Time to first treatment after colonoscopy in patients suffering from colon or rectum cancer in France

Yao Cyril Kudjawu[a,*], Daniel Eilstein[b], Elsa Decool[a], Florence De Maria[a], Nathalie Beltzer[a], Gilles Chatellier[c]

[a] Institut de veille sanitaire, département des maladies chroniques et traumatismes, 12, rue du Val d'Osne, 94414 Saint-Maurice, France
[b] Institut de veille sanitaire, direction scientifique et de la qualité, 12, rue du Val d'Osne, 94414 Saint-Maurice, France
[c] Assistance Publique des Hôpitaux de Paris, Unité d'épidémiologie et de recherche clinique, Hôpital européen Georges Pompidou, 20, rue Leblanc, 75908 Paris cedex 15, France

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ABSTRACT

Background: Time to treatment of cancer is becoming a serious political and social issue. A greater understanding of the timeframes involved in cancer care is needed to reduce inequalities in access to care caused by delays.
Objective: To describe indicators of time to first treatment after colonoscopy in colon cancer (CC) and rectum cancer (RC) patients in France.
Method: Using the international classification of diseases and medical procedures codes, from national hospital discharge and long term illness databases we selected patients newly diagnosed for CC or RC in 2009–2010 who had undergone treatment.
Results: We included 15 694 and 6 623 patients for CC and RC, respectively. Median times to surgery in patients with a surgical treatment pathway for CC and RC were 22 (Q1 = 14; Q3 = 34) and 97 (Q1 = 34; Q3 = 141) days, respectively. Median times to chemotherapy for patients with a non-surgical treatment pathway, for CC and RC were 36 (Q1 = 21; Q3 = 59) and 40 (Q1 = 27; Q3 = 59) days, respectively. The median time to radiotherapy in RC patients was 53 (Q1 = 39; Q3 = 78) days.Time to surgery as first treatment in RC patients (46 days) was twice as long as that in CC patients (22 days). Time to treatment was longer in most northern regions and in overseas districts, and shorter in southern regions, for both CC and RC.
Conclusion: The findings in this unprecedented study in France will inform decision-making policies on the future implementation of guidelines on timeframes for colorectal cancer treatment access.

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1. Introduction

Cancer is a major cause of morbidity and mortality, with approximately 14 million new cases and 8 million cancer-related deaths in 2012 worldwide [1]. Colorectal cancer (CRC) is one of the most common cancers in men and women, representing almost 10% of the global cancer incidence [1].

In France CRC is a high incidence cancer with 23,226 new cases in men and 18,926 in women, for a respective standardized rates of 38.4 and 23.7 cases per 100,000 person-years in 2012 [2]. Despite

decreased mortality in recent years, it remains the second most frequent cause of cancer-related mortality for both men and women [2]. Diagnosis is generally confirmed by colonoscopy [3] or by pathology report. Diagnosis will prompt a referral to a surgeon, who may undertake further investigations to inform treatment decisions, and when required, will obtain patient consent for resection. Due to the potential role of patient in term of treatment adherence, it is important that patients be involved in decisions related to their treatment and be given information that help them accepting the treatment of their illness.The time between diagnostic procedures and treatment is important in terms of preventing disease progression and limiting patient psychological distress. Some studies have found a significant relationship between delay in cancer care and prognosis [4–6].

Accordingly, cancer treatment delay has become a serious political and social issue requiring the production of regular indicators and of spatio-temporal comparisons.

* Corresponding author. Fax: +33 1 41 79 68 11.
E-mail addresses: y.kudjawu@invs.sante.fr (Y.C. Kudjawu),
d.eilstein@invs.sante.fr (D. Eilstein), e.decool@invs.sante.fr (E. Decool),
f.demaria@invs.sante.fr (F. De Maria), n.beltzer@invs.sante.fr (N. Beltzer),
gilles.chatellier@aphp.fr (G. Chatellier).

Currently, there are no established benchmarks for acceptable waiting times for CRC treatment in France. One of the objectives of the French cancer plan for 2014–2019 is to acquire a better understanding of the timeframes involved in cancer care in order to reduce inequalities in access to care arising from delays [7]. Despite the lack of indicators on time to access cancer treatment at the national level, studies based on data from cancer registries [8] and regional cancer networks [9] have been performed in some French districts and regions in order to produce indicators on timeframes for treatment access for four common cancers, including colon cancer.

Using hospital discharge and long-term illness status data, from what are commonly named medico-administrative databases, we conducted a study to produce indicators on time to first treatment for colon and rectum cancer after colonoscopy, at the French national and regional levels.

2. Materials and methods

2.1. Data sources

2.1.1. Hospital discharge database

The French PMSI (Programme de Médicalisation des Systèmes d'Information) system is a medico-administrative database providing nationwide data on all patients discharged from public and private hospitals. Each patient stay is documented with the following data recorded: personal information (age, sex, area code of residence), clinical information such as diagnoses (principal, related and associated) codes according to the International Classification of Diseases 10th revision (ICD-10), medical procedure codes according to the French common classification of medical procedures (FCCMP), care center codes, a single date of admission for procedures (diagnosis or treatment) performed during the same stay, and a systematically generated anonymous individual and common identifier (AICI) which identifies all hospital stays of the same patient discharged from different hospitals over time.

Principal, related and associated diagnoses are defined, respectively, using the following criteria: 1) the main reason for patient admission to hospital; 2) the diagnosis which aims to better explain the principal diagnosis in absence of reliable information; 3) symptoms or other significant reasons that necessitate increased involvement of health professional in patient care, in addition to the care provided for the principal and related diagnoses. For hospitalized, treated patients suffering from cancer, ICD-10 codes (Z510, Z511) for chemotherapy and radiotherapy, respectively, are recorded in principal diagnosis, while the cancer diagnostic code is recorded in related diagnosis.

For this study, looking for newly diagnosed colon and rectum cancers over the period 2009–2010, PMSI data from 2006 to 2011 were extracted from the data warehouse of the French national health insurance system called Sniiram which aims for better understanding and better evaluating beneficiaries' health care consumption and associated expenditure [10].

2.1.2. Long-term illness (LTI)

LTI is a health insurance offering free care to patients certified as needing costly or long-term treatment related to their diseases, including cancer. The application for LTI, filled in by a medical practitioner, is not mandatory, and therefore some patients do not apply for it for personal reasons.

The LTI database constitutes nationwide data extracted from Sniiram, and contains information on LTI health insurance beneficiaries including information on age, sex, area code of residence, ICD-10 diagnostic code and AICI.

3. Methods

3.1. Patient selection

Based on ICD-10 revision cancer codes, we selected hospital stays of patients suffering from colon (C18, C19) or rectum-anus (C20, C21) where these cancer codes were recorded as principal, related, or associated diagnosis in hospital discharge data based between 2006 and 2011. Colon and rectum-anus cancers will be named hereafter as colon cancer (CC) and rectum cancer (RC). Hospital stays without or with a non-valid AICI were excluded from the selection.

Hospital stays of patients for each year of the study period, with CC or RC cancer codes recorded as principal or related diagnosis, were cross-referenced with those of the previous three years via the individual AICI in order to exclude prevalent stays. We then ordered the remaining stays, considered as newly diagnosed CC or RC, according to the date of completion of each recorded medical procedure (colonoscopy, chemotherapy, radiotherapy, and surgery) in order to identify the first hospital stay for each patient. Only the details of a patient's first stay for each procedure were retained for analysis.

When therapy codes for the year 2009–2010 were missing, we looked for these codes in the database for the following year and completed information on the patient's treatment if the search proved successful. Among patients retained, we excluded those whose treatment occurred the day prior to or during the colonoscopy procedures; we speculated that such waiting time was for emergency care.

The selection of CC and RC LTI beneficiaries was based on ICD-10 cancer codes. Beneficiaries were assigned to the calendar year in which they were admitted to LTI, and underwent diagnosis procedure or treatment for their cancer. However, as treatment can be performed in the year of diagnosis but payment for the
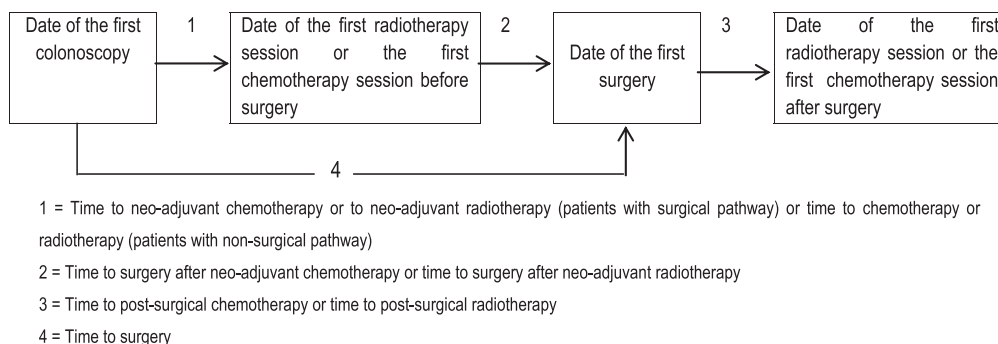

1 = Time to neo-adjuvant chemotherapy or to neo-adjuvant radiotherapy (patients with surgical pathway) or time to chemotherapy or radiotherapy (patients with non-surgical pathway)

2 = Time to surgery after neo-adjuvant chemotherapy or time to surgery after neo-adjuvant radiotherapy

3 = Time to post-surgical chemotherapy or time to post-surgical radiotherapy

4 = Time to surgery

Fig. 1. The Pathway of patients and definition of time to first treatment measured.