

Clinical quality studies in orthopedic oncology and centers of excellence

Recep Ozturk¹, Emin Kursat Bulut¹, Zeynep Zehra Coskun², Keziban Avci³, Huseyin Dogan¹, Emek Mert Duman¹, Bedii Safak Gungor¹

¹Dr Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Clinic of Orthopedics and Traumatology, Ankara, Turkey

²Dr Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Project Department Manager, Ankara, Turkey

³Ankara Yildirim Beyazit University, Faculty of Health Sciences, Department of Health Management & Turkish Healthcare Quality and Accreditation Institute, Ankara, Turkey

Copyright © 2020 by authors and Annals of Medical Research Publishing Inc.

Abstract

Clinical quality studies basically aim to improve the quality of health care and therefore to provide health care services of the same quality throughout the country. These studies of great importance in terms of obtaining the correct data from the system, performing the analyzes correctly, and identifying the areas open to improvement correctly.

Criteria for clinical quality care standards and indicators. Clinical indicators are used to measure and quantify the safety and quality of patient care. Identifying clinical indicators in orthopedic oncology provides accurate analysis of data and improves the quality of health care in sarcoma patients.

Keywords: Clinical quality; clinical indicators; centers of reference; center of excellence; orthopedic oncology

INTRODUCTION

Survival rates are improved in many types of cancer through accessible early detection, quality treatment and care. If measures against cancer are not taken, and a systematic control program is not implemented, treatment costs may soon become financially unmanageable (1). In this context, it is observed that health expenditures have increased rapidly for countries in recent years and oncological expenditures have the highest rate of increase in health expenditures.

In the United States, where 250,000 people die annually due to medical errors, which cost \$ 19.5 billion annually, are identified as the third most important cause of death after heart disease and cancer (2).

Although health and per capita health expenditures, employee and employer, contributions increase simultaneously and cancer survival rates improve, overall health status does not improve at the same rate. And also expected that cancer expenditures and the number of cancer survivors will increase soon. Therefore, an increasing number of countries, especially the USA, are making efforts to switch to health outcomes (value based) reimbursement systems, not by the cost of health care (3). The value is always defined in relation to the customer.

The client of the health services is the patient. In this context, diagnosis, treatment and care activities should be performed properly in the first application and the desired results should be achieved (4). The value-based reimbursement system brings together clinical quality studies.

Clinical quality is the evaluation of patient observations, treatments, processes, experiences and / or care results, measuring the quality of care and improving according to the results. The clinical quality process varies among countries.

However, the basic steps can be listed as follows (5,6):

1. First, an advanced analytical system for data collection is established.
2. Once data becomes collectable, evidence-based maintenance instructions are established to identify areas for improvement
3. Training is provided to follow these instructions properly.
4. In order to better monitor and interpret the improvement in clinical quality, a measurement system infrastructure is implemented.

Received: 11.02.2020 **Accepted:** 06.04.2020 **Available online:** 22.06.2020

Corresponding Author: Recep Ozturk, Dr Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Clinic of Orthopedics and Traumatology, Ankara, Turkey **E-mail:** ozturk_recep@windowslive.com

The aim of implementing the clinical quality process is to improve the quality and efficiency of health care by providing better planning of health services. As certain standards are followed, the workflow is automated, repetitive examinations are avoided and easy access to documents is provided. When this process is applied correctly, patient care and treatment can be improved. Health professionals are also provided with the opportunity to create legal information and documents (6).

Objectives of clinical quality;

- Establishing policies to prevent medical errors,
- Improving patient care processes,
- Increasing the satisfaction of patients and employees,
- Achieving the best health outcomes,
- Monitoring and improving medical processes nationwide, focusing on outcomes related to diagnosis, treatment and follow-up,
- Focusing on priority health phenomena for the country,
- Obtaining concrete data to determine the policies of the Ministry,
- To enable selection of better service organizations and professionals.

The term sarcoma refers to cancers originating from "mesenchymal" cells such as bone, cartilage, connective tissue, adipose tissue, muscle tissue, and vasculature. Sarcomas are named according to the tissue from which they originate. An example of bone-induced sarcomas is osteosarcoma, while chondrosarcoma from cartilage, liposarcoma from adipose tissue, fibrosarcoma from connective tissue, leiomyosarcoma from smooth muscle tissue, and rhabdomyosarcoma from vascular tissue (7). The frequency of these tumors seen in Turkey are similar to the frequencies seen in the world.

The aim of the clinical quality studies in oncological orthopedics, is to gather information about incidence, treatment, and prognosis of sarcomas in Turkey in order to monitor and improve the quality of sarcoma treatment in both a national and an international perspective.

It is very important to record several quality indicators to measure the quality of care provided by hospitals and to make comparisons between hospitals and international standards.

Quality Clinical Studies In Turkey

Turkey effectively to the health services since 2003, an efficient and equitable way of organizing and financing to ensure the various reforms are implemented. Thus, the health system provided a new basis and a series of transformations in healthcare institutions were implemented to meet increasing patient expectations. Within this scope, The Quality and Accreditation for Qualified and Effective Health Services component within the Health Transformation Program (SDP) has undoubtedly

gained importance. In this context, in the 2000s, a quality management department was established within the central organization to determine the quality standards and policies in hospitals, and quality standards were prepared for use in hospital evaluations. The central assessments of Service Quality Standards, which were initiated in 2005 in public hospitals, were expanded in 2008 to include public, private, and university hospitals. In 2009, cross assessments were made widespread and continuous, and since 2010 central evaluations have been conducted in all provinces (8).

In 2012, the determination of the Clinical and Turkey aimed at improving the level of quality began with the Clinical Quality Program. With this program, it is planned to determine the clinical quality standards and indicators, collect data accordingly and examine the results at the institution, region and country levels. Firstly, data on nine health cases (diabetes mellitus, knee replacement, hip replacement, stroke, coronary artery disease, birth and pregnancy process, cataract, colorectal cancer, chronic obstructive pulmonary disease) were collected in order to monitor process and outcome-based indicators of health cases with high disease burden (9). In 2017, prostate cancer and dental implant cases were included in the process and the number of cases was increased to eleven. However, there was no program related to orthopedic oncology (10,11).

In Turkey, the National Health System (NHS), through web services established health data in all health institutions online (online) collection, systematic and functional registration system that allows the upgrading of processing and data quality. Decision Support Systems (DSS) are systems designed to facilitate decision making and to make more effective and correct decisions and include different models and applications. High quality and accurate data is very important for the system to work properly. Quality data; are accurate, reliable, consistent, comparable and reproducible data on corporate activities. Measurement, evaluation and improvement activities cannot be achieved with data that is not trusted. It can also lead to unnecessary labor and cost losses. "It is very important to get the right data from the systems, to perform the analyzes correctly and to determine the areas open to improvement. For this, it is necessary to keep the data insufficient amount.

Efforts to Develop Clinical Quality Measurement Systematic for Orthopedic Oncology in the World

Two elements are needed to improve the quality of clinical care. The first is to develop evidence-based medical practices that define clinical practice to provide better care, and the second is to know how to use evidence-based medicine in routine practice. In order to achieve this, researches are conducted and treatment protocols, clinical road maps and clinical guidelines are prepared. The next step is to conduct quality control at the clinical level or to determine the level of clinical quality to evaluate any intervention or improve quality and safety in health care.

Measurement and reporting to determine the level of clinical quality is the systems that help ensure that health systems provide effective, safe, efficient, patient oriented, fair and timely services. Therefore, clinical quality measurement is a tool used to measure and monitor the quality of health care services (diagnosis, treatment, rehabilitation) (11).

Clinical quality measurement is to implement evidence based treatment protocols and guidelines to evaluate and improve patient care through clinical quality standards or indicators. In this way it offers a way to "do the right thing". Clinical indicators are used to measure and quantify the safety and quality of patient care. They are also often used as endpoints in clinical trials. Definitions of clinical indicators in common use are extremely heterogeneous, limiting their applicability (12).

Through these measurements, health professionals can determine, measure and measure risk areas related to the services they provide and implement improvement activities. As a result of these efforts, best practices can be supported at institutional level. As a result, patient and employee satisfaction will increase as well as health service quality and effectiveness will improve (11,13).

When the literature on orthopedic oncological standards is examined, International standards exist under the title of sarcoma. The United States of America has designated NCCN (The National Comprehensive Cancer Network); The United Kingdom has established NICE (The National Institute for Health and Care Excellence) criteria, while the European Union has established ESMO (European Society for Medical Oncology) criteria.

The term Standard Operating Procedure (SOP) was described by different authors with minor differences. For example, the US Environmental Protection Agency and the European Drug Agency described it as specific a specific function. The SOP describes a series of steps that a person or a group must take to complete the work, removing variations. It is a process document detailing how the operator should perform a specific function. In shortly, SOP is a document that clearly defines who does what, where, how and why. (14)

The incidence of tumors is discussed in the title of health care. When cancer statistics are examined, the most common cancers are lung cancer, prostate cancer, colon-rectum cancer. Bone and soft tissue cancers are in the last place during the frequency. Sarcomas contain less than 1% of all adult solid bone tumors. When sarcomas are evaluated internally, primary malignant bone tumors are slightly more than approximately 10% of all sarcomas. According to one centered a recent study, including data from research conducted at a cancer hospital tertiary care, musculoskeletal and epidemiology of the tumor was no significant difference between the data obtained from other parts of the world (15-19).

When the NICE criteria were examined under the title of sarcoma, 6 titles were determined for quality standards (Sarcoma NICE quality standard QS78 January 2015(20). Five of these are related to orthopedic oncology:

- Paper 1: Sarcoma advisory groups and sarcoma multidisciplinary teams (MDEs) have referral and diagnostic pathways for people with suspected sarcoma.
- Paper 2: Adults, children and adolescents with bone sarcoma, and adults with soft tissue sarcoma have treatments identified by a sarcoma counseling group and care plans approved by sarcoma MDE.
- Paper 3: Sarcoma MDEs publish information about site-specific sarcomas, pathways, activities, and patient outcomes.
- Paper 5: Surgeons performing planned sarcoma resection are the core or extended members of sarcoma MDE.
- Paper 6: People with sarcoma are supported by an assigned key official with expert knowledge of sarcomas and their treatments.

European Union Reference Networks can be examined for the title of quality indicators. Twenty-six member states, 300 hospitals and 900 departments included 24 rare disease centers (21).

When the structures of the hospitals are examined, Education Research Hospitals are considered tertiary hospitals. Fourth level hospitals are considered centers of excellence. Fifth level hospitals are referred to as rare disease reference centers.

In the case of orthopedic oncology, a Danish-based study under the title of standards and quality indicators can be cited (22). In this study, some clinical indicators were identified:

1. The proportion of patients with subfacial tumors and MRI or tumor CT>95%
2. The proportion of patients with moderate or high-grade malignancy undergoing chest CT or PET-CT>95%
3. The proportion of patients with moderate to high malignant bone tumors undergoing TVKS or PET-CT> 95%
4. The proportion of patients operated on primary surgery with insufficient surgical margins <10%
5. The proportion of > 80% of patients who received radiation therapy within 60 days post-op
6. The proportion of patients> 90% seen in the first clinical follow-up within 6 months after treatment
7. The ratio of patients with local recurrence within 5 years after treatment <20%
8. The proportion of patients with metastasis within five years <30%

Clinical indicators identified in the field of orthopedic oncology ensure that treatment is within certain standards. If the standards are not fulfilled, the center is asked to perform a medical record check to find an explanation of the cause and, if possible, to propose a future improvement plan. For example, if more than 95% of patients with subfacial tumors do not undergo MRI or CT, the reasons for this should be questioned.

Should Orthopedic Oncology Clinics be Structured as Centers of Excellence?

The Centers of Excellence are centralized institutions in the specific medical fields. They also provide a comprehensive and interdisciplinary manner with a high degree of expertise and related resources. Centers of excellence provide many advantages for healthcare providers and the populations they serve. Centers of excellence are capable of significantly increasing the depth and breadth of health care in communities (12).

In the Council Recommendation 2009 / C-151/02 of the European Union, which hospital operates in which field is determined. In this way, it has been decided to define the areas of expertise, identify the centers of expertise / specialty hospitals and identify these centers in European reference networks.

In 2011, the European Union Committee for Rare Diseases set the criteria for centers of excellence in rare diseases.

In 2011, instead of the term of the European Union centers of excellence, the concept of specialized centers was preferred and the networks established by these centers among themselves were called "European Reference Networks".

In 2017, 24 European Reference Networks (ERNs) were declared in more than 300 hospitals in 26 Member States, including more than 900 eden specialist centers.

HORIZON 2020, which is run by the European Union (EU), aims to spread excellence and expand participation, so many centers participating in ERN in the period covering 2014-2020 have received research support from HORIZON 2020's budget of 80 billion Euros.

Unfortunately, Turkey is not yet a center of excellence in the field of health / center of expertise available. Following the publication of the legislation on this issue with the circular of Ministry of Health dated 809-0814 numbered Excellence Centers numbered 80118214-010.06, many hospitals have started to work to become centers of excellence in many areas.

This study had some limitations. First, this is a retrospective analysis. Also, clinical quality studies are at an early stage worldwide and there is limited information in the literature. However, this article is important because it contains a summary and short description of the studies on this topic. Further studies with more patient numbers are needed in the future.

CONCLUSION

As a result, under the title of clinical quality, it is aimed to monitor, analyze and improve the medical processes related to the identified health cases and the clinical results obtained based on the health case at the institutional and national levels. In clinical quality assessments, the database is very important. The database is created to ensure data quality through a valid online record entered by a clinician in charge of a particular event, for example, surgery.

Clinical indicators identified in the field of orthopedic oncology ensure that treatment is within certain standards. If the standards are not fulfilled, the center is asked to perform a medical record check to find an explanation of the cause and, if possible, to propose a future improvement plan.

REFERENCES

1. Torun P, Kutlar A. Economic Costs of The Cancer: A Computable General Equilibrium Model Approach. Hacettepe J Health Administration, 2018;21:87-101.
2. Makary MA, Daniel M. Medical error-the third leading cause of death in the US. BMJ 2016;3:2139.
3. Fehrenbach MJ. Dental hygiene education [Internet]. [Place unknown]: Fehrenbach and Associates; 2000 [updated 2009 May 2; cited 2009 Jun 15]. Available from : <http://www.dhed.net/Main.html>
4. High - Expenditure Part B Drugs [Internet]. [Place unknown] 2009[updated 2009 Jan 18; cited 2020 jan 18] Available from: <https://www.gao.gov/assets/650/649459.pdf>.
5. Avcı K. Kalite ve Akreditasyona Teorik Bir Bakış. In Beylik U, Avcı K, eds. Sağlıkta Kalite Yönetimi ve Akreditasyon. Ankara: Gazi Kitapevi 2019;1-6.
6. Centers for medicare and medicaid services[Internet]. [Place unknown] [cited 2020 jan 18] Available from: <https://www.cms.gov>
7. Koç EM, Aksoy H. Klinik Kalite. In Beylik U, Avcı K, Eds. Sağlıkta Kalite Yönetimi ve Akreditasyon. Ankara: Gazi Kitapevi 2019;1-16.
8. International Classification of Diseases for Oncology (ICD-O) 3rd Edition, 1st Revision. © World Health Organization 2013.
9. Avcı K, Şenel ÇF. Sağlık Hizmetleri Akreditasyonu: Faydası, Önemi ve Etkisi Nedir? Online Türk Sağlık Bilimleri Dergisi 2019;4:221-34.
10. T.C. Ministry of Health, Clinical Quality Implementation and Data Quality Improvement Guide. [Internet]. [Place unknown] [updated 2017, cited 2020 Jan 18] Available from: <https://kalite.saglik.gov.tr/TR,25083/klinik-kalite-olcme-ve-degerlendirme-rehberleri.html>.
11. Avcı K. Sağlık hizmet kalitesinin iyileştirilmesi için klinik kalite ölçümü, Health Care Acad J 2017;4:181-5.

12. Bampoe S, Cook T, Fleisher L, et al. Clinical indicators for reporting the effectiveness of patient quality and safety-related interventions: a protocol of a systematic review and Delphi consensus process as part of the international Standardised Endpoints for Perioperative Medicine initiative (StEP). *BMJ* 2018;2;8:023427.
13. National Director of Quality and Patient Safety. [Internet]. [Place unknown]: 2013 A Practical Guide to Clinical Audit [updated 2017 Sep 16; cited 2020 Jan 18]. Available from: [Who/QID/MeasurementQuality/Clinical-Audit/practicalguideclaudit 2013.pdf](#)
14. Amare G. Reviewing the Values of a Standard Operating Procedure. *Ethiop J Health Sci* 2012;22: 205-8.
15. Ozturk R, Arikan SM, Bulut EK, et al. Distribution and evaluation of bone and soft tissue tumors operated in a tertiary care center. *Acta Orthop Traumatol Turc* 2019;53:189-94.
16. Atalay IB, Simsek MA, Irak O, et al. Biological Reconstruction in Malignant Bone Tumors. *Acta Oncol Turc* 2018;51:283-93.
17. Sevimli R, Korkmaz MF. Analysis of orthopedic surgery of patients with metastatic bone tumors and pathological fractures. *J Int Med Res* 2018;46:3262-67.
18. Atalay IB, Yapar A, Ozturk R, et al. Surgical Outcomes of Synovial Osteochondromatosis: An Evaluation of 15 Cases *Acta Oncol Tur* 2019;52:379-82.
19. Sevimli R. Distribution and evaluation of primary bone and soft tissue tumors admitted from Malatya province and surrounding provinces. *Med Science* 2017;6:546-50.
20. Sarcoma NICE quality standard QS78. [Internet]. [Place unknown]: 2016. [updated 2016 jan 25; cited 2020 Jan 18]. Available from: <https://www.nice.org.uk/guidance/qs78>.
21. European Reference Networks. [Internet]. [Place unknown]: 2020 . [updated 2020; cited 2020 Jan 18]. Available from: https://ec.europa.eu/health/ern/networks_en.
22. Jørgensen PH, Lausten GS, Pedersen AB. The Danish Sarcoma Database. *Clin Epidemiol* 2016;25:685-90.