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Laurent Mériade, Corinne Rochette

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## Method Article

**Title:** a relational and geographic method for integrating cancer care pathways

**Authors:** Laurent Mériade and Corinne Rochette

**Affiliations:** Research chair "health and territories"- IAE School of Management – Clermont Auvergne University - France

**Contact email:** [laurent.meriade@uca.fr](mailto:laurent.meriade@uca.fr); [corinne.rochette@uca.fr](mailto:corinne.rochette@uca.fr)

**Keywords:** care pathway; integrated care; geographical mapping; mixed method; breast cancer; France.

### ABSTRACT

The article supporting this method (Mériade & Rochette, 2020) examines how to apply a spatial approach including the geographical and relational dimensions to care pathways for their better integration within their territories. Based on the case study of a senology department of a French Cancer Diagnosis, Treatment and Research Center, we apply a mixed research methodology using qualitative data (synthesis documents, meeting minutes, in-depth interviews) and quantitative data relating to the mobility and geographical location of a cohort of 1,798 patients treated in this center. The objective of this method is to combine, in a dynamic way, a relational and cartographic approach in order to describe integrated health care pathways in their territories. Our results show the inseparable nature of the relational dimension and the geographical approach to move towards greater integration of breast cancer care pathways. This inseparability is illustrated by an initial cartographic description of integrated care pathways in their territory, illustrated in our case study by four major pathway categories. This research provides answers to the difficulties observed by the health authorities in France concerning the implementation of coordinated patient pathways at the area level.

- The first step of the method is to identify how pathway integration is expressed for professionals and patients.
- The second step, continuing from the first, consists of observing the criteria for identifying the care pathways chosen by stakeholders (patients, healthcare institutions, city medicine).
- The third step consists of representing, on a geographic map, the elements relative to the different criteria observed during the second step from the study of a cohort of patients.

### SPECIFICATIONS TABLE

<b>Subject Area</b>	<i>Social Sciences</i>
<b>More specific subject area:</b>	<i>Social Sciences and Medicine</i>
<b>Method name:</b>	<i>Relational and geographical approach of integrated care pathways</i>

### Introduction

The aim of our work is to better understand how integrated care pathways are constructed on the scale of a given geographical area. The work carried out on this issue has focused on the clinical approach of ICP by studying the integration of care based on organizational and professional alignment, centralized and share information, clinical leadership and financial incentives. However, ICP is also linked to the geographical location of medical, care resources, and the way in which these are mobilized and activated by the stakeholders in the pathway (Wennberg et al., 2002). Even if medical and care resources can be identified in the geographical area where the patient lives, they are not always used to achieve an integrated care pathway that combines both location (activation of resources close to the patient) and patient comfort. The patient's pathway is a geographical journey and it is not only a clinical one. This pathway is largely determined by the knowledge that the professionals who are behind the definition of the pathway have of the territorial resources available.

Therefore, the clinical modelling of care pathways is insufficient to achieve a complete approach of integrated care pathways if it is not combined with a geographical reading (patient movements to benefit from medical resources) and a reading of the relationships that health professionals have with each other. These relationships are largely determined by the knowledge that professionals have of the existence and location of territorial medical resources. Therefore, in our research, we propose to combine cartographic approaches, for a geographical reading of patients' journeys, with a qualitative approach for understanding what representation the professionals who define ICPs have of the area, of the location of available resources in relation to the patient's living place. We present here the three stages of a research method for ICPs integrating the relational and geographical dimensions.

#### 1° Method details: Three steps method to map the care pathways integrated on their territories

This research design was developed for a research project to investigate the geographical pathways of breast cancer patients and to understand the factors that explain their moves in a space.

### **First step: Identify by how pathway integration is expressed for professionals and patients.**

The first step is based on qualitative research. If the construction of patients' ICPs responds to the need for clinical intervention which is to care, there is also a geographical dimension in the design of care pathway. The ICP is the result of the articulation of medical and care resources located on different geographical areas. The patient has to move around in order to be able to benefit from these resources. Thus, the knowledge that health professionals have of these resources and the representation that they have of them constitute a non-neutral element in the setting up of territorialised ICPs. The construction of patient pathways is the result of a mental process based on the knowledge and experience that those constructing these pathways have of the available medical resources and the way in which they represent the patient. There is a need to know if the patient is approached as a clinical object and/or as a social object situated in his or her place of life. This first step adopt qualitative approach based on an analysis of patterns in data and ideas to explain why ICP are what they are.

This step is based on a variety of qualitative data collecting empirical materials to respect the principle of data triangulation (Saldana, 2021) :

- 1) documentary sources (activity report, national pathology management plan, the hospital's strategic project) presenting the way in which pathology management is carried out, writing notes when reading,
- 2) taking part as observers in the steering committees of the patient pathways, keeping a diary to record impressions and questions, recording of all the sessions in order to transcribe the participants' comments (internal and external stakeholders) and analyse them accurately.
- 3°conducting Semi-structured interviews with managers and staff of a specific department (writing notes when interviewing) recording of interviews and transcription for a coding,

### **Second step: Observe the criteria for identifying integrated care pathways.**

The second step consists of a detailed analysis of the content of the qualitative material using coding from the memos and diary content written in the first step and from the literature review (Saldana, 2014). Use of a coding grid to analyze the empirical material mobilized and identify the main criteria for integrating care pathways

**Table 1. Coding grid of the method (Mériade & Rochette, 2020)**

Coding Category	Coding Sub-Category
General approach of the patient care pathway	Clinical dimension (pathology)
	Social dimension (patient)
Geographical approach of the pathway	Medical dimension
	Geographic dimension
Relational approach of the pathway	Relations with health professionals
	Patient relations

### **Third step: Represent on a geographic map the elements relative to the different criteria observed (use of geographic mapping software)**

- From the patient cohort studied, map geographically the different criteria observed in the relational analysis.
- Test the cartographic representativeness of the criteria selected and their cross-referencing with patient mobility and care pathways.
- On a single map, cross-reference the different criteria definitively selected in order to define categories of pathways representative of the pathways of the patients belonging to the cohort studied

## **2° Validation method: the example of the senology department of a CLCC in France**

### **First step: Identify how pathway integration is expressed for professionals and patients empirical materials**

- Steering committee of the project at the level of an institution (internal and external stakeholders) recording of the five sessions and transcription of participants' comments,
- Analysis of documents relating to the management of a specific pathology in an institution (internal and external documents)
- Semi-structured interviews with department managers, physicians and patients, recording, transcription and coding,

### **Second step: Observe the criteria for identifying integrated care pathways.**

**Table 2. Criteria for identifying care pathways in their territories (Mériade & Rochette, 2020)**

Coding Category	Coding Sub-Category	Care pathway integration criteria
General approach of the patient care pathway	Clinical dimension (pathology)	Type of pathology
	Social dimension (patient)	Patient location
Geographical approach of the pathway	Medical dimension	Type of treatment
	Geographic dimension	Number of patient mobility
Relational approach of the pathway	Relations with health professionals	Location of health care professionals
	Patient relations	Patient choices

**Third step: Represent on a geographic map the elements relative to the different criteria observed (use of the geographic mapping software Chronomap®)**

**1. Example of maps produced from the criteria revealed by the relational approach**

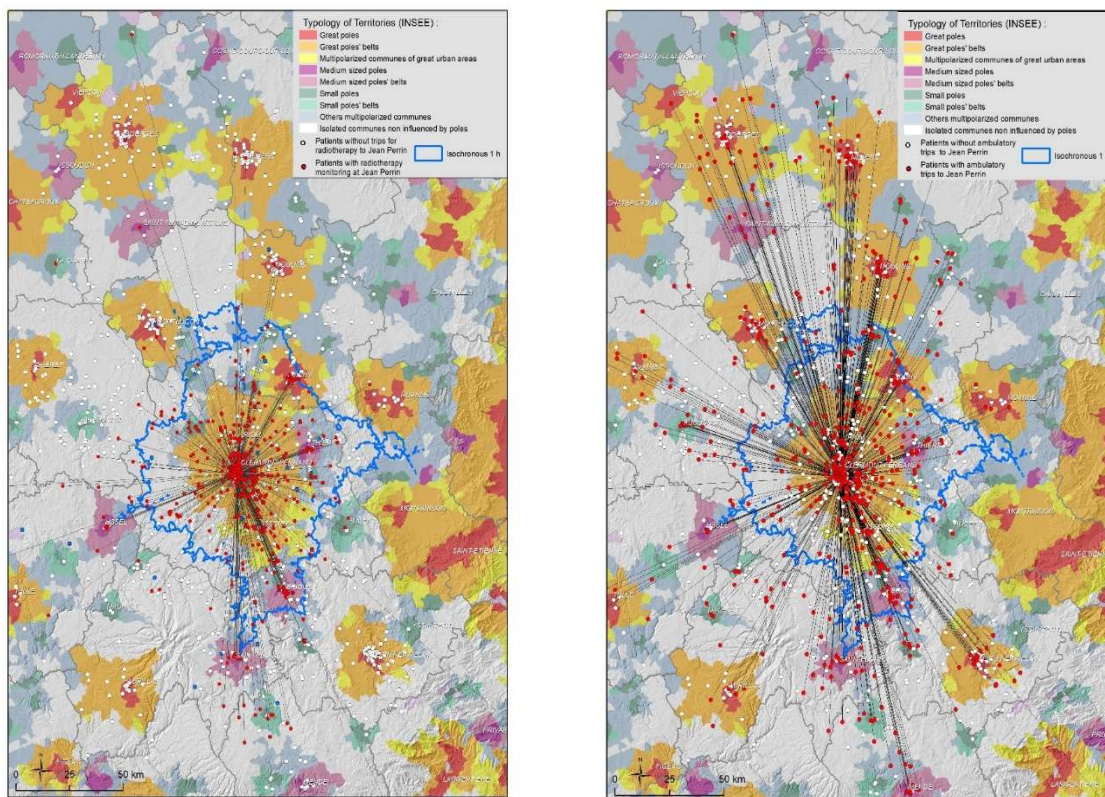
**Figure 1. Mapping mobility as a function of treatment (Mériade & Rochette, 2020)**

Map 1.

Map 2.

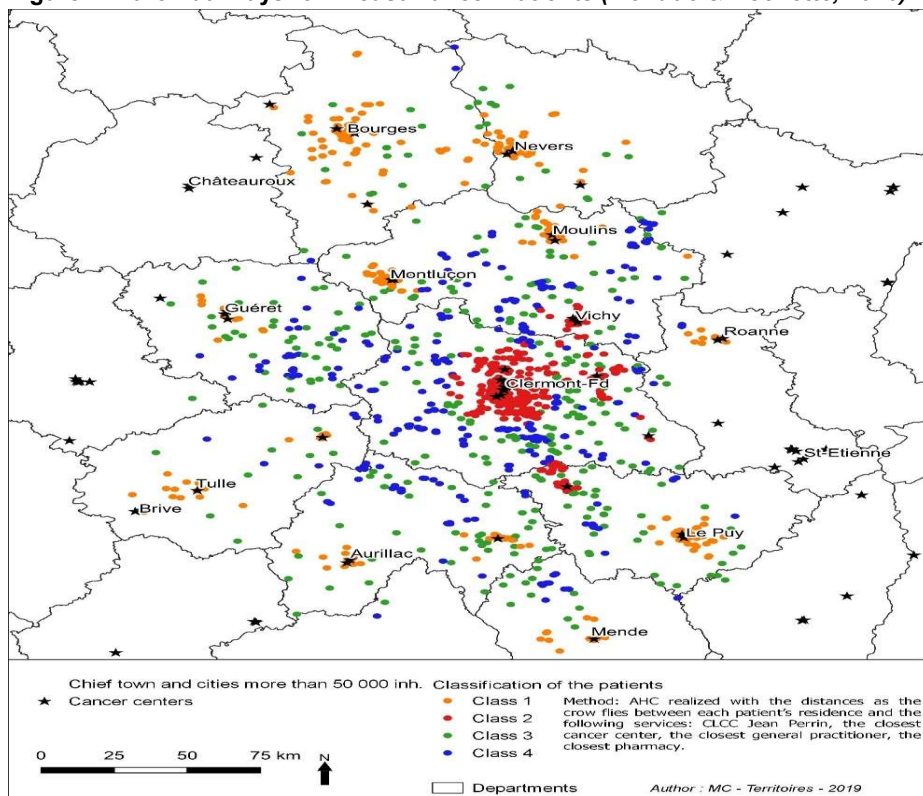
Flow of patients treated in radiotherapy

Flow of patients treated as outpatients



**2. Map of patient care pathways integrating all the selected criteria**

**Figure 2. Care Pathways for Breast Cancer Patients (Mériade & Rochette, 2020)**



## Discussion

The method for integrating cancer care pathways that we propose here allows us to identify the role of the combination of the relational and mapping approach in the development of integrated care. This method offers opportunities to triangulate the relational, medical and spatial perspectives of care pathways, allowing an objective assessment of the issues but also the difficulties that these pathways suggest. This method should help to better define the concept of integrated care pathways (ICPs). Indeed, care pathways integrating a set of actors on a given territory require the mobilization of diversified relational and spatial elements. The identification of four major types of care pathways that we have carried out using this method paves the way for a more precise identification of care pathways outside institutions and their integration at the level of their territory (Nuemi et al., 2013; Nuti et al., 2016).

This method will have to be applied in other health care contexts, in particular to test its replicability. It can be perfected by mobilizing research materials to study the perceptions of non-hospital health professionals (general practitioners, pharmacists, physiotherapists, private nurses) and social workers (social workers, psychologists, dieticians, etc.) in order to develop our knowledge of the relationships they consider necessary for the integration of care pathways.

## Conclusion

The method is a mix method combining qualitative analysis of the content of three types of materials (documents, discourses of participants of steering committees of an hospital, semi-structured interviews of health professionals) and geographical analyses based on quantitative data. It permit to understand that efficient ICPs must be the result of an integrating relational and geographical approach of the clinical pathway for the patient benefit. This method is already being and may be replicated in further studies on the care integration. These new mobilizations will make it possible to perfect or adapt this method to various hospital contexts in order to remove some of its limitations, particularly with regard to the exhaustiveness of the research materials used and some of its results.

**Declaration of Competing Interest:** The authors of this article declare that they have no conflict of interests.

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