Towards a system of concepts in General Practice / Family Medicine

Part 1 Towards a specific indexation system in GP/FM
Document prepared for the first meeting of the members of the board of the thesis of Marc Jamouille, Family doctor
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This document is a preliminary draft
Various paragraphs have to be developed further
This part expected to be ready end of 2014
Some text are still in French. Translation ongoing

Front page
“CODES”, Pen drawing by Jose Tavares, Lisboa, 2014
EXECUTIVE SUMMARY
Towards a system of concept on general practice / family medicine
Part 1 Towards a specific indexation system in GP/FM

Status of this document: preliminary draft, not for diffusion

Intended audience: Members of the board of the PhD thesis of Marc Jamoulle, department of general practice, Liege University and experts in the field contacted by the author

Background: Thousands of general practitioners/family doctors are gathering each year in local, national or international congresses. They are exchanging thoughts, researches and methods through thousands of communications in various formats; posters, oral communications, workshops and so on. Although this huge collection of bottom-up knowledge is sometimes available through Internet sites, there is no specific indexation system allowing a real knowledge management of the exposed works. Consequently the information could not be reached, which don’t favor the exchange between researchers. The absence of a common indexation system is also a problem to organize the congresses and the participants have always difficulties to find communications relevant of their interest.

The technology of semantic web and Linked data have emerged as a future solution to exchange data distributed in many languages between so many providers, the family physicians, spread around the globe. The considerable development of medical ontologies demonstrates the vitality of this field of discovery.

Aim of the thesis: To find the best way to identify the main concepts effectively used by practicing GPs by the development of a system of classification embedded in the International classification of Primary Care aiming at retrieval of clinical and non-clinical issues addressed by the authors in their communications

To propose a mapped terminology to this classification systems, in other words an ontology of GP/FM, to participle to a linked data based automatic or semi-automatic indexation of knowledge in GP/FM and its implementation in the realm of the semantic web.

Content of the part 1: the first steps towards a global classification system in GP/FM are related as well as previous experiences and difficulties with usual coding systems.

The new information technology tools for information management are concisely described which permit the understanding of their importance in future research networks of knowledge in G/FM

A comparison of the coding process and results of 6 congress of GP/FM in several countries and 4 languages has been performed to examine the internal reproducibility of the classifying system proposed.

Next steps of the thesis are discussed of which first of them would be the constitution of an International research group.

Budget:
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TOWARDS A SYSTEM OF CONCEPT IN GP/FM / RESEARCH QUESTIONS

GP field is global,
- includes not only bio-social-psycho-social but also ethical, moral, legal aspects
- Share a common ground with specialized doctors but also a specific knowledge

Most efforts to formalize and represent medical knowledge to date confined to specialized medicine
- Gave rise to ontologies such as MeSH

GP/FM has developed clinical classifications like ICPC for use in clinical settings and epidemiology of primary care
- Similar efforts to formalize, represent GM /FM knowledge has been lacking
- The following considerations are at the core of the proposed work
  - It is in the interest of family medicine to develop a specific tool for indexing their communications at their congress. The techniques used to date, including the authors key words or the MeSH are not sufficiently adapted to the specificities of family medicine.
  - An existing classification, ICPC, International Classification of Primary Care, could be satisfactory to index the clinical items addressed in these communications.
  - It is necessary to develop a complementary tool to ICPC, to index the non-clinical topics addressed by physicians in their communications. This tool is called 3CGP.
  - A comprehensive tool that combines ICPC and 3CGP can organize a congress of family medicine and allows participants to the congress to choose their program and makes it easier to develop networks of research on these topics.
  - The use of semantic editing tools on the Internet allows the networking of different sites of publications of abstracts by various national and international organizations of family medicine, regardless of language.

Thus the aim of this thesis is to find the best way to identify the main concepts effectively used by practicing GPs, propose a mapped terminology to those concepts aiming to participle to an automatic or semi-automatic indexation of knowledge in GP/FM and its implementation in the realm of the semantic web.

The key research questions that we address are:
- Are existing ontologies like MesH and ICPC adequate to encode and represent the vast and diverse GP /FM knowledge?
- What are the GP/FM concepts and terms (both medical and non-medical) that are not to be found in MeSH, in ICPC?
- Can an ontology for GP/FM be devised based on these terms and concepts and possibly integrating MeSH and other knowledge sources?
- Can the detection of these medicals and non-medical terms from GP/FM be automated?
- Can the classification of these medicals and non-medical terms into concepts from GP/FM be implemented with semantic web technologies?

The various steps of the work will be
- Part 1 : to develop the classification 3CGP by using empirical and purposive sampling methods together with collaboration with experts in the domain (Delphi)
- Part 2 : to develop a mapped web based GP/FM ontology by reuse of existing terminologies, by natural language processing techniques and careful verifications
- Part 3 : to show the operationallity of such an indexing system and its implementation to admit the production of GPs in the world of linked data
1. Introduction

- General practice / family medicine knowledge is growing.
- Internet based changes. Social networking changes. Information is up to Family medicine what technology is to specialized medicine (to be developed further)

![Medical knowledge layers](source Michel Roland)

1.1. Accumulated knowledge in GP/FM is not shared effectively or disappears

Specific knowledge in GP/FM, PBM (Patient Based) or EBM (Evidence based medicine), can be found in three main sources: the communications of GPs during the congresses, the published papers/gray literature and the books of Family medicine

1.1.1. Textbooks of Family Medicine

The profession of family doctor has a very elaborated definition { Wonca 2011} but its exact content is left to the discretion of each medical school settings. If we review some Textbooks of Family Medicine, we see that the tables of contents are really diverse.

Analysis of the table of contents of some of the most important of them is appealing in this regard. Whatever the arrangement of the chapters, one can see a general division into three main themes; specific process in family medicine, main areas of knowledge and thirdly mastering the specific clinical approaches as the symptoms and diseases usually seen by general practitioners { McWhinney 1997, Taylor 2003, Druais 2009, Kochen 2012, Murtagh 2011, Casado 2012} for quoting only some.

One of those book {Gusso 2012} is more structured since it takes over the grid of the chapters of ICPC as a table of contents of the conditions and symptoms in addition to addressing the procedures and specific knowledge areas.

But this is a view from above (Top-bottom) that does not prejudge the real interests of family physicians in activity hic et nunc.
1.1.2. Publications of the GPS during congresses

The work of family physicians shared in congresses are often of high quality. They are most often subject to assessment process before being accepted and represent a significant investment of energy and time. Each GP/FM congress organization publishes the abstracts of their participating members. The summaries of the conference participants are not always available. Despite the fact that a lot of work is available in medical journals, more than half of the researches done by GPS and presented in congress will not more be available easily. Often more than 50% of them are not subject to publication {55% VanRoyen 2010, 48% Hummers-Pradier 2007, 65% Post 2013}. Abstracts which are not reaching publication are in an analog range in specialized congress {65% Ylmaz 2013, 63% Dahllöf 2008, 65% Nasir 2013}

Dr. Carl Steylaert has initiated a remarkable effort by editing the abstracts of Wonca Europe conferences since 1995 to date on the Wonca Europe website. There is no indexing system except author’s keywords.

<table>
<thead>
<tr>
<th>Congress</th>
<th>URL</th>
<th>Abstracts available</th>
</tr>
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</tr>
<tr>
<td>Wonca Europe</td>
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<tr>
<td>Wonca rural 2014</td>
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<td>yes</td>
</tr>
</tbody>
</table>

Table 1 Availability of abstracts of some GP/FM congresses with corresponding Congresses URLs

There have been at least two isolated attempts of organizing conference around ICPC (Wonca Europe 2007 conference and CNGE Conference Lille 2014) (fig 11 and 25).

Thus, considerable efforts of family physicians often disappear. It is regrettable that these efforts are not more valued. With the development of Internet and the social networking, interest groups could gather which share the same concerns. One might think it would be useful to keep the works done, and that conservation would facilitate exchanges and the feeling of belonging to a productive community. A common and consistent indexing system could help to strengthen ties between the various actors of GP/FM. This could represent bottom-up views of the content of GP/FM. MeSH are usually recommended for the indexing of abstracts. We will examine this issue more deeply.
2. The worlds of reference in medicine (to be developed further)

- World of reference of GP/FM are quite different from the world of National Library of Medicine, of IHTSDO SNOMED-CT terminology of from ICD related nomenclatures.
- Each corporate organization has its own world of reference, often unconsciously expressed and diffused in a subliminal way

- Related publication annexed: Jamoulle M, Vander Stichele RH, Cardillo E, Roumier J, Warnier M. Mapping French terms in a Belgian guideline on heart failure to international classifications and nomenclatures: the devil is in the detail. Inform Prim Care. 2014;(accepted) http://hdl.handle.net/2268/171599

3. Ethical foundation of the analysis (to be developed further)

- The world of reference of the family doctor is a conscious world based on the human being, his/her environment and the patient doctor relationship developed along the time line.
- About the need to take sides and the non-neutrality of classifications and standards
- About the patient-centered medicine and conflicts of interest
- The concept of quaternary prevention becomes central to the methodological analysis in GP/FM

4. Need for a mixed system to index clinical and non-clinical items

4.1. General practice indexation systems
Management of specific knowledge to the business of general practitioner is a difficult question. The fields of general medicine, family medicine is extremely broad with unclear boundaries.

The clinics or all elements related to the clinical contact with the patient, is central to the practice of family medicine but conditions of the realization of the work represent a different content of information with respect to the clinic. In a first time we have (maybe wrongly) used the term meta-information to describe all non-clinical information related to the core business of a GP. That’s why the reader will find in the text the prefix meta. This name has been replaced, as we shall develop it further, by the acronym 3CGP, standing for core content classification of General Practice and aiming at defining the non-clinical elements of the business of a GP which are often heavily exchanged upon in G/P conferences.

The articulation of the GP/FM discipline to community health is expanding its scope from individual to the community. A nice way to represent such a large and complex fields has been described by Monique Van Dormael, a Belgian medical sociologist {Van Dormael 2001} . By crossing the dimensions of doing and being with that of the individual and the community, it shows both the extent and complexity of the working field.

Figure 3 Four fields of knowledge in GP/FM (Van Dormael 2001)

Although the general training of doctors is usually confined within the how and the individual, i.e. biology and biosciences, there is a thorough consideration of the human being and psychological and psychiatric training of student has been expanding in recent 30 years. But epidemiology, meeting of to do and the collective aspects is still the poor field of basic training. For saying nothing of medical anthropology which is hardly teach. However, there are strong trends and the teaching type Problem based learning {Bestetti 2014} is a leader in this field while medical anthropology has lost recently one of its preeminent researcher [Helman 1981]
Yet every family doctor knows intuitively or due to personal training that he works on these four fields, although the available economic resources are mostly concentrated on the first one, biology and biosciences approaches. And each of those theme are discussed when doctors are gathering. A health information system dedicated to describe the fields of interest in GP/FM has to take on board this extensive view.

4.2. Medical subject heading

4.2.1. MeSH; basic and specificities (to be developed further)
Basic description of the 25,000 MESH and their difficult use in GP/FM indexing
Including the current move to automatic natural language processing (NLP) based indexation
Including discussion about discrepancies between MeSH and GP/FM like in the following concepts: shared decision making, quaternary prevention, overmedicalisation, overscreening, déprescription, overtreatment etc (ongoing work)

4.2.2. Pre-test with MeSH on metaclinical classification. 2007
Aim: pre-test, to compare content of Medline abstracts related to GP/FM with the concepts of the metaclinical classification version 0.2
Methods: Choice of Medline abstracts: one descriptor with several limits to get a little number of abstracts to analyse

"family practice" [MeSH Terms]
Limits: only items with links to full text, only items with abstracts,
English, published in the last 3 years, Humans, Core clinical journals, Review

Each content of abstract is mapped to the metaclinical classification and correspondences are searched. Codes are numeric or alphanumeric.

Results: 39 abstracts from Medline (full data available on http://docpatient.net/class/meta.html )

Figure 4 Example of a Medline abstract to be coded with metaclinical classification (2007)
Example (fig 4); “Treatment and management of chronic conditions” is coded here by QD31 Case management (this term being replaced further by Health issue management in 3CGP). “Adolescence” is coded by QC13 Category of patient adolescent.

Table 2 Coding of 39 Medline abstracts

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### Analysis

The careful reading of those abstracts show a lot of description of diseases or conditions and few specific activities related to family practice. The number of “case management” is wondering 29/39. The term “case management” (replaced further by Health issue management in 3CGP) describes abstracts which are dealing with usual description of disease, here in the context of GP/FM. The descriptors “review” and “family practice” quote 10 abstracts which are not dealing with this kind of disease description. This could indicate that the complexity of themes encountered in GP/FM are poorly identified.

It has to be said that the coding process is addressing the research question of the author or the main question described in the abstract and is not considering the results expressed. Usually the title, the introduction and the methods are enough to get the relevant code, at least if the author has understood the difference between methods and results.

This pre-test raises some suggestions for 3CGP next version:

- **outcome of care** to be considered in category 2.2 (from second Medline abstract)
- **practice management** is quoted twice in metaclinical → skip
- Suggestion to shift from **case management** to **health issue management** in ver 0.3
- Patient’s Categories: **ethnic subgroup** → to be added in metaclinical ver 0.3
- A new pre-test has to be performed with different more complex Medline descriptors.

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4.3. FAMLI 1980 – 1992

The 70s saw the birth of groups and organizations that would determine the future of general practice. The European research workgroup (EGPRW) and the European Academy of Teachers in GP/FM (EURACT) take flight in this decade. Wonca is founded in 1972. Leuwenhorst Group {Leeuwenhorst 1980} would be decisive in this adventure. General practice / family doctor claims its place as a separate discipline. “General practice is a scientific discipline within medicine and has a specific place in a comprehensive health care system” {EGPRW 1982} The field of classifications is also very well studied {Bentsen 1976, Braun 1979} and 1976 saw the first publication of the International classification of health problems in primary care. {JRCGP 1976}

At the same time a significant movement appears in the treatment of the specific literature in GP/FM. FAMLI {Fitzgerald1980}, an index for indexing the literature specific to family medicine system, is edited in Canada. As pointed by D. Fitzgerald: « Family physicians cannot always rely entirely on Index Medicus and Medline to provide the information they require. A number of family medicine journals, including Canadian Family Physician, are not indexed by these major sources.” {Fitzgerald1980a}

This statement is emphasized by Lynn Dunikowski, Director of Library Services of the College of Family Physicians of Canada and second editor of FAMLI who notes: "Because MeSH originally was intended for use with clinical documents, the problem has always been how to adapt it to cover the range of a family physician’s non-clinical activities"(personal communication Aug 2014)

E. Challis, Chairman of the Teachers of Family Medicine, College of Family Physicians of Canada underlines the role of Wonca; “Dr. Ian R. McWhinney, the chairman of the WONCA Bibliography Committee who was also instrumental in the development of this informative reference”.{Challis1981} D. Fitzgerald gives more precision “Each annual cumulation of FAMLI includes a five-year cumulative list of books written by or for family physicians; this is a comprehensive, rather than a recommended, listing”. Moreover, the FAMLI index is edited under the name of Wonca {WONCA 1980} which shows the importance given to this area by the organization of family doctors at this moment.

The specific GP/FM literature is booming and lists of publications are regularly made available. {Dunikowski1986, Dunikowski1984, Weston1992a, Verhoeven1995}

In September 1992 is edited the last issue of the serie FAMLI {Dunikowsky 1992} in which L. Dunikowsky publishes a set of keywords specific to GP/FM under the title "KeyWords in Family Medicine (A Thesaurus)".

Precisions she brings on the approach deserves mention because she already fully notes some discrepancies between the MeSH and the world of family medicine:

> “Some terms commonly used in the field of family medicine do not appear in Medical Subject Headings (MeSH). The thesaurus has been designed to act as a bridge between these terms and the MeSH headings used in FAMLI. Family medicine terms appear in the thesaurus with the nearest equivalent MeSH term (or terms) used in FAMLI printed in bold-face type. The thesaurus also provides brief explanations of selected MeSH terms, to help in choosing the term that most closely corresponds to a selected topic. Some
MeSH terms are listed together with closely related MeSH terms, to suggest ways of broadening a search.” [Dunikowsky1992]

The collection of terms quoted in FAMLI will be studied carefully. We will examine the congruence with the clinical and meta-clinical classification developed to index the abstract of family physicians. (to be developed further)

4.4. The Wonca dictionary

Source for the world of reference of general practice and Family medicine. (To be developed further)

“The main purpose of this dictionary is to act as a reference for GPs/FPs throughout the world, so that they can communicate meaningfully about general/family practice now and in the near future. The Dictionary’s ambition is to cover general terms regarding the organization and the work in general/family practice, research, classification, and epidemiology.” [Bentzen 2003]

Publications annexed:

4.5. ICPC genesis and description (to be developed further)

If one want to manage a clinical information system in family medicine, we have a tool already used extensively in clinical work in GP/FM for almost 25 years {Lambe & Wood 1987} which has become a de facto standard. Internationally known by its acronym, ICPC is available in nearly 30 languages and available also in French as the CISP (Classification Internationale des Soins Primaires) {Jamoulle 2000}. Treatment of clinical information i.e. reasons for encounter, symptoms and diagnoses and of clinical procedures they perform is doable using ICPC.

ICPC genesis and description (to be developed further)

ICPC international de facto standard for clinical data in GP/FM

ICPC terminology availability: The NI Thesaurus / ICPC Plus

Publications annexed:
4.6. Core Content Classification in General Practice (3CGP)

4.6.1. The Q-codes. Lamberts 1987

At the Department of General Practice, University of Amsterdam, in the 80’s, the burden of reading medical journals specific to general practice was devoted to teachers and assistants in the department. Articles relevant to the profession were indexed by ICPC and non-clinical subjects were by Q-Codes. Using the letter Q, available in ICPC, the late Professor Henk Lamberts had opened this new category. This was before the Internet, even before Medline becomes available on CD Rom. To my knowledge this list of Q-Codes has never been published but a copy taken on the tables of the library of the department in 1987 has been preserved. We see in Figure 5 the list of Q-Codes proposed by Professor Lamberts, also linchpin of development of ICPC in the Wonca International Classification Committee, the Wonca working group in classification field.

![Figure 5 Q-CODES Amsterdam (+/- 1987)](image)

Dep of gen practice. Prof Lamberts

From this list proposed by Professor Lamberts, we have conserved the seminal idea and only 3 domains: Category of patient, Teaching and Research(fig 6). In fact Teaching has been extended to Training and Teaching and more generally to Knowledge management, using the letter T added to Q to build the acronym QT. Development has been added to Research, using the letter R added to Q to build the acronym QR standing for the domain QR Research & Development. Out of the Q-Codes, Q0, Q1, Q3 for Care Process & part of Support task was already included in the Process codes of ICPC.

We have chosen to develop progressively the other categories: QS for Structure of practice, QE for Ethical questions, QH for Hazard, i.e. environmental issues, QD for issues related to the activities of the doctor, QP for the patient’s views and QO for Other has been chosen as main domains. The QO Other was initially chosen as a rag bag but it prove to be interesting also to determine some lack of or imprecise information in the abstracts(fig 37)
4.6.2. **From Q-codes to 3CGP**

In 2007, the annual conference of Wonca Europe is held in Paris. French colleagues of the CNGE allowed me to have access to abstracts of the conference before it takes place.

The reading of 998 abstracts has permitted to empirically identify major themes presented by participants from many countries and cultures. The clinical one have been easily cached up by ICPC. For the non-clinical items a new tool became necessary. The structure of what might be called an authority list for non-clinical items took shape slowly. An authority list is a controlled list of terms, names, phrases or similar entries relative to a specific domain or scope (Wason ND) As the tool should be combined with the ICPC classification, a hierarchical structure has been chosen. Taking the Q-Codes of Lamberts as a basis, gradually the 8 areas plus a rag bag appeared to be necessary and sufficient to introduce the major concepts encountered in the texts analyzed.

This empirical method of choice based on the experience of the researcher is described in the Sage dictionary of social research method as 'Purposive sampling' (Jupp 206);

> "A form of non-probability sampling in which decisions concerning the individuals to be included in the sample are taken by the researcher, based upon a variety of criteria which may include specialist knowledge of the research issue, or capacity and willingness to participate in the research. Some types of research design necessitate researchers taking a decision about the individual participants who would be most likely to contribute appropriate data, both in terms of relevance and depth."

In our case the "individual to be included" is the concept identified as significant by the researcher specialized in the discipline he observes.

![Figure 6 The 8 knowledge domains in GP/FM and one rag-bag (QO Other)](image)

Information about the themes identified can be considered as meta-information. The name chosen for the tool storage was first “meta-classification”. This use of the meta prefix was confusing. The need to show we were at the heart of the business of GP/FM has given rise to a change in naming and meta-classification becomes the **Core Content Classification in General Practice / Family Medicine** whose acronym is **3CGP**.
3CGP has a hierarchical structure. The 8 domains denoted each by their first letter are open into categories, open itself into subcategories and if necessary in basic headings. It does not list all the areas of interest of family doctors but those encountered by indexing till now. They can be grouped conceptually according to the logic of the semantic triangle of Ogden and Richard (Richard and Ogden 1923 & 1989)

Ogden & Richards have introduced the words Thought of Reference to connect Symbol and Referent in their famous triangle. In the fig 8, QT42 is the symbol of Vocational Training which is presented not only as a term but as a thought of reference referring to a content such as Vocational Training, Apprenticeship, Trainee and their definitions, exclusion, inclusion criteria and so on. We could also give the example of P4, symbolizing Quaternary prevention, referring to a range of concept like overmedicalization, overtreatment, overscreening, deprescription etc. (fig 2)

It is observed that this procedure about the knowledge exhibited by physicians in the field is a bottom-up approach as opposed to the knowledge accumulated in the textbooks we have mentioned above which can be seen as a top-bottom knowledge. In our case, the experts are the general practitioners. They talk about their concerns. In textbooks, experts are interpreters of what they think is reality. Both methods have their value and are probably complementary but to get an intimate knowledge of family medicine, it is interesting to collate what is expressed in the field.

« What are they talking about? »

This is the question that is usually asked by readers of communications. Thus the project goes much beyond keywords or descriptors. The project is to identify the categories of concepts in GP/FM. When themes and major categories are emerging, one must tackle the thorny issue of subcategories and to give them a name. There is the dilemma of any classifier, namely the difficult combination of inclusivity and exclusivity and to find the most adequate term to give a name to the domain or the category.. A section must be exhaustive and contain all the topics concerned with the exclusion of those who do not apply. That's the unresolvable question whether you put the watermelon with fruits or vegetables. It is
easy to separate the nails & screws but where does one may put screws that can be nailed? We have chosen to follow a method similar to the development of ICPC. A classification of usual theme, acting as container for subset. This is well shown in the fig 2. The concept quaternary prevention covers a set of important issues, heavily discussed in congresses as overmedicalisation, overscreening, overtreatment, déprescription etc. In fig 8 the concept vocational training encompass, as stated in the Wonca dictionary, Vocational training, apprenticeship, Trainee etc.

Anyway we tried to resolve these issues with the greatest possible precision, without, in 2007, to have time to look up the definitions, inclusions and exclusions that would probably refine the tool and report use the most fluid insure also the link with huge nomenclature like MeSH. This task is at the forefront of work to be undertaken. Computer techniques have recently made great strides, we try to incorporate this approach to knowledge in the movement of distributed data and the Semantic Web.

Figure 8 Conceptualization of the themes of communications (here Vocational training) following the semantic triangle

But the first step is to continue the slow discovery of the universe of GP/FM.

After Wonca 2007 and a 6 years latency period, we have had the chance to assist to the 2013 Portuguese congress of family medicine in Covilhã, then to analyze the French CNGE 2013 congress in Clermont, followed by the SwissFamilyDocs congress, Zurich, 2014, the Belgian congress of GP/FM in Brussels 2014 and last one the LILLE CNGE Congress 2014.

We will present here the methods and the results of those analyzes of nearly 1400 communications of our colleagues.

5. Evolution of the method
The methods used have been influenced by the time elapsed since the beginning of the research. While ICPC was born before the blow up of laptop and Internet era, it has proven to be very well adaptable to electronic data base and researchers have worked with Dbase, Excel, Access and SQL for its development and related studies.
So the first step in developing 3CGP have been also those traditional methods. Computer content assisted analysis software is a tool used in qualitative research but is also quite performant to identify knowledge in GPS texts. Since this year the analysis of the abstracts have been done with the software Atlas.ti.

In the meantime the huge influence of semantic web technology was growing and ontologies are taking precedence on terminology for managing knowledge in the new era of distributed data. This particular field has been explored in depth and is exposed below. Participation in MERITERM group allowed to enter this area (www.meriterm.org)

5.1. Spreadsheet and database data on Internet

In the first time the development was marked by the use of information management method used in the 80’- 90’. We used a spreadsheet (Excel) and for abstracts Wonca 2007 a SQL database published online with the help computer scientist, thanks to a small grant received from the Wonca International Classification Committee.

At the annual conference of GPs and Portuguese family in Covilha, Portugal in 2013, it seemed interesting to go back to the research and to analyze the abstracts of this meeting. Then, the French National College of Teachers in General Practice (CNGE) hosts an annual conference that brings together GPs teachers and researchers in Lille this year 2014. Professor Berkhout, chairman of the scientific committee, has suggested to use the 3CGP/ICPC indexing system to index the abstracts submitted to the conference CNGE 2014. The purpose is twofold. First, show the focus of the meeting to all abstracts presented. Second, by indexing before the review process, one could examine the contents of abstracts rejected compared to accepted. This comparison would inform the conference organizers and participants themselves.

It becomes therefore a process of operational research in quality of communications. This approach would complement the usual evaluation methods of quality of summaries. To be aware of the interests of members of CNGE and test the operational capability of ICPC and 3CGP, it was proposed by Prof. Laurent Letrilliard, Lyon, to code summaries of the previous congress held in CNGE Clermont Ferrand in 2013.

5.2. 2014 Use of a Computer-assisted qualitative data analysis software

The analysis of the 205 abstracts of Clermont 2013 was conducted using a Computer-assisted qualitative data analysis software (CAQDAS). Indeed our work could be assimilated to a qualitative research and "content analysis as the use of replicable and valid method for making specific inferences from text to other states or properties of its source" {Krippendorff 1969 quoted by Mairing 2000}

We have a large set of previously gathered codes as ICPC contains just a little bit less than 700 codes, and 3CGP version 0.2 show 153 codes. Coding means “to bring similar data according to themes, concepts, etc.. Generate code from the data level (inductively) or according to existing ideas (deductively) as necessary” {Silver & Lewins 2014 }. This implies we are using more inductive capabilities (linking strings of text to existing codes) than deductive ones (looking for missing concepts in texts and attributing new code).
After a review of the available products, and due to its user-friendly interface and its low cost for academic purpose the software ATLAS.ti has been chosen.

The work was completed by the analysis of 45 abstracts of SwissFamilyDocs 2014 and 37 abstracts of the Belgian research congress in general practice in 2014.

A reporting structure has been developed to analyze abstracts of CNGE Lille in 2014 just after the submission process and blinded towards the reviewers. Computer-assisted qualitative data analysis software will be used to code the Lille abstracts as soon as they will be available.

One will find on the following pages the analysis of these six Congress followed by a comparison between them and a discussion of the strengths and limitations of the method.

The ICPC classification is available on the website www.ph3c.org in many languages.

The classification 3CGP version 0.2 is available on my personal website website http://docpatient.net/mj/wonca2007/3CGPFMdeskcopy.pdf. The Version 0.3.1 of 3CGP, current result of the work described above is available in annex.

5.3. Exploring semantic web

New tools in information management

Since the seminal proposal of Tim Berners Lee to turn the Internet of documents into an Internet of data {Berners-Lee 2001}, giant steps have been made by numerous researchers. At the same time the power of the laptops has grown exponentially. Gradually the health knowledge management field becomes a multidisciplinary case involving both domain specialists, terminologists, taxonomists, computer scientists and computational linguists.


Semantic web and linked data

The technology of semantic web and Linked data have emerged as a future solution to exchange data distributed between so many providers, the family physicians, spread around the globe. The considerable development of medical ontologies demonstrates the vitality of this field of discovery.

It became increasingly clear that advances in information technology, or ontologies, new languages such RDF {Allemang 2008} or SPARQL {Salvadores 2012}, transforming the Internet
into a huge distributed data base, associated with Natural Language processing techniques { Ittoo 2013} would allow strides in information management in general and, it is hoped, in information management of family medicine. The realization of the prediction that information is up to general practice what technology is up to specialized medicine { Van Dormael 2001} may finally be within reach.

This area will be developed later, but the interested reader can find more information on the website of the group is MERITERM www.meriterm.org and will find a training in ontologies (in French) at http://docpatient.net/onto/formol.html

**Ontology, what’s for a name ?**

Understanding of computer scientist and computational linguist world of reference is not that easy. When dealing with the term “ontology”, mainly all the fundamental papers in the field are referring to the seminal paper of Gruber in which he gives the following definition “Ontology is a formal specification of a conceptualization” {Gruber 1993} This not enlightening for a practicing doctor. Here, the term Ontology, although coming from the field of philosophy is not referring to the study of being or existence. The term ontology is used in the world of Artificial Intelligence and refers to an huge Internet based collection of interlinked terms describing the whole content of a domain in a dedicated machine readable format.

Indeed the second term to understand is the term formal. Formal could have many perceived meanings and one thinks directly to the form in the sense of shape, to formal in its legal sense as rules or to some kind of standard with specific format. In fact computer scientists are using formal in its mathematical sense i.e. a set of symbols understandable by machines. The problem is that the collection of term has to be read and understood by human beings also. Ontologies are not for human use but for machine use in a sequence; human to machine to machine to human. So one can say that ontologies are an arrangement of written human knowledge ready to be used by machines.

**What about conceptualisation?**

We remain with two terms to define ; specification and conceptualisation. Conceptualisation has already be addressed in this text in the above triangle of Ogben & Richard. Historically, the concepts, defined as mental representations or written form of an idea, are usually categorised and defined in written dictionary in an onomasiological way (list of words like an index) or semasiological way (list of senses of words like a thesaurus).

Ontologies are the machine based semasiological expression of all the possible occurrences of meanings and links of a word in a defined domain (i.e. all terms of sailing ships or all terms related to EKG) and this whatsoever the language used by humans. This possible multilingualism is due to the fact that the word representing the concept is related not to its lexical representation but to the concept it represents which could be expressed in various linguistic format. Usually the ontologies are in English working language but the specifications allows this miracle of interoperability of language. See for further insight the website www.babelnet.org
You say specification?

This introduces the last term of the definition proposed by Gruber “Ontology as a formal specification of a conceptualization”. Specification refers to all the information technology tools patiently elaborated by hundreds of computer scientists and computational linguists since the 2000. First of all has been the URI (Unique Resource Identifier), proposed by Tim Berners Lee (Berners Lee 2002). We know all the URL which is now for us the Internet address of a specific document. The URI is the specific address of a data, i.e. by example that you exist as a person (first data) and that your weight is 80kg (second data linked to the first). The second most important proposal is RDF (Resource Description Framework) {W3C 1999} and its relatives {W3C 2004} We understand very well HTML, this language which allows us to link a document to another. RDF is the name of that language which allows the link of a data with another data. There exist much more specifications and new languages, all derived from the work in Artificial intelligence but with those two you can understand the phenomenon of Linked data {Bizer 2009}

Linked data and Dereferenced data

Examining the cloud of linked data on linkeddata.org you can see that billions of data are now interlinked by RDF and submitted to queries by dedicated robots. Whatsoever the activity, business, cars selling, books selling, civil affairs management or health care they are a lot of sites already managing linked data. The difference with the Internet of document is striking. If you question the linked data website of the BBC asking information about an artist will not receive a link to a prepared page, but rather it will be created instantly to match the query. The screen you see is prepared at the very second. this is achieved by copying data from the relevant cloud. The computer scientist don’t say copied, the use the strange term dereferencing data.

This allows the retrieval of all the knowledge needed on a subject while the data are not gathered in a database but dereferenced at a glance. The data is reachable through the Internet. Internet is now the database and this is the explanation of the word “distributed data”.

The future of health care information systems

The next EHR

Now imagine that the data of your patients are not sent by mail to your electronic medical record anymore but that, with the due authorizations, you are allowed to dereference the data you need in all the hospitals or primary care settings which store information about your patient in the correct format. You will reconstitute in seconds and only for the time needed, the current record of your patient. Health-Data becomes Linked-Data {Dowling 2013}. As stated by Pierce and all “Semantic Web
technologies offer the potential to revolutionize management of health care data by increasing interoperability and reusability while reducing the need for redundant data collection and storage”{Pierce 2014}. This is the future of health care information system and of electronic health record (HER). This is behind our door {Fernández-Breis 2013} That’s why scientists are working so hard to develop medical ontologies like Open Biomedical Ontologies consortium (OBO) {Smith 2007}, National Center for Biomedical Ontology {Musen 2011} or Linking Open Drug Data (LODD) for pharmaceutical research {Samwald 2011}

**Interlinked publications**

In the same way, the abstracts presented by doctors in congress, or the gray literature could be tagged by semantic web specifications, stay in their place into the local database of congress organizers or local organizations and a semantic web robot could traverse these sites, dereferencing the asked information through a common indexation system. One hopes to apply such techniques to indexation system for communications of family doctors, interlink them through the use of dedicated ontology in a semantic web GP/FM universe.

**Related publications annexed :**


6. **Comparative study of 6 congresses in GP/FM**

6.1. **Wonca Europe congres 2007**

6.1.1. **Introduction**

As stated above, French colleagues gave me access to abstracts before the congress and I have been able to code all of them (998) and to manage an online database with a query module online before the congress.

It’s worth to mention that the scientific committee lead by Bernard Gay has already chosen ICPC as an indexation tool for the management of the abstracts. One can see in the following figure this opening but also that the question of non-clinical themes of abstracts has been solved by opening the chapter A of ICPC
6.1.2. Method

With the help of Niels Bentsen, at this moment Chair of the Wonca International Classification Committee I have been able to found some budget to pay the development of an online database on a dedicated website. I had the access on line to the screen of the reviewers of the submissions to the congress. All 998 abstracts have been introduced one by one by hand in an Excel spreadsheet. I have read carefully all the abstracts, looking for main theme with in mind the distribution of Q-codes of Henk Lamberts described above. Gradually, days after days and weeks after weeks, I have identified more themes dealing with the core job of the family doctors and 3CGP version 0.2 has emerged. All the codes have been reported in the spreadsheet as shown in the following table 3. At this moment I was still using the name “meta-classification”. That’s why in the figure one finds the acronym META as column entries. I have tried to give maximum 3 codes of each classification, ICPC and metaclassification. In the figure, chosen example have max 3 codes META and 2 codes ICPC (ICPC1 and 2).

As an example for people not ICPC minded, the abstract n° 15 in the figure, titled “Audit of use of periconception folate in prevention of neural tube defects in Singapore” is coded with 3CGP codes QD31 which was used for Primary Prevention and QR21 used for field research, while ICPC codes W78 for pregnancy and W50 for treatment during pregnancy.
6.1.3. Results

Online database with query module

All the data gathered in the spreadsheet have been introduced by the team of computer scientists in an online database as shown in the following figure 12 which is a copy taken from a power point saved from destruction of my computer. Indeed a computer crash has provoked the loss of mainly all data and the web domain was too costly to maintain. So all this experience has disappeared.

A query module allowed the search of specific abstracts by using the indexation tools as retrieval units. One can see in the figure all the abstracts associated with the code QD8: health provider personal life. Unsurprisingly, the correspondent abstracts dealt with burnout and work satisfaction.

The system has been presented in a workshop held in the Paris conference. This workshop didn’t attract a lot of people. Critics by some Wonca executives have been disappointing. There general comments was
that there was no need for a new indexation system in GP/FM and that the MeSH could fit with the GP/FM publications. No funds was available for an abstract database.

Figure 12 Copy of a power point. 2007 The online database with all the 998 abstract of Paris 2007. Here the query system shows the QD8 related abstracts

Figure 13 Copy of a power point. 2007 The online database. Query window

**Meta-clinical (3CGP) content**

The analyse of the non-clinical codes of the Paris congress is nevertheless interesting. 1999 non-clinical codes and 970 ICPC-2 codes have been used to code 998 abstracts.
The distribution of the non-clinical codes, let’s use the acronym 3CGP now, shows that the majority of coding is in the QD Doctor’s issue domain (Fig 14). Indeed the main used code into the QD domain was QD31 Health issue management (description of disease and its management) which implies that young participating doctors like to show their ability to describe disease process and management. At this moment the cow milk of drug therapy i.e. Diabetes, Lipid issues and so called Metabolic syndrome was very attractive. This is quite evident in the distribution of the chapters of ICPC-2 with the prevailing chapter T (which, for non ICPC minded readers, contains all those problems)(fig 15)

Wonca is an association of academics and teachers in GP/FM and this appears very well in the 405 codes used for teaching and learning (3CGP QT) and 434 codes Research & development (3CGP QR) (fig 14)

It’s appealing that the domain of medical ethics(QE) has attracted only 10 participations while virtually nothing for Hazards (QH) which encompasses the environment issues. Structure of practice (QS) like settings, manpower, organisation of Primary care etc. and Patient’s issue (QP) (like accessibility, acceptability, security etc. was no as attractive as research and teaching.

Figure 14 Wonca Paris 2007. Distribution of 3CGP main domains. On 998 abstracts
**Clinical content through ICPC coding**

For people used to see ICPC distribution through bar histograms, the Paris 2007 ICPC distribution is unusual. The distribution here don’t follow what we are used to see in clinical settings when using ICPC to code clinical problems like reason for encounters or diagnosis.

Only the proportion of T (metabolic and endocrine), K (circulatory) are at the same level as in usual daily clinical data. The usual clinical based diagram shows much more item in the R chapter (Respiratory) and certainly not so much in the P chapter (Psychological) and Z one (social problems)

This could raise an interesting research question. Why the GPs don’t point out the P & Z problems in clinical settings and discuss a lot about it during congresses?

![Figure 15 Wonca Paris 2007. Distribution of ICPC-2 chapters. On 998 abstracts](image)

Through ICPC-2 indexing, (from a clinical perspective) it is evident that European researchers in GP/FM are confronted with and addressing a large amount of psychosocial problems, mainly depression and addiction (nicotine and alcohol)
The distribution of process show that GPs like to speak about treatments and mainly about drug therapy (item 50). The second position is for immunisations (item 44) while all the others are really rarely discussed.

The cross between the various items of 3CGP and ICPC could give interesting pictures as in the following figure 18 which shows the non-clinical problems associated with the patient category Migrants (QC32). The interested readers could have a look at the power point still available on my personal website http://docpatient.net/mj/wonca2007/243.htm
In the above figure, one can see that the migrant issue was discussed in 4 abstracts with acceptability of health care, in two abstracts dealing with nutrition, in 2 dealing with accident and emergency issues (A&E) etc.

This could give an idea of the expected query for an item in an application prepared for a congress if the corresponding indexation systems are used during the submission of the congress. A participant to a congress, interested in the issue Migrant, and introducing this item in the query module, could receive all the related communications. The precise indications like authors & mail, title and content of abstract, place and time could be easily introduced in the system. Naturally, the two classifications ICPC-2 and 3CGP could be crossed.

This kind of tool could favour a quick communication between authors and attendees and will favour also, it’s hoped, the development of social networking between researchers.

Moreover, as we will try to experiment, the RDF tagging (see 5.2 above) of the metadata of abstracts, the abstracts themselves and related indexation could open the door to a semantic web of knowledge between family practitioners by introducing it in the world of semantic web.

6.2. APMGF Covilha 2013 Annual Conference

Attending the Portuguese Association of General and Family Medicine 2013 Annual Conference (APMGF – Associação Portuguesa de Medicina Geral e Familiar) in Covilha was an opportunity to witness the youth and enthusiasm of attendees, as well as the great quality of their work. The 128 submitted abstracts were peer-reviewed by the conference’s organizers who expressed desire to include them in their association’s journal.

Down below is a text summary of this work. Codification was done according to the ICPC-2 structure as well as the 3CGP system, validated six years earlier in Paris at the WONCA 2007 conference (ICPC-2 &
Using the International Classification for Primary Care (ICPC) and the Core Content Classification for General Practice (3CGP) to classify conference résumés

Family medicine is like the Danaid’s barrel, a bottomless pit of knowledge. Each year, thousands of GPs work hard to construct hypothesis, develop research, gather data, elaborate reports and present their work. All this knowledge will be lost or remain hidden. Only few works will be published in a medical journal. Books of résumés are not readily accessible or, if published as journal supplements, very difficult to search through. The Wonca Europe web site gathers résumés from 1995 to present but there is no indexation system to retrieve specified general practice (GP) / family medicine (FM) subjects.

As far as I can remember, there have been several attempts to index the Wonca Europe and World conferences résumés with the International Classification of Primary Care (ICPC). This was not working. ICPC address only clinical situations and is unfit for the non-clinical ones.

In the 80s, the late professor H. Lamberts from Amsterdam University had developed a classification called Q codes (as Q is not used in ICPC) to index, jointly with ICPC, the main publications of medical journals available in his department. In 2006, reusing the Q codes, I have developed a classification of non-clinical issues addressed by GPs called 3CGP allowing indexation of Wonca congress communications. 3CGP stands for Core Content Classification in GP/FM and is divided in 8 domains, subdivided in categories and subcategories containing currently 164 rubrics. To develop it, I have read and indexed personally the 1000 résumés of the Paris congress in 2007 and presented my work during this conference. This work has laid dormant during 6 years and opened one eye in June 2013 in Belém, Brazil, during the last SBMFC conference. Indeed the organizers of the 2016 Wonca world conference in Rio de Janeiro are looking for an résumé indexation system and have expressed interest in 3CGP.

In the mountains of Portugal the idea woke up for good. When in Covilhã, invited by APMGF to the Portuguese 18th national conference of family medicine, Sept 28, 2013, I have read with interest the “Livro de Resumos”. The 128 résumés of very interesting work done by so many young and enthusiastic GPs have been indexed with 3CGP and ICPC. I present here the main results (full data available on request)

203 ICPC codes were used to classify 119 résumés, 9 were not codable at all by ICPC. 36 codes are in component 1 (Symptoms – Complains), 123 in component 7 (diagnoses) and 44 process codes, of which 30 are related to drug prescription (-50) and only one about referral (-67). One sees on the figure the overrepresentation of P, T, W and Z chapters.

There are 8 communications about depression (P76), 4 for dementia (P70) and five for tobacco issues (P17). The overwhelming domination of T chapter is due to the combination of diabetes, obesity and lipid issues, always attractive for young doctors. Less expected are the 8 communications about pregnancy and the 7 addressing social issues.

With the 3CGP eye one sees 36 communications describing disease (QD32 ; health issue management), 6 concerning children (QC11), 8 about aged people (QC14), 6 about relationships with secondary care (QS2). The palm goes to Teaching (39 Critical reading QT53) and Research (25 QR2 Epidemiology) . 4 are dealing with primary prevention (QD41),
12 with secondary (QD42), 4 with tertiary (QD43) and 8 with quaternary prevention (QD44). Only one addresses an ethical issue.

The two tools show that communicating GPs in Covilhã prefer diseases (QD32 and component 7), looking for them (QD42), drugs (~50) and the so-called metabolic syndrome (diabetes + weight + lipid) but with deep interested in mental health and social problems and pregnancy. The influence of the teachers and vocational training is evident with many communications about epidemiological researches (QR2) and critical reading (QTS3).

Much remains to do before 3CGP becomes a professional tool allowing participants to search their preferred domain in a conference program but yet one can have a look at résumés with a different angle and at least, just like this communication which shows the interest of “quebra-cabeça” to prevent dementia"," 3CGP allows me to activate my neurons by following the interests of a young generation of dedicated doctors.

Figure 19 Main data, APMGF Covilha congress 2013

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2 Jamoulle M. Core Content Classification of General Practice / Family Medicine (3CGP) ver 0.2 Oct 2007 [Internet]. Available from:http://docpatient.net/mj/wonca2007/3CGFMedskopy.pdf


*******************************

Some more about Portuguese GPs.

In the P chapter (fig 20), Portuguese GPs are using Symptoms and Complaints component in P while not in T chapter
They like to discuss drug and treatment as shown in the distribution of the process codes (fig 21)

When addressing P problems, Alzheimer, tobacco and depression have been preferred issues to discuss about (fig 22)
Figure 22 Distribution of 25 P problems on 128 communications in Covilha

Related publication annexed:

Jamoulle M. Using the International Classification for Primary Care (ICPC) and the Core Content Classification for General Practice (3CGP) to classify conference abstracts. Letter. The Portuguese Journal of General Practice (RPCG) n° 29 issue 5. p 66-67 Nov 2013

6.3. CNGE Clermont congrès 2013

6.3.1. Introduction

The College of General Medicine Professors (Collège national des généralistes enseignants – CNGE) organize a yearly conference gathering general medicine teachers and researchers. In 2014, the conference will be held in Lille. The scientific committee’s president is Christophe Berkhout and is vice-president was Marc Vanmeerebeek, general medicine professor in Liège.

The CNGE Conferences

A classification tool designed to enable general practitioners (GPs) to codify non-clinical terms was presented during the 2013 Family Medicine Conference in Paris. This tool is named Core Content Classification of General/Family Practice (3CGP).

This, alongside other tools such as the International Classification of Primary Care (ICPC), enables GPs to index their scientific endeavours during conferences. Adding to these tools was the inclusion of the term « Quaternary Prevention » (P4) and its implications, which helps to build an ethical and philosophical framework to guide GPs in their activities.

Online abstract classification of the Lille 2014 Conference

Professor Berkhout suggested re-examining the abstracts submitted to the CNGE 2014 conference using these classification tools. This was done to 1) highlight the key interests of the attendees and 2) to distinguish the contents of the accepted abstracts from the rejected. This comparison would inform the conference organizers and participants on the most popular topics that year.

This was to be done in addition to the regular peer-reviewed process of abstract submissions. Professor Laurent Letrilliard suggested to do this classification exercise with previously-submitted abstracts (the 2013 Clermont Ferrand CNGE conference) conference to understand last year’s topics of interests and validate such methods.

6.3.2. Methods

Clermont Ferrand 2013 abstract analysis using Atlas.ti software

The two first experience Paris and Covilha have been analysed with the now traditional method of copy and paste and Excel spreadsheet. The next congress are analysed with a qualitative research tool. The 205 abstracts were extracted from Clermont Ferrand’s database. We retained the ID / Title / Body data which were analysed qualitatively with qui ATLAS.ti². Keywords were manually analyzed.

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1 Collège national des enseignants en médecine générale' www.cnge.fr
Preliminary analysis of abstract presentation

The English language was frequently used. This was not a problem since it is common place in information technology and is written without diacritics. However, some keywords were not possible to translate from English to French (for instance, “Gut feeling” in Abstract 33 for which there was no direct translation).

Capitalization, letter cases and word genders may have an impact on keywords. In French lemmatisation\(^3\), the employment of the singular masculine gender of the words, as well as the use of lower cases whenever possible, is standard. Proper nouns need to retain their capitalization (Alzheimer’s disease, for instance). Keywords should also abstain from being shortened by initials and/or acronyms, unless the abbreviation refers to a well-defined and commonly understood aspect of the literature (e.g. COPD).

The lack of standardization of the keywords testifies that authors seem to refer to a common realm of practice, which is also known as a « world of reference » or, in the field of logics, « the discourse universe ».\(^4\) It is a spontaneous collection of terms that CNGE’s members consider to be belonging to their practice.

Keyword analysis

261 keywords were extracted from the database. Concepts that pertained to general and family medicine were further scrutinized. Keywords were not standardized according to any given structure. Some keywords were found to be intuitive but operationally challenging. For instance, an abstract entitled “Barriers of the use of emergency contraceptives by women aged 18-24” defined the keywords as “Barriers”, “Women”, “18-24”, “age”, “contraception” and “emergency”. In spite of re-wording the keywords (in French) in the following order: “Barriers”, “Women aged 18-24” and “Emergency contraceptives”, the semantics of the term “Barriers” was not fully grasped.

Keywords – Frequency distribution

The simple extraction of keywords yielded 658 entries which needed to be cleared from hyphens, discourse connectives and other conjunctions. After removal of abbreviations, double entries and terms deemed « too general », 261 keywords were usable. The following table shows the words that appeared at least three times. CNGE members will easily interpret these results.

We were surprised by the occurrence of the terms « General Medicine » from which we can further extract three mentions of « GM », twelve mentions of the word « General » and twelve mentions of the word « Medicine ». We sense a desire from these authors to reaffirm their specialty via a surprising repetition of these terms. It would be rather unusual to read abstracts submitted to a cardiology conference in which professionals would feel the need to repeat their specialty as a keyword in so many instances. We suggest that such repetition is used as a means to convey identity and reassurance to the authors.

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3 In morphology and lexicography, a lemma is the canonical form, dictionary form, or citation form of a set of words (wikipédia)
Table 4 Keywords detected in at least three abstracts with number of abstracts CNGE Clermont 2013

Preliminary analysis of 25 abstracts of the 2013 conference

At first, we used ICPC and 3CGP classification tools with 25 abstracts in order to validate our method. We performed an analysis of all difficulties encountered in the process. The process was found to be promising and doable, with potential immediate consequences for the 2014 conference organizers.

Content analysis of the 2013 abstracts via software ATLAS.ti

The 2007 Paris and 2013 Covilha abstracts were analyzed using MS Excel. This did not allow for a rigorous content analysis and halted contents export to other software.

Following a suggestion from Dr. Frederic Ketterer, sociologist at the Liège University Department of General Medicine, we used a qualitative analysis software (ATLAS.ti\(^5\)) because it enabled us to carry the required analyses at a relatively low cost.

ATLAS.ti enabled to map specific words to already-defined CISP and 3CGP terms. Furthermore, the classification process enabled the discovery of new themes. The same theme could not reappear in the same abstract more than once, and (generally) no more than six themes were identified in each abstract.

Figure 23 shows a print screen of the codification using ATLAS.ti which shows a CNGE 2013 abstract and the identified themes.

6.3.3. Results

6.3.3.1. Preliminary recommendations to Lille 2014 Scientific Committee

- **Abreviations & acronyms**: Halt external readers’ comprehension
- **Title**: A good title should be able to provide (almost) all keywords to code an abstract’s theme
- **Structure**: A good structure (Objective / Methods / Results) guarantees a good mapping of the abstract to its core themes. Concepts absent from the title should be identified in the objective or the methods sections. In regards to keywords

A standard categorisation of keywords according to MeSH terms as defined by INSERM\(^6\) should be expected from authors and would enable an easier classification process. However, this may induce further limitations as discussed above. However, we recommend the following:

- **Format**
  - Use words in the simplest singular and masculine forms, without capitalization (except for proper nouns).
  - Avoid using the English language in keywords.
  - Avoid abbreviations and initials unless referring a well-defined and understood acronym (e.g. COPD, HTA).
  - Hyphens should be used to decipher concepts and ideas, but not words.
  - Do not restrain from using syntagma (e.g. family medicine, patient participation).

- **Contents**
  - Title should encompass most key concepts. Otherwise, these concepts should be found in the Objectives and/or Methods sections of the abstract.

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\(^6\) Le MeSH bilingue anglais – français [http://mesh.inserm.fr/mesh/]
Ensure a well-defined structure with Objectives, Methods and Results. The most common mistake was to include results in the Objectives section.

Choose keywords wisely. Those terms should highlight the core contents of the abstract.

Remember that the keyword is meant to be understood by external readers. For instance, use the terms « student training » as opposed to « training », « professional liability » as opposed to « liability”. Keywords should thereby be descriptive enough for an external reader to understand it within their own realm of study.

If time allows it, consider using the INIERM website as a means to find a corresponding MeSH term. An interesting case would be not to find an appropriate MeSH. Clearly indicating not having found it would enable the reader to understand the specificity of the proposed contents.

Ensure general readability. The abstract should be proofread by an outsider to verify whether they have understood the contents.

**Lille 2014, ensuing consequences of the recommendations**

The Lille 2014 conference organizers have adopted most of the recommendations we made and have transformed the submission platform. The new structure is more organized than previously (Figure 24).

It is now suggested to choose from the ICPC chapters to classify the abstract if its contents is applicable (Figure 25).

![Figure 24 CNGE Lille 2014 New online submission form.](image)
6.3.3.2. Results; 205 abstracts from Clermont Ferrand 2013 using ATLAS.ti. 717 codes were used to map the abstract to their respective themes (one reviewer). ICPC-2⁷ allowed to codify clinical items and (104 codes used). 3CGP 0.2⁸ was used 613 times in the 205 abstracts. There was between 3 and 4 codes per abstracts (717 codes/205 abstract) and on average one 3CGP 0.2 per abstract (717/104).

**Distribution of ICPC codes Clermont 2013**

We sought to identify the major themes emerging from our classification. No abstract dealt with urological problems (fig 26). It is important to note that contraception is placed in Chapter W of the ICPC alongside pregnancy and family planning.

Medical acts were indicated with –proc (for process) (fig 27). Therapeutic interventions were the most frequently cited (17 citations / 26, coders starting by « 5 » in Figure 6). Sixteen mentions pertain to psychology (“P”) and 14 for social issues (“Z”). This high proportion of Z interventions or pathologies merits attention, as most doctors who used ICPC typically do not refer to the P section, and almost never to the Z section which rarely is quoted in more than 2% of entries. An interesting question thus surfaces: Why do doctors do use few Z coding in clinical practice but use it more frequently for conferences?

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The relatively low proportion of ICPC (104 codes for 717 total codes) implies that authors rarely refer to their clinical work. This can be explained by the nature of submitters and their preferred research objectives, which revolves around teaching.

Figure 26 Clermont 2013. ICPC Chapters (A – Z) and Process (-proc).

Figure 27 Process codes. Coding of 205 abstracts Clermont 2013
A closer look at the 14 Z codes (fig 28), the subcode Z01 (poverty) emerged 5 times, for which the terms «great precarity» reappeared most often. Work-related problems come second with 3 occurrences. The 16 P codes are shown in figure 29. Substance abuse recurred frequently.
In order to convey effectively the mapping classification process, Figure 9 shows 7 W codes as detected in the abstracts

**Distribution of 3CGP codes Clermont 2013**

Non-clinical items were coded according to 3CGP and was mapped 613 times among the 205 abstracts. 3CGP (Core Content Classification in General Practice/Family Medicine) includes 9 categories including “other” (QO) (fig 31)

The letter Q is used because it is not in the ICPC and to honor Professor Henk Lamberts (University of Amsterdam) who first suggesting incorporating Q-Codes linked with ICPC to index his family medicine journals in his department (1987).

Q-Codes do not encompass all knowledge in primary care but were still the most precise method to classify more than 1400 conference abstracts.

A careful examination of the abstracts allows to realize missing themes. When analyzing French abstracts, the QR section (for Research and Development) has considerably grown (See Appendix for the current 3CGP codes version 0.3).

![Figure 31 3CGP domains including QD0 for 'Other'](image)

Figure 32 presents the distribution of 3CGP codes as mapped after careful reading of the 205 abstracts. It is not surprising to realize the important frequency of the QT and QR domains (Knowledge Management and Research and Development respectively) since the CNGE conference is primarily aimed at researchers in the field of pedagogy. Patient perspective (QP) and physician-specific characteristics (QD) are poorly represented.
The QT domain (fig 34) allows us to appreciate the current performance of 3CGP in regards to training and teaching. We should note that this appraisal was not standardized and carried by only one reviewer. Further collaborative studies will strengthen this proposal.

Figure 33 QR codes distribution (Research and Development)

Figure 33 highlights the high frequency of qualitative studies in the QR codes distribution. Twenty-five abstracts mention using scales, questionnaires or vignettes. Our small sample size limits our interpretation and appreciation of code reoccurrence. However, our preliminary analysis shows that qualitative studies are focused on QT42 (Vocational training, or interns), on QT46 (Academics,
identification of training programs) on QT13 (Teaching & training evaluation) and QT11 (Pedagogical methods) (Figure 13).

Literature reviews were also mentioned 15 times (QT53 Critical reading & review). (Fig 34)

QT62 (Online editing) is interesting (Fig 35) This deals with the use of the Internet in knowledge dissemination, including international journals and online training programs. We will discuss a little bit later

The mapped verbatims (Figure 36) will be used in a later analysis to inform the conceptualization of the Natural Language Processing Language, a semi-automatic coding system.

Figure 34  QT codes distribution (teaching and training)
The re-occurrence of physician-specific codes highlights the participant’s desire to further investigate issue that pertain on the professional and personal lives of physicians (QD7 & QD8 in fig 36). The preventive domain (QD4) was mapped 22 times. Quaternary prevention (Knock’s Effect) was mentioned 5 times whereas there were 3 mentions of De-prescription, a relatively new field in family medicine. Not
unlike other conferences, ethical and environmental issues (QE and QH, respectively) are seldom mentioned.

We shall now deal with the « other » category. This theme was originally proposed to capture potentially missing categories in 3CGP, but was broadened to include arising linguistics issues and reading difficulties.

<table>
<thead>
<tr>
<th>37 codes QO Other sur 205 résumés Clermont 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>QO4 Consider new code</td>
</tr>
<tr>
<td>QO3 Out of scope of GP/FM</td>
</tr>
<tr>
<td>QO24 Verbosity, not codable</td>
</tr>
<tr>
<td>QO23 Lack of identifiable concepts</td>
</tr>
<tr>
<td>QO22 Lack of precision of the item</td>
</tr>
<tr>
<td>QO21 Abbreviation not understandable</td>
</tr>
<tr>
<td>QO2 Unable to code, unclear</td>
</tr>
<tr>
<td>QO1 Unable to code; too generic</td>
</tr>
</tbody>
</table>

Three QO4-coded abstracts (Fig 37) suggest missing categories in 3CGP. Two pertain to randomized controlled trials, which is worthy of its own category in the QR domain. The third deals with cancer patients, which has no category of its own in ICPC (no term as generic as “cancer”). Similarly, there is no category for “infectious disease”. These two generic terms, however, are categorised in the International Statistical Classification of Diseases and Related Health Problems. Such broad terms are however typically reserved to non-scientific literature.
QO3 Out of scope is reserved to themes that are not typically considered as family medicine (mostly secondary or tertiary levels of care).

Eleven abstracts were coded with QO21 because of the use of unintelligible abbreviations. We have already made the recommendation to avoid abbreviations in a scientific abstract, as using such abbreviations implies that the research community has auto-defined itself which could, in turn, push away non-initiated readers. Figure 17 illustrates this idea.

**Added codes after Clermont 2013 analyze**

The initial code list is the one developed in Paris in 2007 at the WONCA international conference. This list was not exhaustive but shed light on professionally relevant terms. Every new conference bring its load of new concepts and aspects of our field.

In table 5 are shown new codes added to 3CGP after the 2007 Clermont Ferrand Conference. QD28 (Family planning) is somewhat redundant with the W Chapter of ICPC (pregnancy, reproduction and family planning). We see the emergence of new aspects relating to Quaternary Prevention. However, the Clermont Ferrand conference principally allowed to develop the QO code and identify more precisely the limits of codification.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QC15</td>
<td>Adults /</td>
</tr>
<tr>
<td>QD28</td>
<td>Family planning /</td>
</tr>
<tr>
<td>QD41 P4</td>
<td>Overmedicalisation/ QD444 P4 Deprescription/</td>
</tr>
<tr>
<td>QO1</td>
<td>Unable to code; too generic /</td>
</tr>
<tr>
<td>QO2</td>
<td>Unable to code, unclear /</td>
</tr>
<tr>
<td>QO21</td>
<td>Abbreviation not understandable /</td>
</tr>
<tr>
<td>QO22</td>
<td>Lack of precision of the item /</td>
</tr>
<tr>
<td>QO23</td>
<td>Lack of identifiable concepts /</td>
</tr>
<tr>
<td>QO24</td>
<td>Verbosity, not codable /</td>
</tr>
<tr>
<td>QO3</td>
<td>Out of scope of GP/FM /</td>
</tr>
<tr>
<td>QO4</td>
<td>Consider new code /</td>
</tr>
<tr>
<td>QP61</td>
<td>Social networking /</td>
</tr>
<tr>
<td>QR23</td>
<td>Multimorbidity study /</td>
</tr>
<tr>
<td>QR41</td>
<td>Qualitative study /</td>
</tr>
<tr>
<td>QR46</td>
<td>Mixed study /</td>
</tr>
<tr>
<td>QR47</td>
<td>Action research /</td>
</tr>
<tr>
<td>QR48</td>
<td>Delphi study /</td>
</tr>
<tr>
<td>QS46</td>
<td>Midwife/</td>
</tr>
</tbody>
</table>

**Table 5 Code added to 3CGP after Clermont analysis**

6.3.3.3. **Upcoming guidelines to lay a new strategy to analyse the 2014 Lille online abstract submission**

As mentioned in the introduction, we plan on analyzing the abstracts submitted to the 2014 CNGE 2014 Conference. Ideally, the classification should be done as abstracts are submitted on the online platform. Abstracts should be sent to the reviewer before the peer-review process, without knowing the acceptance status of the abstract. We hope to be able to highlight the differences between the accepted and rejected abstracts submitted for the Lille 2014 conference in November 2014.
6.4. Congrès SwissFamilyDocs Zurich 2014

6.4.1. Introduction
Primary Care, the Swiss journal of first line physicians\(^9\), has recently published the conference proceedings of the SwissFamilyDocs Conference\(^10\) which was held in Zurich in August 2014\(^11\). The publication enabled us to examine the 45 abstracts which were presented at the conference. We sought to estimate the applicability of 3CGP in another context.

6.4.2. Methods
The submitted abstracts were very well structured and evidently met standardized presentation criteria. The abstracts were presented in three languages, namely English, German and French. For German abstracts, we used Google Translate which enabled us to the major themes. We collaborated with a colleague (Daniel Widmer) to validate our comprehension. Abstracts were transcribed in an Excel spreadsheet, easily recognized by Atlas.ti which we had used in our Clermont Ferrand 2013 Conference abstract analysis (using the ICPC version 2 and 3CPG version 2.1 (Appendix)).

6.4.3. Results
6.4.3.1. SwissFamilyDocs 2014 through the lens of the ICPC

![23 codes ICPC sur 45 résumés SwissFamilyDocs 2014](image)

This was a small sample size. However, we note 1.9 ICPC codes per abstract (fig 39 & 40).

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\(^9\) Primary Care, Le journal suisse des médecins de premier recours [http://www.primary-care.ch](http://www.primary-care.ch)


The P chapter of the ICPC is typically less well represented than the R (respiratory) and L (locomotion) chapters. The Z chapter is usually very low.

We observed a weak frequency of the conference organizers’ mention of clinical situations. Figure 40 shows an abstract coded only at the level of the chapter K cardiovascular chapter of ICPC. This particularly abstract deals with acute coronary diseases, which is usually coded with three ICPC codes. We therefore chose to codify the abstract under the chapter as opposed to ICPC rubrics. Figure 41 shows abstract excerpts coded by class “K22” of the ICPC.

6.4.3.2. SwissFamilyDocs 2014 through the lens of 3CGP

The abstract analysis (Figure 42) yielded 148 3CGP codes and therefore highlight the importance of clinical items (as opposed to non-clinical items) since there was only 23 identified ICPC codes. Research codes (QR) appeared 42 times and Teaching (QT) appeared 26 times. We observed 34 occurrences of the physician-specific domain (QD) and 15 occurrences of the patient-specific domain (QP). The practice-specific domain (QS) was mentioned 16 times. QO (others) was used 5 times. No
abstract dealt with environmental health (QH). Seven abstracts referred to patient categories (QC) and 3 deal with ethical questions (fig 43).

Figure 42 SFD Zurich 2014. 3CGP distribution

Figure 43 SFD 2014 3CGP (QC patient’s categories, QE Ethics , QD doctor’s issues, QP patient’s view)

Complementary and alternative medicine was well represented (6 abstract mentions). Figure 44 shows the references to abstracts dealing with homeopathy (QD51) and complementary medicine (QD5). Two abstract were coded with both codes. None of these abstracts was in French.
6.4.3.3. SBF 2014 QO codes

QO3 Out of scope of GP/FM) was applied to an abstract dealing with « paramedic care, licensure of paramedics and paramedical training» The Swiss Association is a group of first-line physicians which enables us to understand why it was submitted. However, these are non primary care-related fields which explains why there was no mapping possible using 3CGP.

QO2 (Unable to code/unclear) was applied to an abstract on « methodological approach to the specific work practices( nach dem methodischen Zugang zu den spezifischen Arbeitsweisen)" for which the clinical context is hard to identify.

QO1 (too generic) was used for an abstract dealing with « chronic pain syndromes: a survey at an academic hospital » ‘Chronic pain syndromes’ was too generic to be categorised using ICPC. Furthermore, it was an
inpatient study which was not relevant to general medicine and code QO3 could have been applied as well.
QO5 (Flawed concept) was suggested because of the flawed position of an author who used specialized vocabulary and erroneously used the term «primary prevention» to define what would be more accurately described as secondary prevention. Such mismatch sometimes happens in cardiology when referring to prevention care. In the excerpt: «primary prevention of cardiovascular disease (CVD) are based on the identification of high-risk patients who are most likely to benefit from medications such as aspirin and statin” primary prevention is not defined according to the concept of family medicine\textsuperscript{12}, as the patient does not feel ill but was qualified as “at risk” by the physician. The physician then observes risk factors for which they prescribe aspirin and statins (a prime example of secondary prevention). Since the concept was misused, we applied the code QO5 (Flawed concept).

6.4.3.4. SwissFamilyDocs enables the addition of new terms to 3CGP
Reading the SFD abstracts has enabled us to identify new terms to add to the current structure of 3CGP.
These codes are: QC23 Sex difference / QD51 Homeopathy / QO5 Flawed concept / QP43 Patient knowledge / QR49 Case report / QT64 Email communications
The definite designation of these new codes will be attributed to usage, repetition and shared observations.

The 2014 Call for Abstracts for the SFD conference enabled us to realize the applicability of 3CGP and ICPC in most cases. In spite of cultural and interest differences, the current state of classification seems to be applicable to our Swiss colleagues. We shall investigate this further upon the comparison of all five conferences.

6.5. The Belgian congres Brussels 2014

The first « Symposium de Recherche en médecine générale » has been held in Brussels on the tenth of May 2014. There has been 37 communications of which 19 posters. The abstracts are not available online but will be published in the Medline indexed Revue Medicale de Bruxelles.

The codes 3CGP and ICPC used in the analysis of the Swiss abstracts have been imported for the analysis of the Belgian abstracts in a new analysis unit of the software ATLAS.ti together with the 37 Belgian abstracts. The analysis of content of the Belgian meeting is not so fruitful as there are too few abstracts. Nevertheless some interesting observation arose.

![Figure 46 3CGP domains in the 37 Belgian abstracts](image)

In the above figure, one see the distribution of 3CG domains throughout the 37 abstracts. Recall; QC category of patient, QD doctor’s issue, QE Ethics, QH Hazard, QO other, QP Patient’s issue, QT Research, QS structure of Practice, QT teaching and training.

Unsurprisingly, as it was a “research” congress, the abstracts coded with QR Research are the largest group and in good association with the QT teaching and training which both content are open in the fig 46 and 47. The codes QS structure of practice are proportionally more numerous than in the Swiss ones and five abstracts are addressing the question of coordination between GP and specialists (fig 47). As expected QE Ethics and QH are not attractive domains.

The 12 QO codes distribution (fig 42) shows 9 abstracts with readability problem. 1 out of scope was addressing a subject far from GP/FM, 4 had no structure at all, 2 was using not understandable abbreviations and two dealt with theme so generic that there was no way to codes it in ICPC (as the cancers “les cancers” or the anaemia “les anémies”.

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3 abstracts have given the opportunity to consider new codes as “ethnological research”, “health data management” and “informal caregivers” to input in 3CGP (fig 48).

**Figure 47** Distribution of QO in 37 Belgian abstracts

**Figure 48** The study of the Belgian abstracts induces the suggestion of new codes
They have been very few use of ICPC for coding the Belgian abstracts. One has been used for coding not the patient but the doctors themselves. An astonishing study on 555 doctors in Brussels show that 15% could be considered as alcoholic!

![Image of ICPC codes]

Figure 49 15 codes ICPC in the 37 Belgian abstracts

![Image of QR distribution]

Figure 50 Distribution of QR in the 37 Belgian abstracts

![Image of QT distribution]

Figure 51 Distribution of QT in the 37 Belgian abstracts

![Image of QS distribution]

Figure 52 Opening of QS in 37 Belgian abstracts
6.6. The CNGE Lille congress 2014

As soon as the access to the abstracts will be granted.

All the abstracts will be analysed before to be reviewed

A comparison between accepted and refused abstract is projected (if enough)

6.7. Comparisons between some congresses

Figure 53 Manual coding
Wonca 2007 (998 abstracts) versus Covilha 2013 (128 abstracts)

The comparison between the content of the Wonca Europe Congress Paris 2007 and the Congress of the Portuguese association of GPs in Covilha 2013 have been done more for the exercise than for the analysis. Indeed the first meeting was gathering thousands of GP and 998 abstracts have been analysed. The Portuguese meeting was gathering three hundred Portuguese GPs presenting 128 communications. The method is the same, manual coding with the same codes and spreadsheet. The observer is the same. But the second coding was unexpected and not planned. 6 years are separating the two experiments.
Nevertheless, it’s strange to see the same percentage of QR (communications dealing with research) or QT (dealing with teaching and training) and the quasi absence of ethical subjects nor environmental ones. We have to assume that this is a coincidence and repeat the experiment is a necessity.

![Figure 54 ATLAS.ti 3CGP coding (%): 3 congresses (205 abstracts Fr - 45 Ch - 37 Be)](image)

The Fig 50 shows the distribution of percentage of 3CGP codes between the French CNGE congress in Clermont 2013 (205 abstracts), the SwissFamilyDoctors congress in Zurich 2014 (45 abstracts) and the Belgian one, 2014 (37 abstracts).

Despite the difference in number of communications, the similarity of the subject about Research (QR) in the 3 congress is attractive. The number of communications of the French dealing with Teaching and training is twice the number of Swiss and Belgians. This could be explained by the fact that CNGE is first of all a society of teachers in Family Medicine.

The use of QO Other is more important in the Belgian communications. The change in use of QO could explain it. The codes has been used in the Belgians to highlight the fact that numerous abstracts was not easy to understand, due to abbreviation, lack of structure or verbosity.
The figure 56 shows the comparison of the use of ICPC codes between the two congress Wonca 2007 and Covilha 2013. We are obliged to assume that the similarity is a coincidence. Nevertheless it is strange to look at the distribution of the two chapters P & Z.

Indeed the proportion of P and Z in the two cases is not at all what is expected when coding reason for encounter or diagnose in clinical settings.

Above, in percentage between Wonca 2007 and Covilha 2013. Interesting similarities in P, T and Z. T is mainly diabetes, lipid and “metabolic syndrome”. Depression, Alzheimer and tobacco in P.
7. Discussion
Within a general framework of complexity, and parallel to the use of ICPC, I have try to describe GP/FM by developing a simple classification system to represent the main concepts forming the core content of our specialty. While exploring the core content of GP/FM is not a new idea, as shown by the study of FAMLI, as far as the author could discern, this is the first attempt to systematize those concepts into a classification.

During the conceptualisation and first stages of the research, the direct indexing of Wonca congress presentations using a spreadsheet based methodology induced better insight into the main research interests of European GPs. Moreover, indexing abstracts through an interactive web-based database permitted to congress participants to retrieve preferred presentation abstracts. One could imagine the whole organisation of a GP/FM congress based on abstract indexing through ICPC and 3CGP.

The subsequent analysis of several European congress in France, Switzerland and Belgium, using a content analysis system has suggested an internal reproducibility of the method, at least with one unique observer. The CAQDAS methodology has also induced a better description of the content. It has been shown easy to compare entries and to propose new codes. The data remain available easily for future comparison and could be exported in xml format for further analysis. The method is also convenient for multiuser experimentation and scientific networking. QDA Miner, another CAQDAS will be considered for further work as it is more oriented towards linguistic and terminological analysis.

This project has several limitations. First of all, it is the work of one person and although it has demonstrated a certain utility, one could hardly say that it represents a reproducible approach to the core content of GP/FM. This has to be evaluated by inter-observer trials and extensive practice and research use before being able to consider it a valid construct.

One could argue that Medline indexing is quite sufficient, and that GP/FM does not need such an additional set of descriptors. However, Medline indexing is not easy, the terms and themes are not specifically designed for GP/FM, and its usage is far from simple. As shown, the universe of the corporate bodies owners of classifications and terminologies could be rather different. Retrieving specific GP/FM publications is quite difficult. Moreover, Medline indexation is a post-hoc task. In this proposal, one can imagine that authors will be asked to choose ICPC & 3CGP items to describe their abstract, and that reviewers would be tasked with verifying the codes.

Analyses of this kind could support discussion on how research in GP/FM should be oriented. This also gives an idea about how diverse and difficult the GP's job is. The use of 3CGP could lead to better organisation of congresses through the distribution of information along the two classifications.
Naturally, 3CGP/ ICPC indexing is complementary to Medline, while serving a different purpose. From a taxonomic point of view, several problems have to be addressed. They are specific classification problems: comprehensiveness (a place for each concept) and exclusivity (only one class by concept) and each have to be studied carefully for each item. The addition of definitions and inclusion and exclusion criteria are also required, and this will require extensive work. Some terms, not indexed in Medline, will be subject to careful search in the literature to define and link them to specific GPs knowledge. However this is necessary in order to avoid as far as possible heterogeneity and overlap of the classes. It will be necessary to continue to develop new categories and subcategories to cover the entire field of knowledge as GP/FM is a dynamic enterprise encompassing each year new fields or new interpretations. Thus 3CGP/FM is an ongoing and dynamic product.

3CGP/FM has not been endorsed by the Wonca International Classification Committee, but some members have accepted the idea of launching an international trial to develop and validate the proposed tool. The development of the on-line data base is a condition to continue this experiment. Such an interactive tool will permit retrieving and editing, but also facilitate statistical analysis of data produced by the indexing process.

To be continued
8. Next steps

8.1. Classification field

8.1.1. Looking for a consensus about 3CGP content
Internal and external validity of the tools
Organising a Delphi about the structure, the domains etc
⇒ To build an international team of colleagues
Identification of concepts specific to GP/FM, specific definitions and bibliography
⇒ To build a team of dedicated GPs

8.1.2. Building and field testing 3CGP and ICPC
Developing classification by analyzing ongoing congress
Considering to develop an application test for smartphone
Considering preparation of Rio 2016 interface for coding by congress participant/
Suggestion to congress organizers to use ICPC and 3CGP as indexing tool

8.2. Ontological field

8.2.1. Building a reference terminology mapped to 3CGP
NLP and semantic tools.
Text database of Wonca Europe abstracts available (6.000 pages) (Carl Steylaert)
Term identification by NLP (Ashwin Ittoo ULg?) Termlist (V. Hoste Leuven?)
Mapping concepts to terms?

8.2.2. Preparing semantic tools
Building 3CGP OWL on Protégé: Definition inclusion exclusion mapping MeSH, Hetop.eu
Babelnet.org, other existing ontologies
Mapping ICPC OWL and Dutch thesaurus?
Proposal for a semantisation of abstracts
9. A multidisciplinary team is a necessity

9.1. Members of the board

- Prof Marc Van Meerbeeck and Didier Giet. Professors of General practice. ULg
- Prof Dr. Aswin Ittoo, Management Information Systems, HEC-ULg
- Ms Elena Cardillo , PhD, Linguist, computer scientist, Information technology specialist, University of Calabria, Italia cardillo.elena@gmail.com
- Prof Dr Robert Vander Stichele, MD, PhD, family doctor and professor of pharmacology, University of Ghent, Belgium Robert.VanderStichele@UGent.be
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- Prof Dr Kees van Boven, MD, PhD, senior researcher, Radboud University Nijmegen, Department of Primary and Community Care, Nijmegen, Netherlands cvboven@hetnet.nl
- Mss Anne-Françoise Donneau, health statistician. Department of public health sciences, ULg. afdonneau@ulg.ac.be

9.2. People recently contacted and interested by the project

1. Terminologie, mapping, semantisation

- Mr Julien Grosjean, Ingénieur de recherche et doctorant, Equipe CISMeF, CHU de Rouen http://www.hetop.eu/hetop/

- Dr Stephan Darmoni, Coordonnateur du projet CISMeF, Professeur d'informatique médicale, Faculté de médecine de Rouen, Chef du Service Informatique Biomédicale (SIBM) du CHU de Rouen http://www.cismef.org/

- Dr Ilkka Kunnamo. Duodecim Finland. & Chair of the Wonca working party on Informatics. Involved recently in semantic stuffs see { Mazza 2013} http://www.ncbi.nlm.nih.gov/pubmed/23497520

2. Library and information science (FAMLI)

- Lynn Dunikowski, Head, Canadian Library of Family Medicine; Betty Taylor Library. Western University Libraries http://www.lib.uwo.ca/

3. Computer application

- Christian Simon, informaticien, SILK Informatique, 40 bis avenue Patton - 49100 Angers http://www.silk-info.com/ Webmaster ph3c.org et Cispclub.org
10. Acknowledgements
I must say that without the friendly welcome at Liege University by professor Giet and van Meerbeek, I would not have started this adventure. The meeting with Ashwin Ittoo, information management specialist from the management school of the same university has been determinant.

Naturally, I would thank also all my colleagues and friends from the WICC who have accepted to be in my board as well as all those already quoted above and interested by my work.

Special thanks to all my colleagues and friends who have supported this idea. Carl Steylaert for the access granted to Wonca Europe abstracts. Hector Falcoff, Anne Marie Magnier and Madeleine Favre, members of the College National des Généralistes Enseignants (CNGE - France) who have given access in 2007 to the reviewers web pages of Wonca Paris 2007. Special thanks also to Niels Bentzen, past chair of the Wonca International Classification Committee who has supported the project since the beginning, to John Beasley, Emeritus Professor, University of Wisconsin School of Medicine and Public Health, who helped to moderate the Wonca Workshop 2007 and to revise this manuscript and to Jean Karl Soler, GP in Malta, who has edited the first version of this manuscript in 2008.
11. Références


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Annex I Codes introduced so far in the content analysis software (August 2014)

ICPC Process full / used ICPC rubrics / full 3CGP

-30 Medical Exam/Eval-Complete
-31 Medical Examination/Health Evaluation- Partial/Pre-op check
-32 Sensitivity Test
-33 Microbiological/Immunological Test
-34 Blood Test
-35 Urine Test
-36 Faeces Test
-37 Histological/Exfoliative Cytology
-38 Other Laboratory Test NEC
-39 Physical Function Test
-40 Diagnostic Endoscopy
-42 Electrical Tracings
-43 Other Diagnostic Procedures
-44 Preventive Immunizations/Medications
-45 Observe/Educate/Advice/Diet
-46 Consult with Primary Care Provider
-47 Consultation with Specialist
-48 Clarification/Discuss Patient’s RFE
-49 Other Preventive Procedures
-50 Medicat-Script/Request/Renew/Inject
-51 Incise/Drain/Flush/Aspirate
-52 Excise/Remove/Biopsy/Destruction/ Debride
-53 Instrument/Catheter/Intubate/Dilate
-54 Repair/Fixate-Suture/Cast/Prosthetic
-55 Local Injection/Infiltration
-56 Dress/Press/Compress/Tamponade
-57 Physical Medicine/Rehabilitation
-58 Therapeutic Counselling/Listening
-59 Other Therapeutic Procedure NEC
-60 Results Tests/Procedures
-61 Results Exam/Test/Record
-62 Administrative Procedure
-63 Follow-up Encounter Unspecified
-64 Encounter Initiated by Provider
-65 Encounter Initiated third person
-66 Refer to Other Provider (EXCL. M.D.)
-67 Referral to Physician/Specialist/ Clinic/Hospital
-68 Other Referrals NEC
-69 Other Reason for Encounter NEC
-Process
A General and Unspecified

A23 Risk factor NOS
A28 Limited function/disability NOS
A29 General symptom/complaint other
A78 Infectious disease other/NOS
A87 Complication of medical treatment
B Blood, Blood Forming Organs and Immune Mechanism
B90 HIV-infection/aids
D Digestive
D19 Teeth/gum symptom/complaint
D72 Viral hepatitis
D75 Malignant neoplasm colon/rectum
D94 Chronic enteritis/ulcerative colitis
E Eye
F83 Retinopathy
F Eye
K Cardiovascular
K01 Heart pain
K22 Risk factor cardiovascular disease
K77 Heart failure
K86 Hypertension uncomplicated
L Musculoskeletal
L03 Low back symptom/complaint
L14 Leg/thigh symptom/complaint
L95 Osteoporosis
N Neurological
P Psychological
P06 Sleep disturbance
P15 Chronic alcohol abuse
P17 Tobacco abuse
P18 Medication abuse
P19 Drug abuse
P20 Memory disturbance
P70 Dementia
P74 Anxiety disorder/anxiety state
P76 Depressive disorder
P81 Hyperkinetic disorder
QC Patient’s categories
QC1 Age groups
QC11 Infants
QC12 Children
QC13 Adolescents
QC15 Adults
| QC16 | Ageing                        | QE4  | Infoethics           |
| QC2  | Gender issues                | QE41 | Confidentiality     |
| QC21 | Men's health                | QE42 | Informed consent    |
| QC22 | Women's health              | QH   | Hazards             |
| QC23 | Sex difference              | QH1  | Environmental hazard|
| QC3  | Social high risk            | QH11 | Indoor pollution    |
| QC31 | Ethnic subgroups            | QH12 | Outdoor pollution   |
| QC32 | Migrants & refugees         | QH2  | Biological hazard   |
| QC33 | Homeless                     | QH3  | Nuclear hazard      |
| QC34 | Prisoners                    | QO   | Others              |
| QC4  | Addiction                    | QO1  | Unable to code; too generic |
| QC41 | Legal products               | QO2  | Unable to code, unclear |
| QC42 | Street drugs                 | QO21 | Abbreviation not understandable |
| QC43 | Gaming                       | QO22 | Lack of precision of the item |
| QC5  | Assault                      | QO23 | Lack of identifiable concepts |
| QC51 | Battered women               | QO24 | Verbosity, not codable |
| QC52 | Victims of abuses            | QO25 | Lack of structure of abstract |
| QC53 | Torture                      | QO3  | Out of scope of GP/FM |
| QC54 | Ritual mutiliations          | QO4  | Consider new code   |
| QD1  | Doctor's issues              | QO5  | Flawed concept      |
| QD11 | Communicator                 | QP   | Patient issues      |
| QD12 | Doctor patient relationship  | QP1  | Diagnostic process  |
| QD13 | Counselling                  | QP11 | Availability of diagnostic process |
| QD14 | Systemic evaluation          | QP12 | Safety of diagnostic process |
| QD15 | Motivational interviewing    | QP2  | Therapeutic process |
| QD2  | Caregiver                    | QP21 | Availability of therapeutic process |
| QD21 | Problem solving              | QP22 | OTC                 |
| QD22 | Comprehensiveness            | QP23 | Comfort of therapeutic process |
| QD23 | Health education             | QP24 | Safety of therapeutic process |
| QD24 | Clinical skills              | QP3  | Practice & health care organization |
| QD25 | Continuity of care           | QP31 | Availability of health care |
| QD26 | Palliative care              | QP32 | Accessibility of health care |
| QD27 | A & E                        | QP33 | Acceptability of health care |
| QD28 | Family planing               | QP34 | Safety of health care |
| QD3  | Care manager                 | QP37 | Quality of health care |
| QD31 | Health risk management       | QP4  | Patient views       |
| QD32 | Health issue management      | QP41 | Patient appraisal   |
| QD33 | Health status assessment     | QP42 | Patient satisfaction |
| QD34 | Outcome assessment           | QP43 | Patient knowledge   |
| QD35 | Genetic issues               | QP44 | Patient autonomy/dependency |
| QD4  | Agent of prevention          | QP45 | Patient cultural background |
| QD41 | P1 Primary prevention        | QP46 | Patient expenses    |
| QD42 | P2 Secondary prevention      | QP5  | Patient health habits |
| QD43 | P3 Tertiary prevention       | QP51 | Patient nutrition   |
| QD44 | P4 Quaternary prevention     | QP52 | Patient’s sexuality |
| QD441| P4 Overmedicalisation        | QP53 | Self-care & hygiene |
| QD443| P4 Deprescription            | QP6  | Patient’s participation |
| QD443| P4 Deprescription            | QP61 | Social networking   |
| QD5  | Complementary medicine       | QR   | R & D tools         |
| QD51 | Homeopathy                   | QR1  | Science philosophy  |
| QD6  | Medico legal issues          | QR2  | Epidemiology of primary care |
| QD7  | Professional image & identity| QR21 | Pharmacoepidemiology |
| QD8  | Health provider personal satisfaction | QR22 | Community health study |
| QE   | Medical Ethics               | QR23 | Multimorbidity study |
| QE1  | Personal views               | QR24 | Pharmacovigilance   |
| QE2  | Professional ethics          | QR3  | Functional status   |
| QE3  | Bioethics                    | QR4  | Research methods    |
| QE31 | Euthanasia                   | QR41 | Qualitative study   |
| QR42 | Research network                      | QT72 | Drug reporting                        |
| QR43 | Longitudinal study                   | QT73 | Events reporting                      |
| QR44 | Transversal study                    | R   | Respiratory                           |
| QR45 | Retrospective study                  | R05 | Cough                                  |
| QR46 | Mixed study                          | R80 | Influenza                             |
| QR47 | Action research                      | R95 | Chronic obstructive pulmonary disease |
| QR48 | Delphi study                         | R96 | Asthma                                 |
| QR49 | Case report                           | S   | Skin                                   |
| QR5  | Classification & Terminology         | S18 | Laceration/cut                         |
| QR6  | Scales, questionnaires and vignettes | S97 | Chronic ulcer skin                    |
| QR7  | Health economy                       | T   | Endocrine/Metabolic and Nutritional   |
| QR8  | PHC planning & organization          | T82 | Obesity                                |
| QS   | Structure of practice                | T83 | Overweight                             |
| QS1  | Infrastructure of practice           | T86 | Hypothyroidism/myxoedema              |
| QS11 | Primary care setting (incl. Rural)   | T90 | Diabetes non-insulin dependent        |
| QS12 | Economy of practice                  | U   | Urological                             |
| QS15 | Health Information management        | W   | Pregnancy, Childbearing, Family Planning |
| QS16 | Practice equipment                   | W10 | Contraception postcoital              |
| QS17 | Practice security                    | W11 | Contraception oral                    |
| QS2  | Practice relationship                | W12 | Contraception intrauterine            |
| QS21 | Practice collaboration               | W19 | Breast/lactation symptom/complaint    |
| QS22 | Referral/ counter-referral           | W79 | Unwanted pregnancy                    |
| QS23 | Coordination of care                 | X   | Female genital                        |
| QS24 | Transdisciplinarity                  | X75 | Malignant neoplasm cervix             |
| QS3  | Professional bodies                  | X76 | Malignant neoplasm breast female      |
| QS4  | Primary care provider                | Y   | Male Genital                          |
| QS41 | Family doctor / General practitioner | Y07 | Impotence NOS                         |
| QS42 | Nurse practitioner                   | Y08 | Sexual function sympt./complt.(m)     |
| QS43 | Primary Care physiotherapist         | Z   | Social Problems                       |
| QS44 | Primary care social worker           | Z01 | Poverty/financial problem             |
| QS45 | Primary care psychologist             | Z05 | Work problem                          |
| QS46 | Midwife                               | Z08 | Social welfare problem                |
| QT   | Knowledge management                 | Z10 | Health care system problem            |
| QT1  | Teaching                              | Z11 | Compliance/being ill problem          |
| QT11 | Pedagogic methods                    | Z12 | Relationship problem with partner     |
| QT12 | Teaching management                  | Z18 | Illness problem with a child          |
| QT13 | Teaching & training evaluation       | Z19 | Loss/death of child problem           |
| QT4  | Training                              | Z22 | Illness problem parent/family         |
| QT41 | Undergraduate                         | Z25 | Assault/harmful event problem         |
| QT42 | Vocational training                  |     |                                        |
| QT43 | Continuous medical education         |     |                                        |
| QT44 | Supervision & Balint                 |     |                                        |
| QT45 | Trainers & supervisors                |     |                                        |
| QT46 | Academics                             |     |                                        |
| QT5  | Quality assurance                     |     |                                        |
| QT51 | Evidence based medicine               |     |                                        |
| QT52 | Guidelines                            |     |                                        |
| QT53 | Critical reading & review             |     |                                        |
| QT54 | Peer review                           |     |                                        |
| QT55 | Accreditation process                 |     |                                        |
| QT56 | Quality indicators                    |     |                                        |
| QT6  | Editing                               |     |                                        |
| QT61 | Publications                          |     |                                        |
| QT62 | Online editing                        |     |                                        |
| QT63 | Digital libraries                    |     |                                        |
| QT64 | Email communications                  |     |                                        |
| QT7  | Reporting                             |     |                                        |
| QT71 | Sentinel network                      |     |                                        |
Annex II Some figures about codes and their use in abstracts analysis

Figure 57 Structure of 3CGP; 9 domains

Figure 58 Some 3CGP codes of the QT domain and study of their definitions with sources
Figure 59 QO Others domains opening after abstracts analysis

Figure 60 Example of quotes linked to QT62 in CNGE Clermont 2013
**Figure 61** The chapter W Pregnancy of ICPC as found in CNGE Clermont 2013 abstracts

**Figure 62** Use of 3CGP QD51 Homeopathy and QD5 Complementary medicine in SwissFamilyDocs abstracts
Figure 63 use of ICPC K22 in SwissFamilyDocs abstracts

Figure 64 The 3CGP codes QD44 P4 deprescription in the CNGE CLermont abstracts
Annex III  Personal publications related to the content of this report
Available through ORBI, the online system of the Liege University (http://hdl.handle.net)


Jamoulle M, Vander Stichele RH, Cardillo E, Roumier J, Warnier M. Mapping French terms in a Belgian guideline on heart failure to international classifications and nomenclatures: the devil is in the detail. Inform Prim Care. 2014;(accepted) http://hdl.handle.net/2268/171599


Jamoulle M. Using the International Classification for Primary Care (ICPC) and the Core Content Classification for General Practice (3CGP) to classify conference abstracts. Letter. The Portuguese Journal of General Practice (RPCG) n° 29 issue 5. p 66-67 Nov 2013 http://dazbook.com/euromedice/rpmgf-setout-2013/#/66 http://hdl.handle.net/2268/171601

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**H Hazards**
- Environmental
  - QH1
  - Indoor pollution
  - Outdoor pollution
- Biological
  - QH2
- Nuclear
  - QH3

**P Patient issues**
- Diagnostic process
  - QP
  - Availability diag. process
    - QP11
  - Safety diagnostic process
    - QP12
- Therapeutic process
  - QP2
  - Availability of ther. process
    - QP21
  - Over The Counter
    - QP22
  - Comfort ther. process
    - QP23
  - Safety of ther. process
    - QP24
- Practice & health care organisation
  - QP3
  - Availability of health care
    - QP31
  - Accessibility of health care
    - QP32
  - Acceptability health care
    - QP33
  - Safety of health care org.
    - QP34
  - Participation
    - QP36
- Patient's views
  - QP4
  - Patient demand
    - QP40
  - Patient appraisal
    - QP41
  - Patient satisfaction
    - QP42
  - Patient knowledge
    - QP43
  - Patient autonomy/depend
    - QP44
  - Patient cultural backgr.
    - QP45
  - Patient expenses
    - QP46
- Patient health habits
  - QP5
  - Nutrition
    - QP51
  - Sexuality
    - QP52
  - Self care & hygiene
    - QP53
  - Travel
    - QP54

**R R & D tools**
- Science philosophy
  - QR1
- Epidemiology
  - QR2
  - Pharmacoepidemiology
    - QR21
  - Community health
    - QR22
- Functional status
  - QR3
- Research methods
  - QR4
  - Qualitative study
    - QR41
  - Research network
    - QR42
- Classification
  - QR5
- Scales & Questionnaires
  - QR6
- Health economy
  - QR7
- PHC planification & organisation
  - QR8

**S Structure of practice**
- Infrastructure
  - QS1
  - Setting (incl. rural)
    - QS11
  - Economy of practice
    - QS12
  - Practice management
    - QS13
  - Manpower
    - QS14
  - Health Inform. Manag.
    - QS15
  - Practice equipment
    - QS16
  - Security
    - QS17
- Relationship
  - QS2
  - Collaboration
    - QS21
  - Referral/ countereferral
    - QS22
  - Coordination of care
    - QS23
  - Transdisciplinarity
    - QS24
  - Professional bodies
    - QS3
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This authority list, adapted from an orginal work of Prof. Dr. Henk Lamberts about Q codes in 1987, has to be completed by further analysis of publications in General Practice and Family Medicine.

Careful analysis of the definitions, inclusion and exclusion criteria is now necessary in order to avoid as far as possible the heterogeneity and the overlap of the classes.

This tool is complementary to ICPC and is designed to describe the metaclinical concepts refering to GP/FM. The letter Q is not used in ICPC and has been chosen to make the link with this clinical tool.

This tool is not validated nor is it endorsed by WICC.

As such it's a proposal for a future work proposed to WICC members during the Dunedin (NZ) meeting in 2007.

This work is free of use (free document) under the condition to publish the source.

Please do refer to marc@jamoulle.com for any questions.

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Citation