Budget impact analysis of discontinuing Tyrosin Kinase Inhibitors in patients with chronic myeloid leukemia achieving a complete molecular response by using probabilistic Markov approach (ECOSTIM)

First published: 21/04/2017

Last updated: 24/07/2024

Study | Finalised

Administrative details

EU PAS number

EUPAS18568

Study ID

49932

DARWIN EU® study

No

Study countries

France

Study description

Chronic myeloid leukemia (CML) is an hematopoietic stem cell disorder in which a t(9,22) (q34,q11) reciprocal chromosomal translocation gives rise to Philadelphia chromosome (Ph) and generates the BCR-ABL1 fusion gene encoding a constitutively activated tyrosine kinase protein. Over the past decade, a broad array of drugs designed to selectively inhibit protein tyrosine kinases i.e., tyrosine kinase inhibitors, (TKI) have emerged as novel therapies. These treatments induce durable responses and prolong survival allowing CML patients to have a near-normal life expectancy. Two important issues must be then considered in the future: 1-the quality of life and ethical aspects of the lifetime treatment during lifetime, 2- the economic impact of treating patients during lifetime. One of the best ways to consider these two points is to ask the question about stopping TKI in good responder patients. Previous studies showed promising results concerning patients who remained in complete molecular remission (CMR, i.e. undetectable residual disease on quantitative RT-PCR), for at least two years after imatinib was withdrawn. All molecular relapsing patients were sensitive when imatinib was re-challenged. Around 40% of these patients remain in a prolonged treatment-free remission (TFR) after treatment cessation. Considering the cost of imatinib and the number of months without treatment based on these studies, the savings in France would be 9 million €. However, since only 40 % of patients are in treatment free remission, a study, assessing the real budget impact for the healthcare system of stopping TKI in the eligible population seems necessary as no published study has ever addressed this question in France. The French National Health Insurance database (SNIIR-AM) is well suited to conduct this study since it provides exhaustive information about total costs induced by CML patients in France in both strategies (continuing or stopping TKI treatment).

Study status

Finalised

Research institutions and networks

Institutions

Bordeaux PharmacoEpi, University of Bordeaux

France

First published: 07/02/2023

Last updated: 08/12/2025

Institution | Educational Institution | Hospital/Clinic/Other health care facility | Not-for-profit | ENCePP partner

Contact details

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Study contact

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Primary lead investigator

Nicholas MOORE

Primary lead investigator

Study timelines

Date when funding contract was signed

Actual: 29/12/2016

Study start date
Planned: 31/12/2017

Actual: 22/03/2018

Data analysis start date
Planned: 31/03/2018

Actual: 15/06/2018

Date of final study report
Planned: 28/02/2019

Actual: 08/04/2019

Sources of funding

- Other

More details on funding

Direction Générale de l’Offre de Soins (DGOS)

Study protocol

ECOSTIM-v2.1_clean version 20170322.pdf (912.24 KB)

Regulatory

Was the study required by a regulatory body?

No

Is the study required by a Risk Management Plan (RMP)?

Not applicable

Methodological aspects

Study type

Study type list

Study topic:

Disease /health condition

Human medicinal product

Study type:

Non-interventional study

Scope of the study:

Other

If ‘other’, further details on the scope of the study

Medico-economic study

Data collection methods:

Secondary use of data

Main study objective:

The main objective of the study is to assess the budget impact, of discontinuing TKI treatment in patients with CML, treated since at least 3 years and achieving deep molecular response compared with current practice (treatment during entire life), between 2008 and 2015 from the healthcare system point of view,

by using a probabilistic Markov model.

Study Design

Non-interventional study design

Cohort

Study drug and medical condition

Anatomical Therapeutic Chemical (ATC) code

(L01XE) Protein kinase inhibitors

Protein kinase inhibitors

Medical condition to be studied

Chronic myeloid leukaemia

Population studied

Short description of the study population

Chronic myeloid leukemia (CML) patients aged 18 years or older treated with tyrosin kinase inhibitors (TKI) identified from the French nationwide claims and hospital database (SNIIRAM) for the study period of 1 January 2005 to 31 December 2015.

Inclusion criteria:

• Patients aged 18 years or over;

• Patients with LTD registration or hospitalization for CML (primary, associated and linked ICD-10 diagnosis code, i.e. C92.1 or C921) during the study period;

• Patients who discontinued their TKI treatment for the first time during the inclusion period;
• Patients treated with TKI during the inclusion period with a minimum of 3 year-period of TKI regular treatment before TKI discontinuation. A 3 year period of TKI regular treatment will be defined on the presence of at least 10 TKI reimbursements per year during the 3 years preceding TKI discontinuation.

Exclusion criteria:
• Patients who proceeded to allogeneic or autogenic hematopoietic stem-cell transplant (hospitalization ICD-10 code diagnosis Z94.80) in the 3 year-period prior to or in the month following the last TKI reimbursement identified before TKI discontinuation;
• Patients with HIV/AIDS (hospitalization ICD-10 code diagnosis B24) or chronic Hepatitis C or B (hospitalization ICD-10 code diagnosis B18) in the 3 year-period prior to or in the month following the last TKI reimbursement identified before TKI discontinuation;
• Recent (i.e. in the previous year) or ongoing pregnancy at TKI discontinuation date identified by an algorithm based on codes of hospitalization diagnoses and medical procedures.

Age groups

- Adults (18 to < 46 years)
- Adults (46 to < 65 years)
- Adults (65 to < 75 years)
- Adults (75 to < 85 years)
- Adults (85 years and over)

Special population of interest

Other

Special population of interest, other

Chronic myeloid leukemia patients

Estimated number of subjects

800

Study design details

Data analysis plan

The following analyses will be performed for the cohort: • A flow chart depicting the number of patients and sequences of treatment available in the database satisfying the cohort criteria and follow-up duration, • Description of baseline characteristics, comorbidities and CML diagnosis, • Description of the duration and causes of TKI discontinuation and the resumed TKI in case of treatment resumption in the year following the discontinuation, • Description of the healthcare resources use and costs

Documents

Study results

astrugue value in health 2021.pdf (497.04 KB)

Study publications

Astrugue C, Bénard A, Bosco-Levy P, Dulucq S, Rouyer M, Lassalle R, Hayes N, Ma...

Data management

ENCePP Seal

The use of the ENCePP Seal has been discontinued since February 2025. The ENCePP Seal fields are retained in the display mode for transparency but are no longer maintained.

This study has been awarded the ENCePP seal

Conflicts of interest of investigators

DOI_Moore2017.pdf (107.13 KB)

Composition of steering group and observers

Observers_ECOSTIM.pdf (176.06 KB)

Signed code of conduct

empty-file.pdf (14.94 KB)

Signed code of conduct checklist

empty-file.pdf (14.94 KB)

Signed checklist for study protocols

2017-0043_ENCePP Checklist for Study Protocols_EUPAS18568.pdf (234.4 KB)

Data sources

Data sources (types)

Administrative healthcare records (e.g., claims)

Use of a Common Data Model (CDM)

CDM mapping

No

Data quality specifications

Check conformance

Unknown

Check completeness

Unknown

Check stability

Unknown

Check logical consistency

Unknown

Data characterisation

Data characterisation conducted

No