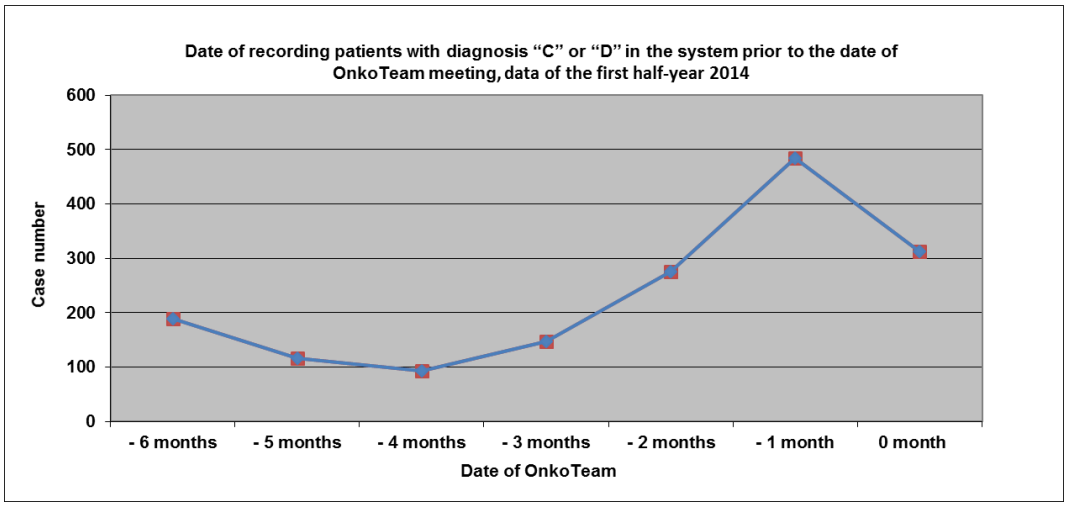

Figure 1 Time passed till the OnkoTeam meeting

Following the processes described above, the so-called OnkoTeam will hold a meeting when responsible and expert decision will be made on the patient's further treatment after careful decision preparing process [3]. In significant number of cases, oncologists already at this time detect that the patient has suffered such loss of time that surgical intervention already became impossible. At this point, it does not only mean a simple cost problem, but the possibility of giving adequate medical attendance which could have been provided at an earlier date is also questioned. Thus the patient's chances of healing decrease, his/her life quality worsens, and the efficiency of intervention or therapy is impaired. All these processes generate significant health expenditure, without showing any proper health profit and benefit to the society [4]. It can be well seen in Figure 2 that besides making the diagnosis, decreasing the time passed till the start of the therapy is also an important task.

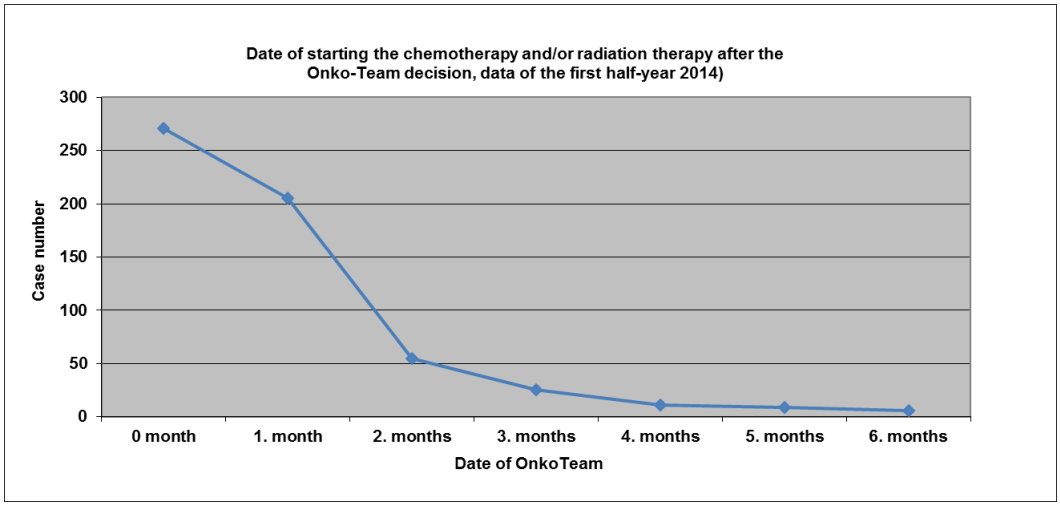

Figure 2 The time passed from the OnkoTeam decision to the start of the therapy

Development of health service capacities

Quantity and quality development of health services is being continuously on the agenda in all countries. As a result of the technical development and innovation in the field of medical devices and techniques, newer and more advanced diagnostic machines, equipment, more

specific and efficient medicaments and therapies appear day by day. Through various tenders, the health sector spent significant European Union sources on the extension of diagnostic capacity of hospitals and improvement of professional level of health care units in recent years. The new image-forming technologies – functional MRI, PET-CT – are available in the country, university and other centres and further image-forming devices also important for oncologic diagnostics – CT, MRI – are accessible in the larger institutions. However, the amount of diagnostic capacities is significantly lower than the European average and the areal distribution of accessibility is also highly uneven. As a result, not only check-up periods are lengthened, but significant patient transportation capacities are also engaged.

All these facts are determining those participating in the management of health sector to pay attention to the development of patient pathway management in order to increase efficiency and better exploit the existing capacities. Central management of patient pathways can be achieved by introducing changes in legislation, creating interest, putting in sanctions and providing information technology support. Changes in legislation slowly influence such activity of employees working in the sector and are inefficient without incentives, there is no budget source for creating interest, and sanctions may worsen the general feeling which is not good in the sector, anyway. Information technology support seems to be the easiest and least risky way of winning over the employees working in the sector to develop level of services.

Objectives of implementation of OnkoNetwork system

When designing the bases of the system, we outlined several concurrent objectives which were changed or modified several times during the regular meetings and conferences. As a result of our common work, the following objectives are set out:

I. The oncology patient should not be lost and wasted in the attendance system of the various specialities.
II. The expected time factor: Onko-Team decision should be made in 30 days from being recorded in the system, and then the treatment should be started immediately.
III. The oncology patient should be attended by an oncologist. Oncologic treatment should not be done without an Onko-Team decision. Because of the time factor, it is a booking priority.
IV. Profession- and organ-specific oncologic medical attendance system should be implemented.
V. Specific informatics system managing the oncologic clinic attendance should be implemented. Oncology patient documentation should be stored separately on a parallel server.

Implementation of patient pathway management in practice

Management of oncology patients is one of the most complicated tasks among the patient pathway management tasks within the health sector. Therefore the implementation of

oncology patient pathway management system allows its introduction in other specialties and in general, too.
With the help of the process and method developed jointly by clinical professionals, the medical document management, the procedure management and the expert system synthesising the professional knowledge could be established simultaneously. For achieving the above-mentioned aim, we could prepare such synthesising system which can access and involve the data stored in the presently operating medical systems (HIS), and - instead of physicians and specialists - trusts the administrators to watch the dates, handle the bookings, and check the implementation of steps defined in the protocols. Collection of data on the knowledge of medical professionals will not mean any special task for the physicians, either, since the data recording integrated in the process will automatically build up the knowledge base in accordance with the classification defined in advance and it will be monitored by so-called supervisor physicians. Granted, transformation of internal operation of the institution is the most difficult task. In order to operate the system efficiently, significant part of the internal operating mechanisms of the county hospital must be reorganized and for the oncology patient attendance it will include the whole medical, administrative and information technology processes of the service.

Result of the development of the service

Patient pathway management will allow that not a single patient having suspicion of oncology disease can be lost, or miss adequate attendance. Already this result will mean significant advancement as compared to the present system. In addition, the date monitoring along the check-up protocol will give equal chance to all patients and the attendance provided in accordance with the standards will lead to enforcement of quality assurance aspects. Already this phase may bring well visible, positively communicable, objective result provable with clear indicators.
Making the diagnosis according to the check-up protocols will ensure the professional basis through which all scientific results can immediately be integrated in the process of attendance, reaction time of medical profession will become shorter, research results will be recovered sooner, and independently of where the patient turns to the health care system, he/she will have the same possibility of having an exact diagnosis determined. This is the best way to achieve equality of chances and possibility of equal access in the sector.

Integration and support with administrative means of decision preparing process of OnkoTeam make it possible to reduce the burdens of busy OnkoTeam members of high competency, decrease the pressure to make a decision on the basis of insufficient information that is to increase efficiency. Certainly we cannot avoid possible hindrances to the implementation: this kind of objectivity may hurt the participators' present "freedom" as regards the decisions and priorities, which is general now but disadvantageous to the patient.

Determination of therapy and evaluations on the basis of organ- and profession-specific therapeutic protocols are expected to help professionals shape effective and efficient therapy. Through the oncology tracking (attention), we will be able to save many patients who miss regular controls and only come back into the attendance system when the doctors already

cannot or only to a limited extent can help them. By the early involvement of these patients, we can calculate with the return of costs of earlier therapy as well.

The information technology solution implemented

Purpose of the OnkoLogistic software is to support patient pathway management work of those working in the oncology clinic attendance in order that the effective treatment of the patients appearing in the health service providers and suffering from an oncology disease with great probability can be started as early as possible and it can contribute to the attention following the successful therapy. In addition, the program aims at measuring the effectiveness of therapies in the long term. The completed system still to be tested integrates the patient pathway reviewing functionality of a modern medical system, the date handling of an efficient procedure monitoring application and the data collecting-systemising abilities of an expert system.

The software has been prepared for the implementation of the following medical, administrative and scientific functions within one system:

- Medical-professional documentation system functionality
  - Determining exact diagnosis
  - Selecting profession- and organ-specific examination protocols
  - Filling, writing anamnesis data
  - Granting the classification "urgent"
  - Selecting the therapeutic protocol
- Procedure (patient pathway) handling, managing system functionality
  - Monitoring the dates
  - Setting up the statuses
  - Recording the events
  - Organising the OnkoTeam meeting
  - Documenting the physicians' decisions
- Scientific-professional solution functionality
  - Classifying subsequently
  - Efficiency test
  - Successfulness test
  - Statistical analyses

For the uniform handling of the patient documentation, the WEB based application is in close connection with the medical systems of the institutions through standard interfaces, but alternatively the system is also prepared for accessing the necessary patient documentation with the method developed by the so-called „iKórlap" ("iRecord") patient pathway program [5].

From the review screen in Figure 3, it can be seen that the tasks of patient pathway management require different approach from the decision makers participating in the patient attendance process and the colleagues participating in the decision-preparing process.

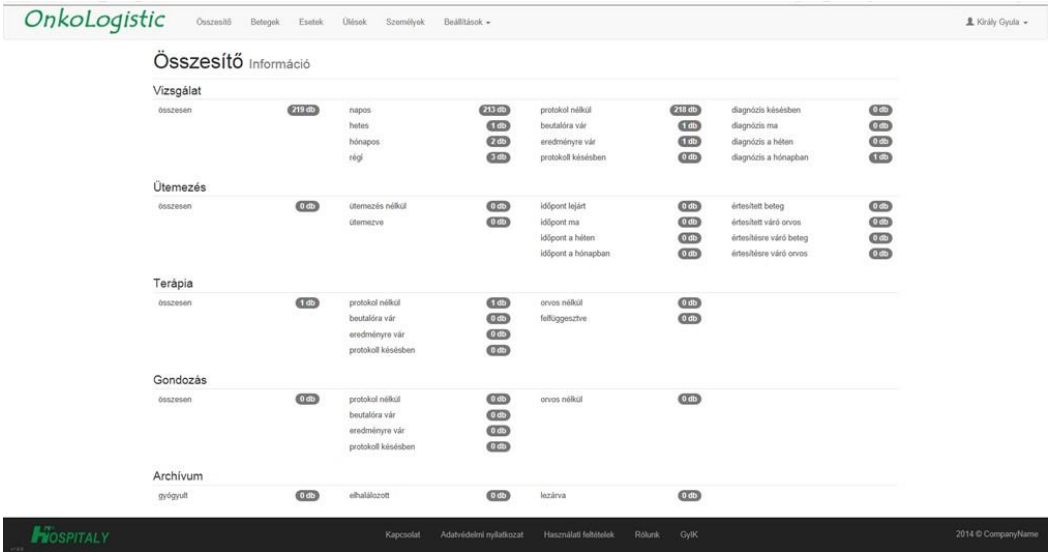

Figure 3 Review screen for supporting the patient pathway management

The trial test of the system will start in the following weeks; now establishment of organisational structure, procurement of necessary infrastructure and training of employees are in process.

The team will describe the operating experiences gained during the test period in another publication. With their activity, authors wish to support renewal of operation of the oncologic attendance system in Hungary, above all for the purpose of improving the tumour morbidity and mortality situation.

References:

1. Central Statistics Office [Online] Year 2013. Mortality according to the most frequent casues of death (1990–), [Referred: 2015. 06 13.]; https://www.ksh.hu/docs/hun/xstadat/xstadat_eves/i_wnh001.html

2. Hungarian Official Journal, Number 71, 26th May 2015., Tuesday, [Online] [Referred: 2015. 06 13.];http://www.kozlonyok.hu/nkonline/MKPDF/hiteles/MK15071.pdf

3. Hungarian Official Journal, Number 64, 31st May 2012., Thursday, [Online] [Referred: 2015. 06 13.];http://www.kozlonyok.hu/nkonline/MKPDF/hiteles/MK12064.pdf

4. Dr. Mariann Moizs, Nikoletta Malbaski, Dr. Gábor Bajzik, Barbara Borcsek, Kitti Deé, Dr. Zsuzsanna Lelovics, Dr. Csaba Dózsa, Dr. János Strausz, Dr. Imre Repa: Conditions and phases of the health-economic analyzes and modelling towards the analysis of national applicability of low-dose CT lung cancer screening, 2012. IME Volume XI, Number 10.

5. Gyula Király: iKórlap (iEHR) – a simple inter-institutional information system in the physician's hand, 2012. IME Volume XI, Number 4.