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General practitioners justifications for therapeutic inertia in cardiovascular prevention: an empirically grounded typology

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4 **empirically grounded typology**
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Declaration of competing interests:

All authors have completed the Unified Competing Interest form (available on request from the corresponding author) and declare that:

- JPL and DP have support from Pierre Fabre Médicaments® for the submitted work;
- They have no relationships with companies that might have an interest in the submitted work in the previous 3 years;
- Their spouses, partners, or children have no financial relationships that may be relevant to the submitted work;
- They have no non-financial interests that may be relevant to the submitted work.

Ethics approval

The Institutional Review Board of Versailles approved the ESCAPE study, which included this study. All patients gave written informed consent for their data to be used for this study. The ESCAPE trial was registered with ClinicalTrials.gov, number NCT00348855.

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Authorship, transparency

All authors had full access to all of the data in the study, and can take responsibility for the integrity and accuracy of the analysis. The first author declares that the article is an honest, accurate and transparent account of the study.

Contributorship

JPL, JSC, DP, VY, IAA and AM designed the study and carried out the data collection and analysis. HVR, EV and KH audited the whole methodological process. All authors contributed to the interpretation of findings and to the final construction of the typology. All authors contributed to the development of the manuscript.

Data sharing

Full datasets and coding tables are available from the corresponding author at jean-pierre.lebeau@univ-tours.fr. All these data are anonymised, and risk of identification is low.

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Abstract

Objective. To construct a typology of GPs responses regarding their justification of therapeutic inertia in cardiovascular primary prevention for high-risk hypertensive patients.

Design. Empirically grounded construction of typology. Types were defined by attributes derived from the qualitative analysis of GPs reported reasons for inaction.

Participants. 256 GPs randomized in the intervention group of a cluster randomized controlled trial.

Setting. GPs members of 23 French Regional Colleges of Teachers in General Practice, included in the ESCAPE trial.

Data collection and analysis. The database consisted of 2638 written responses given by the GPs to an open-ended question asking for the reasons why drug treatment was not changed as suggested by the national guidelines. All answers were coded using constant comparison analysis. A matrix analysis of codes per GP allowed the construction of a response typology, where types were defined by codes as attributes. Initial coding and definition of types were performed independently by two teams.

Results. Initial coding resulted in a list of 69 codes in the final codebook, representing 4764 coded references in the question responses. A typology including seven types was constructed. 100 GPs were allocated to one and only one of these types, while 25 GPs did not provide enough data to allow classification. Types (numbers of GPs allocated) were: "Optimists" (28), "Negotiators" (20), "Checkers" (15), "Contextualizers" (13), "Cautious" (11), "Rounders" (8) and "Scientists" (5). For the 36 GPs that provided 50 or more coded references, analysis of the code evolution over time and across patients showed a consistent belonging to the initial type for any given GP.

Conclusion. This typology could provide GPs with some insight into their general ways of considering changes in the treatment/management of cardiovascular risk factors, and guide design of specific physician-centred interventions to reduce inappropriate inaction.

What is already known on the subject

- Therapeutic (or clinical) inertia has been defined as the failure of health care providers to initiate or increase treatment when the therapeutic targets are not met
- The existence of therapeutic inertia in the management of modifiable cardiovascular risk factors has been shown
- Little is known on the underlying reasons and intimate mechanisms of therapeutic inertia

What this study adds

- GPs reported reasons for inaction all fit in a typology including seven types
 - Belonging to one of these types is consistent over time and from one patient to another for a given GP
 - Specific physician-centred interventions relying on this typology should be designed to reduce therapeutic inertia
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Strengths and limitations of this study

- The typology was constructed from the data gathered during the study, without any pre-established framework, and therefore reflects the actual way GPs rationalize their reasons for inaction.
- Both the initial coding and the physician types initially described separately and blindly by the two coding teams were remarkably consistent.
- For the GPs who provided enough data to allow such an analysis, the type of responses given was consistent over time and across patients.
- Social desirability bias may have influenced the content of the data: in writing down reasons for inaction, a physician would consider the acceptability of the response.
- The GPs included may not represent the general GPs population, because they were specifically trained in treating cardiovascular risk factors for the ESCAPE trial intervention group, and were involved to various extent in general practice teaching.

Introduction

Guidelines for the primary prevention of cardiovascular events in hypertensive patients have been widely disseminated¹⁻⁴. They cover blood pressure (BP) targets that should be achieved and other risk-reducing strategies regarding LDL-cholesterol and smoking cessation. For hypertensive patients with type-2 diabetes, specific BP targets are recommended, along with HbA1c targets and low-dose acetylsalicylic acid treatment in specific cases. These guidelines and targets rely on a large body of evidence from a substantial number of large randomized controlled trials⁵⁻⁷.

Nevertheless, most hypertensive patients do not achieve control according to the recommended targets⁸. In the United Kingdom, 30% of people between 20 and 79 years old are hypertensive, but among them only 65% are aware of their condition, Of these, 51% are treated, and 27% are controlled⁹. These figures are even worse in France, where 31% of 18-74 year olds are hypertensive, 52% are aware, 42% treated, and 21% optimally controlled¹⁰. Evidence from the United States and Canada also shows considerable room for improvement⁹. Overall, in Europe and North America, more than half of the hypertensive patients are uncontrolled^{11,12}. Furthermore, when multiple risk factors are active in one patient, control of each risk factor becomes even more suboptimal^{12,13}.

Various causes may explain this gap between proposed targets and actual clinical outcomes. While patients' lack of adherence remains a prominent factor¹⁴, the responsibility of the health care professional has been more recently brought to light¹⁵. Among the various reasons that often keep adherence to guidelines low, therapeutic inertia (TI), or the failure of health care providers to initiate or increase treatment when the therapeutic targets are not met, is now regarded as a major impediment to reach both individual and public therapeutic goals regarding cardiovascular risk factors^{11,15,16}. The existence of TI in the management of modifiable cardiovascular risk factors has been shown¹⁶⁻¹⁸. For uncontrolled BP in treated hypertensive patients in European countries, TI occurs in up to 85% of consultations¹¹.

A number of explanations have been proposed to understand this phenomenon. The subjective overestimation by the practitioner of the care provided, a lack of familiarity with the guidelines, or organizational issues have been shown to lead to TI^{17,18}. Various hypotheses regarding the intimate mechanisms underlying these behaviours have also been proposed^{15,19,20}, but very few qualitative studies have explored these in depth²¹⁻²³. Studies were based on either nominal or focus groups, but did not specifically explore what happens during consultations with individual patients.

Decision-making is an important issue in psychological research, and the use of typologies has proven effective to better understand vocational choices²⁴ or to characterize the effects of cultural

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3 differences²⁵. Regarding health care, typical patterns of dealing with clinical issues and typologies in
4 decision-making have been brought to light in various situations^{26,27}. Decision-making is also both
5 crucial and very specific in cardiovascular primary prevention, where the physician should prescribe
6 drugs and rules to an asymptomatic patient, expecting a hypothetical benefit that will remain
7 unseen. A typology of GPs decision-making in cardiovascular primary prevention in actual clinical
8 practice has not been studied yet.

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13 In this qualitative study, the objective was to construct a typology of GPs responses regarding their
14 justification of TI in cardiovascular primary prevention. We explored the reasons put forward by GPs
15 for not optimizing a treatment when indicated, that is, to explain their TI, and then looked for
16 possible patterns of responses that could be clustered into types.

17 18 19 20 21 **Methods**

22 *Qualitative approach*

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24 We performed an empirically grounded construction of typology²⁸⁻³⁰. A typology is made of a
25 number of types. Each type is constructed and defined by a combination of attributes. These
26 attributes are codes that resulted from the qualitative analysis of the responses collected from the
27 GPs included. The typology described the reasons given for not initiating or reinforcing a preventive
28 cardiovascular drug treatment when indicated. Although the aim was to construct a typology, there
29 was no initial framework, and all types were inductively derived from the data.

30
31 In the process of constructing the typology, the combination of two rules was followed:

- 32 - The GPs within one type had to be as similar as possible, and the differences between the
33 types as strong as possible²⁸.
- 34 - Each GP had to belong to one type and only one^{28,30}.

35 36 37 *Population*

38
39 For this study, qualitative data of the ESCAPE study were analysed. The quantitative part of
40 ESCAPE was a cluster randomized controlled trial conducted in general practice settings in France.
41 It aimed at determining whether a multifaceted intervention focused on GPs could increase the
42 proportion of high-risk hypertensive patients in primary prevention who achieved their
43 recommended therapeutic targets. The results have been published elsewhere³¹.

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46 The GPs involved in this study were all in the intervention group of the ESCAPE trial³¹. As the
47 intervention of the trial was at the GPs level, they all attended a one-day training seminar about
48 therapeutic targets and strategies recommended by the French national guidelines^{1,2}. Four trained
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3 university GP lecturers delivered the standardized training seminars, using the same teaching kit. A
4 validated electronic blood pressure measurement device (Spengler TB101[®], Spengler SAS, Antony,
5 France) was provided to the GPs, to improve the accuracy of blood pressure measurements. A six-
6 page leaflet that summarized therapeutic targets and strategies recommended in the guidelines was
7 also provided, and the GPs were asked to keep it on their office desks.
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11 126 GPs formed the intervention group of the ESCAPE trial, and recruited at least one patient. 125
12 provided qualitative data. On average GPs were 51 (SD=5.4) years old, with a male/female ratio of
13 80/20 (Table 1).
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17 The patients recruited were aged 40 to 75, treated for hypertension for at least six months, in
18 primary prevention, with at least two other cardiovascular risk factors (Age/gender, family history,
19 type 2 diabetes, high LDL-cholesterol, left ventricular hypertrophy or smoking). 905 patients were
20 recruited (7.2 per GP; 1-17). On average, they were 62 (SD 7.8) years old, and had been treated for
21 hypertension for an average of 10.9 years (SD 8.1). 71% had more than two other associated
22 cardiovascular risk factors and 57% had type 2 diabetes (Table 2). Each patient was seen five times
23 during this study.
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28 *Data collection*

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30 As planned in the ESCAPE protocol, at the end of each of the five consultations per patient
31 dedicated to cardiovascular prevention, GPs in the intervention group were asked to write in the
32 case report form the answer to the following open-ended question:
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36 *"If the therapeutic targets recommended in the guidelines for this patient were not reached*
37 *(blood pressure, LDL-cholesterol, HbA1c, and low-dose aspirin for diabetic patients) and you*
38 *did not change the medication, could you tell us why?"*
39
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41 This led to the collection of up to five responses per patient.
42

43 *Coding*

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45 All the responses were entered into a database and coded, using a constant comparison process
46 without predetermined categories. This generated an initial list of codes. The initial coding was
47 performed independently by two teams of researchers (JPL/VY and IAA/AM) using a qualitative
48 analysis software package (NVivo 9.2[®], QSR International Pty Ltd, Doncaster, Australia; 2011). The
49 two lists were then combined into one final codebook. Discrepancies were resolved by discussion,
50 and remaining disagreements went to arbitration with a fifth researcher (JSC).
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55 *Attributes and types*

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3 A matrix was constructed, where codes were the columns and GPs were the rows. The number in
4 each cell was the number of occurrences of the code found in the responses of each GP. In order to
5 have as much data as possible in a manageable size, a submatrix of the 10 GPs who provided the
6 greatest number of codes was first analysed to characterize GPs types and start constructing the
7 typologies. From this submatrix, researchers defined relevant codes as major or minor attributes to
8 construct and define types. The decision to use a given code as a major or minor attribute of a type
9 was taken independently by the two teams of researchers (JPL/VY and IAA/AM), and then
10 discussed with the arbitration of a third team (JSC and DP) for a final consensus. The types thus
11 defined were then applied to 30 other randomly allocated GPs (10 for each of the three teams), to
12 check for other emerging types and characterize them.
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19 20 *Typology*

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22 The types were applied to the whole matrix, and every GP that provided sufficient data was
23 allocated to one type.
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26 Finally, we checked for consistency per GP of belonging to one type over time and from one patient
27 to another. In order to have sufficient data for this, we selected and checked the GPs who provided
28 more than 50 coded references.
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31 32 *Registration*

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34 The Institutional Review Board of Versailles approved the ESCAPE study, which included this
35 study. The ESCAPE trial was registered with ClinicalTrials.gov, number NCT00348855.
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37 38 **Results**

39 40 *Data collection*

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42 The 125 GPs performed 4295 visits for the ESCAPE study for 905 patients, and gave 2638 answers
43 (from 1 to 59) to the open-ended question. Responses were transcribed verbatim to form the
44 database. Qualitative analysis of the database provided the results.
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47 48 *Coding*

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50 Initial coding resulted in a list of 69 codes in the final codebook, representing 4764 coded
51 references from the responses (Table 3).
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53 54 *Attributes and types*

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56 The matrix was constructed (Additional file 1), and the submatrix of the 10 GPs who provided the
57 largest numbers of codes (from 85 to 173) was extracted to define each type and its attributes. Both
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3 teams of researchers determined the same five types, with slight differences in the major and minor
4 attributes that characterized these types. Discussion and arbitration with the third team resolved the
5 final definition of 6 six types (“procrastinators” was split in “checkers” and “negotiators”). Belonging
6 to one type depended on fulfilling at least one of the two or three major attributes, and at least three
7 of the minor attributes defining that type (Table 4).
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11 Application of the templates to the subsequent 30 randomly allocated GPs lead to the emergence of
12 a 7th type (“Scientists”).
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14 15 *Typology*

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17 Applying the attributes to the whole database allowed the classification to one of the seven
18 response types for 100 of the 125 GPs. The 25 remaining did not have enough data to allow a
19 classification using attributes (Figure 1).
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22 The “Optimists” were the largest group (28 GPs). Great expectations related to the patient’s recent
23 or expected lifestyle changes were their central characteristics: *“Repeating the lifestyle*
24 *recommendations should be enough to reach the HbA1c target”*. Three GPs had a “Negotiator”
25 tendency, but the negotiations were mostly focused on lifestyle too: *“We insisted again on diet and*
26 *exercise”*. Follow-up visits for re-evaluations were often scheduled.
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30 Twenty GPs were classified as “Negotiators”. Difficulties in negotiating the treatment (including
31 lifestyle changes) with the patient were the main argument for not changing it: *“no aspirin: says he*
32 *won’t take it anyway...”*. “Partial modification” was a frequent way to overcome these difficulties: *“he*
33 *finally accepted the statin, so I did not insist on aspirin”*. Two GPs in this group had a profile close to
34 the “Optimists”: *“so I finally asked for lifestyle modification, which, after all, might do...”*.
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38 Fifteen GPs were “Checkers”. TI was justified by results that were either close to the targets or
39 questionable with regards to the usual results: *“BP usually not as high. Will check in 6 months and*
40 *ask for a home measurement if still as high”*.
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44 “Contextualizers” accounted for 13 of the GPs. Abnormalities in measurement results were
45 attributed to either associated events (including the circumstances of measurement) or socio-
46 professional context: *“High BP, but drove a long way to the practice, and waited a long time in the*
47 *overheated waiting room”*; *“Is in the middle of a political campaign”*. Intercurrent medical events
48 could be seen either as a cause for bad results or as priorities that justified postponing any other
49 medical intervention: *“Very anxious about the surgery (and so am I). I didn’t even mention the high*
50 *BP”*.
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54 The “Cautious” type included 11 GPs. Fear of adverse effects was their main characteristic.
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56 Possible gastric adverse effect of aspirin, muscular adverse effect of statins and orthostatic
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hypotension were the most frequently invoked reasons: “no aspirin because of gastrointestinal history”; “statins might not be well tolerated”. Of note, one GP in this group reported that all of his six diabetic patients “allergic to aspirin”.

Eight GPs were “Rounders” . They had a tendency to consider the results as close enough to the targets to justify inaction: “BP close to target. HbA1c is getting better. LDL-c is very close to target”.

The “Scientists” included five GPs. Their reasons for inaction were based on evidence, which could be new studies, new guidelines, or specialists’ advices: “The cardiologist he met in January said: no aspirin”. Three GPs defended their disagreement with the guidelines by providing the contradictory results of more recent publications: “I disagree with the guidelines regarding aspirin: read the recent New England article!”. While the attributes for this type were few, these GPs were quite consistent in showing these attributes only.

No GP fulfilled the attributes to belong to two different types. However, 27 had a tendency to relate to another type (one major attribute, and one or two minor). Table 5 summarizes the interrelations between the types.

For the 36 GPs that provided 50 or more coded references, analysis of the code evolution over time and from one patient to another showed consistency with their initial type for any given GP.

Discussion

Main findings

A typology including seven types was constructed from the qualitative analysis of GPs reported reasons for not initiating or reinforcing cardiovascular primary prevention drug treatment For the GPs who provided enough data to allow such an analysis, the type of responses given was consistent over time, and across patients.

Strengths and limitations

The specificities of both the underlying concept (therapeutic inertia) and the method used imply a special consideration for the meanings and limits of the results.

Of note, the names given to the types are actually nicknames referring to responses and not to the person, and therefore should not be considered as semantic description of the GPs included.

The GPs included were all investigators in the ESCAPE trial, and as such were recruited by the French National College of Teachers in General Practice. Many of them hosted a general practice trainee in their practice, and a substantial number of them were involved to various extents in teaching. Furthermore, they were all randomized in the intervention group of the trial, and

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3 underwent a training seminar. Their involvement and motivation in treating cardiovascular risk
4 factors was therefore different from the general population of GPs.
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7 Results of LDL-cholesterol, glycated hemoglobin and BP measurements were included in the CRF,
8 but the prescriptions were not, so it was not possible to know if a reason for not modifying
9 therapeutics was given every time it should have been.
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12 Two key points in the analysis process could introduce considerable subjectiveness: initial coding
13 and definition of the types. Modelling of the analysis by the researchers' assumptions is a bias
14 nested in the core of qualitative analysis. We tried as much as possible to overcome this by blinded
15 coding and analysis by separate teams of researchers. Both the initial coding and the types initially
16 described separately by the two teams were remarkably consistent, although we had as little
17 discussion as possible on the matter before the analysis.
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21 Although many of the reasons given by the GPs for inaction were questionable, the analysis came
22 across very few that could be regarded as definitely unacceptable, such as "no time" or "not in the
23 mood". One can imagine that in writing down the reasons for inaction, a physician would consider
24 the acceptability of the response. This social desirability bias may have influenced the content of the
25 data. Indeed, the typology here defined described the way GPs rationalized their decision of
26 inaction, and thus may not elucidate underlying factors or motivations, especially those that might
27 be considered socially unacceptable. Nevertheless, while it may not provide complete insight to the
28 intimate mechanisms of inaction, it does provide a practical classification of justifications.
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32 33 34 35 *Comparison with existing literature*

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37 Defining a typology regarding the reasons provided for not initiating or increasing the treatment of a
38 cardiovascular risk factor when indicated has not been done previously. The survey study of
39 Oliveira *et al.* did ask the physician the reasons of the decision for a given patient, but was not
40 conducted in a framework where the physician was specifically urged to give guideline-based
41 care³². While our results cannot be confronted with previous results of the exact same nature, the
42 various factors and behaviours involved in the inaction process have all been described before.
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47 Reviewing the whole database for a first impression, the overwhelming trust in lifestyle counselling
48 is striking. Diets of all kinds, physical exercise, weight loss and various other lifestyle modifications
49 expected or prescribed were cited very often as reasons to delay a drug prescription. Although most
50 guidelines do recommend lifestyle counselling as the first intervention, such a confidence in its
51 effectiveness for high-risk hypertensive or type 2 diabetic patients is not supported by clinical
52 evidence³³. Moreover, recent results suggest very little effect on clinical outcomes, if any, of lifestyle
53 interventions in diabetic patients³⁴. This confidence relates to the broader "overestimation of care
54 provided" issue, already described by Phillips *et al.* as a cause of clinical inertia^{15,35}.
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3 The need to check the values of blood pressure accounts for up to 35% of the reasons for inaction
4 in the management of hypertensive patients according to Oliveira *et al.*³². As already stated by a
5 number of authors, office blood pressure is often unreliable, due to white coat effect or other
6 intercurrent reasons, and home or ambulatory blood pressure measurement (HBPM or ABPM) is
7 now the recommended procedure^{36,37}. Taking in account HBPM or ABPM should therefore be
8 regarded as appropriate, as long as it is not indefinitely repeated. In this study, very few physicians
9 disregarded the results of such measurements. Nevertheless, a few “Checkers” did check values
10 above targets up to 5 times for the same patient, without increasing the treatment over 2 years,
11 which can hardly be justified. This also happened with LDL-cholesterol and HbA1c values.

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18 Negotiation is the core of the patient-centred shared decision-making. Negotiating the primary
19 prevention of cardiovascular risk in a consultation raises some specific issues³⁸. On the one hand,
20 much high-quality evidence is available, together with a number of decision aids, and this makes
21 information easy to share with patients. On the other hand, cardiovascular risk prevention means
22 lifestyle modifications and drug treatments for a benefit that remains hypothetical, and usually not
23 discernible. Further, most patients will not agree with all the lifestyle or drug options available. This
24 ambivalence relates to the controversy that arose when, in order to overcome clinical inertia, Phillips
25 and Twombly suggested to “run the numbers first and deal with blood pressure and glucose before
26 asking about other problems”³⁹. A number of researchers and physicians protested that such an
27 attitude would oversimplify primary care and go against the principles of patient centeredness⁴⁰.
28 Elements of negotiation were present in a very large proportion of the GPs responses gathered
29 here, and most of them sounded relevant at first sight. However, GPs in the “Negotiators” group
30 seemed to lead, with any given patient, the same negotiation about the same drug every six months
31 for two years. Here again, the decision to postpone the drug prescription relied a lot on the
32 expectations of lifestyle changes and a better adherence to medication. In these cases, negotiating
33 did not actually lead to any further action.

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42 The “rounding phenomenon” refers to three different behaviours, related to three possible reasons
43 for inaction. The first one is the end-digit preference, or tendency of physicians to round down the
44 results of measurement⁴¹. For BP measurement the results are usually rounded to the lower
45 multiple 10 or 5. Although the use of an electronic device reduces this tendency, it still exists, and
46 can significantly delay the initiation or reinforcement of a recommended treatment^{41,42}. The second
47 one is the “close enough to target” issue, already extensively described^{23,32,43}. It was mentioned
48 here at least once by each of the “Rounders”. Although its consequences have not been as
49 precisely assessed as with end-digit preference, it is likely to have the same effect. The third one is
50 the “mental adjustment” described by participants in the study by Howes *et al.*, where physicians
51 described how they mentally adjust down the BP actually measured to “better represent the true
52 BP” of the patient²³. Although such a behaviour was not as clearly described here, it seemed to
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3 underlie the decision of some “Rounders”. The GPs responses do not allow measurement of the
4 gap between the measured and the “mentally adjusted” BP, nor the possible clinical consequences
5 of the adjustment. Overall, rounding, in any of these three ways, might be a way to avoid a difficult
6 or time-consuming negotiation.
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10 The context of the measurement provided a wide variety of reasons why the figures found were not
11 regarded as reliable. At the time of the study, ambulatory measurements were not mandatory, and
12 the three measurements made in the office were the standards for the study. Therefore, contextual
13 reasons ranging from “waited too long in the waiting-room” to “didn’t have enough time in the
14 waiting room” are now outdated. Still, contextual reasons most frequently cited referred to personal
15 life or professional issues experienced by the patient. The “Contextualizers” paid much attention to
16 any kind of stress that patient was going through, regarding elevated BP as a consequence. This
17 has probably much to do with a coincidence of words in French, where BP, muscular tension, and
18 psychological stress share the same denomination (“tension”). Supporting this hypothesis, the
19 findings of Nicodème et al. in France⁴⁴, stressing the high impact of the “immediate” context on the
20 physician’s decision of inaction, differ from those in English-speaking countries, where context
21 refers more to the initial reason for consultation or to other medical priorities^{23,27}. Such a variety of
22 contextual elements, with regards to different cultures, questions both the feasibility and the
23 appropriateness of interventions on the physician behaviour, and makes clear the need of additional
24 qualitative data.
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28 Questioning the guidelines is also a very common reason invoked for not following them¹⁹. The
29 usual criticism relates to their complexity, inapplicability in general practice real-life, and outdated
30 evidence basis^{19,23}. This study did not find any rejection of the guidelines related to either their
31 complexity or their inapplicability in daily practice. This unusual result may be due to the framework
32 of the ESCAPE trial, where the GPs in the intervention group attended a one-day training about
33 these guidelines and the way they should be followed. Therefore, the “Scientists” typology included
34 GPs that criticized the validity of the guidelines on the basis of new scientific evidence. Indeed,
35 during the 2 years of the study, 2 articles were published that concluded that low-dose aspirin for
36 hypertensive diabetic patients should be prescribed under certain conditions only^{45,46}. At the same
37 time, a controversy arose about the maximum BP values that should be tolerated before initiating or
38 increasing a treatment. A popular French evidence-based medicine journal advocated values above
39 those defined in the guidelines⁴⁷. There were only five “Scientists” in our sample, but this should not
40 be understood as a lack of “scientism” in this GP population, since the typology related only to
41 reasons for inaction.
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54 55 56 *Perspectives* 57 58 59 60

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3 More work is needed to understand the mechanisms of inaction in GPs decision-making. First, the
4 validity of this typology should be confirmed. One way could be to propose clinical case vignettes to
5 these GPs, and check for the consistence of their declared behaviour with the attributes of the type
6 they belong to. Second, a thorough exploration of their representations and inner feelings in these
7 situations must be conducted.
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11 The answers given by the GPs were related to typical clinical inertia¹⁵. A number of works have
12 been published on this issue in the last few years. Nevertheless, because of the persisting
13 ambivalence between loss of chance for the patient and clinical safeguard from the guidelines, the
14 whole concept remains blurry^{17,20,39,40}. Interventions so far have aimed at reducing inertia as a
15 whole, but chances are that a proportion of the recorded inaction is actually appropriate patient-
16 centred care. Where the ultimate goal is to eliminate inappropriate inaction only, this typology could
17 be a mean to provide the GPs with some insight to their general ways of considering changes in the
18 care of cardiovascular risk factors, and to design specific physician-centred interventions aiming at
19 reducing inappropriate inaction.
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Characteristics		n	%
Overall		125	100
Gender	M (%)	100	80
	F (%)	25	20
Mean age (SE)		50.2 (+/- 5.4)	
Mean years of practice (SE)		21.0 (+/- 6.5)	
Area of practice	Urban	67	53.6
	Semi-rural	40	32.0
	Rural	18	14.4
Conditions of practice	Joint	91	72.8
	Single	34	27.2

Table 1. Characteristics of the GPs

Characteristic	<i>n</i> = 905
Male, <i>n</i> (%)	575 (63.5)
Mean age, years (SD)	62.1 (7.9)
Body Mass Index, kg/m ² (SD)	30.7 (5.2)
Mean systolic blood pressure, mmHg (SD)*	145.9 (15.3)
Mean diastolic blood pressure, mmHg (SD)*	83.7 (11.7)
LDL, mmol/L (SD)	3.19 (1.02)
MDRD-estimated glomerular filtration rate, ml/min (SD)	79.6 (19.6)
Left ventricular hypertrophy, <i>n</i> (%)	150 (16.6)
Family history of early cardiovascular event, <i>n</i> (%)	225 (24.9)
Albuminuria ≥ 20 mg/L, <i>n</i> (%)	186 (22.3)
Mean years since diagnosis of hypertension (SD)	10.5 (7.8)
Smoker status	
Current <i>n</i> (%):	193 (21.3)
Past smoker < 3 years <i>n</i> (%):	72 (8.0)
Non-smoker <i>n</i> (%):	640 (70.7)

Characteristic	<i>n</i> = 905
Number of antihypertensive drugs, <i>n</i> (SD)	2.16 (1.04)
Type-2 diabetes, <i>n</i> (%)	527 (58.2)
Mean years since diagnosis of type-2 diabetes, (SD)	6.9 (6.1)
HbA1c, % (SD)	7.0 (1.1)
Cardiovascular risk factors, <i>n</i> (%)	
Men > 50 or women > 60 years old	779 (86.1)
Current smoker or past smoker < 3 years	265 (29.3)
LDL ≥ 4.14 mmol/L or treatment	692 (76.5)
HDL ≤ 1.04 mmol/L	189 (20.9)
Number of cardiovascular risk factors, <i>n</i> (%)	
≤2	259 (28.6)
3	319 (35.2)
4	222 (24.5)
≥5	105 (11.6)
Mean 10-year Framingham-Anderson risk score, (%)	17.5

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For peer review only

Codes	Number of references
Exercise and/or diet in progress	203
Lifestyle changes instructions first	129
Recent changes	122
Patient's promise	25
Expectations	20
Just wait and see	5
Scheduled reevaluation	277
Referral	121
Scheduled change	38
Other specialist's advice	63
GP's opinion	45
Selected result	37
Partial modification	36
Omission	33
Minor modification	24
Other scientific reasons	13
Doubt on treatment effectiveness	7
No time	1
Lifestyle rules	588
Weight loss	53
Dietician	34
Alternate treatment	11
Adverse effect	196
Long prescription/Polypharmacy	85
Precautions of use	69
Insulin	48
Maximal treatment	36
Adherence to non-drug treatment	298

Adherence to drug treatment	89
Treatment interrupted	40
Patient's preferences	123
Psychological profile	110
Alcohol	57
Socio-professional context	43
Familial context	29
Stress	27
Hopeless	10
Professional risk	6
Age	5
Other intercurrent disease	158
Depressive disorder	24
Sleep Apnea	7
Drug related medical intercurrent event	30
Non medical intercurrent event	119
Organizational issue	101
Other medical priority	46
Sleep issues	6
HBPM* unknown procedure	161
HBPM* uncorrect procedure	45
HBPM* correct procedure	26
Recent cardio checkup	92
ABPM**	23
Echocardiography	2
Borderline results	136
Unusual results	123
« Not so bad » results	65
Preference for manual device	71

Inadequate arm cuff	38
Unreliable measurement device	19
Preference for another electronic device	13
Missing results	44
White coat effect	36
Circumstances of measurement	33
Not estimable LDL cholesterol	15

Preference for self-measured glycaemia	12
Negotiation	83
Limitation of instructions	39
Hierarchical organisation	29
Confidence	12
69 codes	4764

Table 3. Final code book. The number of references for a given code represents the number of sections of the initial verbatim allocated to that particular code

*HBPM : home blood pressure measurement**; ABPM: ambulatory blood pressure measurement

Types	Codes defined as major attributes	Codes defined as minor attributes
Optimists	<i>Physical exercise</i> <i>Preference for exercise and diet</i>	“Not so bad” results Hygienic rules Weight loss Exercise and/or diet in progress Scheduled re-evaluation Patient’s preference Recent changes Expectation
Negotiators	<i>Negotiation</i> <i>Hierarchical organisation</i> <i>Limitation of instruction</i>	Patient’s promise Adherence (drug or non-drug) Treatment interrupted Psychological profile Insulin Hopeless Circumstances of measurement
Checkers	<i>BP self-measurement</i> <i>Scheduled re-evaluation</i>	Unusual results Referral Scheduled change Scheduled re-evaluation Borderline results Circumstances of measurement
Contextualizers	<i>Non medical intercurrent event</i> <i>Intercurrent disease</i> <i>Socio-professional context</i>	Psychological profile Stress Familial context Adherence to treatment (drug or non-drug) Treatment interrupted Scheduled re-evaluation Alcohol Unusual results Other medical priorities Hierarchical organisation
Cautious	<i>Precautions of use</i> <i>Adverse effects</i>	Drug related intercurrent event Partial modification Minor modification Long prescription Maximal treatment Lifestyle changes first

Rounders	<i>Borderline results</i>	“Not so bad” results Unusual results Circumstances of measurement Scheduled re-evaluation
Scientists	<i>Other scientific reason</i> <i>Other specialist’s advice</i>	Doubt on treatment effectiveness BP self-measurement

Table 4. Attributes for the 7 types

Belonging to a type meant fulfilling at least one major and three minor attributes (one major and two minor for the “Scientists” type).

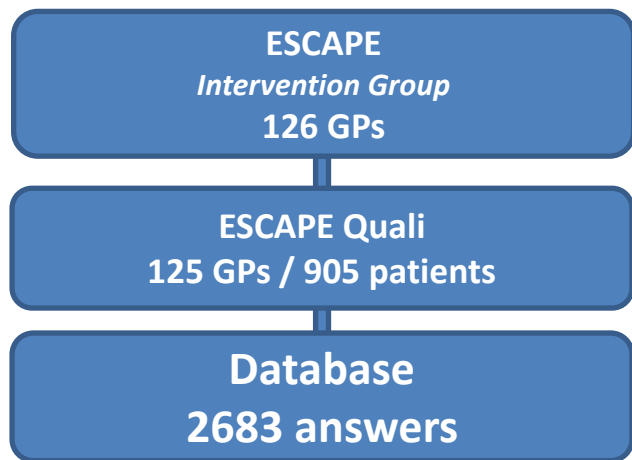
Types	Optimists	Negotiators	Checkers	Contextualizers	Cautious	Rounders	Scientists
Optimists		2 (10%)	2 (13.3%)	2 (15%)	0	0	0
Negotiators	3 (10.7%)		0	0	1 (9.1%)	1 (12.5%)	0
Checkers	1 (3.6%)	2 (10%)		0	1 (9.1%)	1 (12.5%)	1 (20%)
Contextualizers	1 (3.6%)	0	1 (6.7%)		0	2 (25%)	0
Cautious	0	0	0	2 (15%)		1 (12.5%)	1 (20%)
Rounders	1 (3.6%)	1 (5%)	0	0	0		0
Scientists	0	1 (5%)	0	0	1 (9.1%)	0	
None	22 (78.6%)	14 (70%)	12 (80%)	9 (69%)	8 (73%)	3 (37,5%)	3 (60%)
Total=92	28	20	15	13	11	8	5

Table 5. Interrelations between the types

27 GPs had a tendency - defined as one major attribute, and one or two minor - to relate to another type

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Data collection

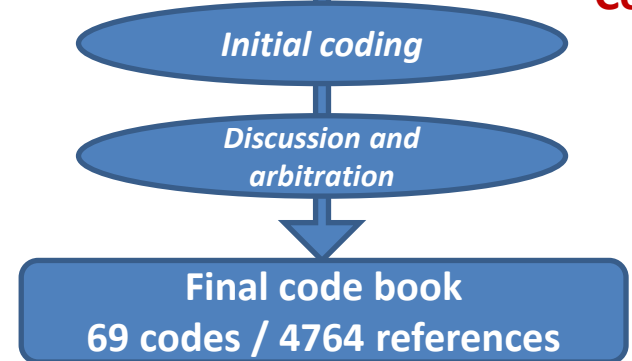


1 to 17 patients
5 visits per patient
0 to 85 possible answers per GP

1 to 17 patients
5 visits per patient
1 to 85 possible answers

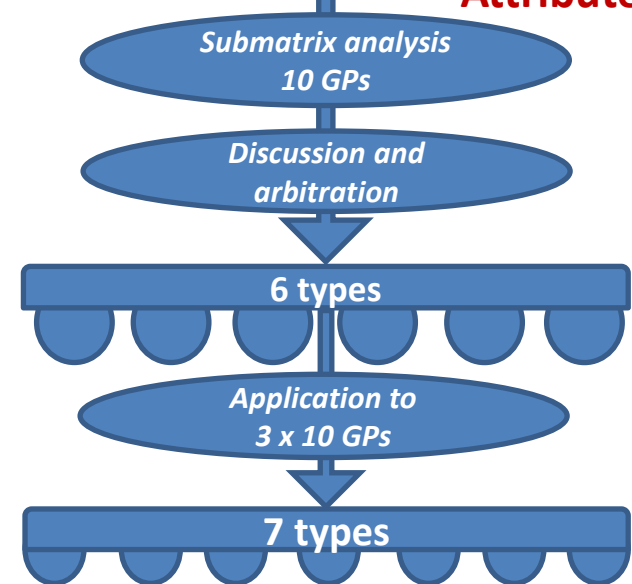
1 to 59 answers per GP

Coding



See Table 3

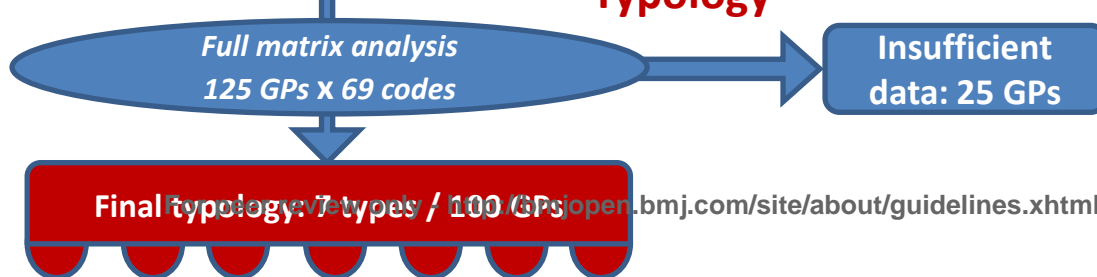
Attributes and types



85 to 173 codes per GP

Types defined with major and minor attributes (table 4)

Typology



BMJ Open

General practitioners justifications for therapeutic inertia in cardiovascular prevention: an empirically grounded typology

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General practitioners justifications for therapeutic inertia in cardiovascular prevention: an empirically grounded typology

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Abstract

Objective. To construct a typology of GPs responses regarding their justification of therapeutic inertia in cardiovascular primary prevention for high-risk hypertensive patients.

Design. Empirically grounded construction of typology. Types were defined by attributes derived from the qualitative analysis of GPs reported reasons for inaction.

Participants. 256 GPs randomized in the intervention group of a cluster randomized controlled trial.

Setting. GPs members of 23 French Regional Colleges of Teachers in General Practice, included in the ESCAPE trial.

Data collection and analysis. The database consisted of 2638 written responses given by the GPs to an open-ended question asking for the reasons why drug treatment was not changed as suggested by the national guidelines. All answers were coded using constant comparison analysis. A matrix analysis of codes per GP allowed the construction of a response typology, where types were defined by codes as attributes. Initial coding and definition of types were performed independently by two teams.

Results. Initial coding resulted in a list of 69 codes in the final codebook, representing 4764 coded references in the question responses. A typology including seven types was constructed. 100 GPs were allocated to one and only one of these types, while 25 GPs did not provide enough data to allow classification. Types (numbers of GPs allocated) were: “Optimists” (28), “Negotiators” (20), “Checkers” (15), “Contextualizers” (13), “Cautious” (11), “Rounders” (8) and “Scientists” (5). For the 36 GPs that provided 50 or more coded references, analysis of the code evolution over time and across patients showed a consistent belonging to the initial type for any given GP.

Conclusion. This typology could provide GPs with some insight into their general ways of considering changes in the treatment/management of cardiovascular risk factors, and guide design of specific physician-centred interventions to reduce inappropriate inaction.

Strengths and limitations of this study

- The typology was constructed from the data gathered during the study, without any pre-established framework, and therefore reflects the actual way GPs rationalize their reasons for inaction.
- Both the initial coding and the physician types initially described separately and blindly by the two coding teams were remarkably consistent.
- For the GPs who provided enough data to allow such an analysis, the type of responses given was consistent over time and across patients.
- Social desirability bias may have influenced the content of the data: in writing down reasons for inaction, a physician would consider the acceptability of the response.
- The GPs included may not represent the general GPs population, because they were specifically trained in treating cardiovascular risk factors for the ESCAPE trial intervention group, and were involved to various extent in general practice teaching.

Introduction

Guidelines for the primary prevention of cardiovascular events in hypertensive patients have been widely disseminated¹⁻⁴. They cover blood pressure (BP) targets that should be achieved and other risk-reducing strategies regarding LDL-cholesterol and smoking cessation. For hypertensive patients with type-2 diabetes, specific BP targets are recommended, along with HbA1c targets and low-dose acetylsalicylic acid treatment in specific cases¹. These guidelines and targets rely on an extensive body of evidence from a substantial number of large randomized controlled trials⁵⁻⁷.

Nevertheless, most hypertensive patients do not achieve control according to the recommended targets⁸. In the United Kingdom, 30% of people between 20 and 79 years old are hypertensive, but among them only 65% are aware of their condition. Of these, 51% are treated, and 27% are controlled⁹. These figures are even worse in France, where 31% of 18-74 year olds are hypertensive, 52% are aware, 42% treated, and 21% optimally controlled¹⁰. Evidence from the United States and Canada also shows considerable room for improvement⁹. Overall, in Europe and North America, more than half of the hypertensive patients are uncontrolled^{11,12}. Furthermore, when multiple risk factors are active in one patient, control of each risk factor becomes even more suboptimal^{12,13}.

Various causes may explain this gap between proposed targets and actual clinical outcomes. While patients' lack of adherence remains a prominent factor¹⁴, the responsibility of the health care professional has been more recently brought to light¹⁵. Among the various reasons that often keep adherence to guidelines low, therapeutic inertia (TI), or the failure of health care providers to initiate or increase treatment when the therapeutic targets are not met, is now regarded as a major impediment to reach both individual and public therapeutic goals regarding cardiovascular risk factors^{11,15,16}. The existence of TI in the management of modifiable cardiovascular risk factors has been shown¹⁶⁻¹⁸. For uncontrolled BP in treated hypertensive patients in European countries, TI occurs in up to 85% of consultations¹¹.

A number of explanations have been proposed to understand this phenomenon. The subjective overestimation by the practitioner of the care provided, a lack of familiarity with the guidelines, or organizational issues have been shown to lead to TI^{17,18}. Various hypotheses regarding the intimate mechanisms underlying these behaviours have also been proposed^{15,19,20}, but very few qualitative studies have explored these in depth²¹⁻²³. Studies were based on either nominal or focus groups, but did not specifically explore what happens during consultations with individual patients.

Decision-making is an important issue in psychological research, and the use of typologies has proven effective to better understand vocational choices²⁴ or to characterize the effects of cultural

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3 differences²⁵. Regarding health care, typical patterns of dealing with clinical issues and typologies in
4 decision-making have been brought to light in various situations^{26,27}. Decision-making is also both
5 crucial and very specific in cardiovascular primary prevention, where the physician should prescribe
6 drugs and rules to an asymptomatic patient, expecting a hypothetical benefit that will remain
7 unseen. A typology of GPs decision-making in cardiovascular primary prevention in actual clinical
8 practice has not been proposed yet.

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13 In this qualitative study, the objective was to construct a typology of general practitioners (GPs)
14 responses regarding their justification of TI in cardiovascular primary prevention. We explored the
15 reasons put forward by GPs for not optimizing a treatment when indicated, that is, to explain their
16 TI, and then looked for possible patterns of responses that could be clustered into types.

17 18 19 20 21 **Methods**

22 23 *Qualitative approach*

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25 We performed an empirically grounded construction of typology²⁸⁻³⁰. A typology is made of a number
26 of types. Each type is constructed and defined by a combination of attributes. These attributes are
27 codes that resulted from the qualitative analysis of the responses collected from the GPs included.
28 The typology described the reasons given for not initiating or reinforcing a preventive cardiovascular
29 drug treatment when indicated. Although the aim was to construct a typology, there was no initial
30 framework, and all types were inductively derived from the data.

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32 In the process of constructing the typology, the combination of two rules was followed:

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37 - The GPs within one type had to be as similar as possible, and the differences between the
38 types as strong as possible²⁸.
- 39
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41 - Each GP had to belong to one and only one type^{28,30}.

42 43 *Population*

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46 For this study, qualitative data of the ESCAPE trial were analysed. The quantitative part of ESCAPE
47 was a cluster randomized controlled trial conducted in general practice settings in France. It aimed
48 at determining whether a multifaceted intervention focused on GPs could increase the proportion of
49 high-risk hypertensive patients in primary prevention who achieved their recommended therapeutic
50 targets. The results have been published elsewhere³¹.

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55 The GPs involved in this qualitative study were all in the intervention group of the ESCAPE trial³¹.
56 As the intervention of the trial was at the GPs level, they all attended a one-day training seminar
57 about therapeutic targets and strategies recommended by the French national guidelines^{1,2}. Four
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3 trained university GP lecturers delivered the standardized training seminars, using the same
4 teaching kit. A validated electronic blood pressure measurement device (Spengler TB101®,
5 Spengler SAS, Antony, France) was provided to the GPs, to improve the accuracy of blood
6 pressure measurements. A six-page leaflet that summarized therapeutic targets and strategies
7 recommended in the guidelines was also provided, and the GPs were asked to keep it on their
8 office desk.
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12 126 GPs formed the intervention group of the ESCAPE trial, and recruited at least one patient. 125
13 provided qualitative data. On average GPs were 51 (SD=5.4) years old, with a male/female ratio of
14 80/20 (Table 1).
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18 The patients recruited were aged 40 to 75, treated for hypertension for at least six months, in
19 primary prevention, with at least two other cardiovascular risk factors (Age/gender, family history,
20 type 2 diabetes, high LDL-cholesterol, left ventricular hypertrophy or smoking). 905 patients were
21 recruited (7.2 per GP; range 1-18). On average, they were 62 (SD 7.8) years old, and had been
22 treated for hypertension for an average of 10.9 years (SD 8.1). 71% had more than two other
23 associated cardiovascular risk factors and 57% had type 2 diabetes (Table 2). Each patient was
24 seen five times during this trial.
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29 *Data collection*

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32 As planned in the ESCAPE protocol, at the end of each of the five consultations per patient
33 dedicated to cardiovascular prevention, GPs in the intervention group were asked to write in the
34 case report form the answer to the following open-ended question:
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37 *"If the therapeutic targets recommended in the guidelines for this patient were not reached*
38 *(blood pressure, LDL-cholesterol, HbA1c, and low-dose aspirin for diabetic patients) and you*
39 *did not change the medication, could you tell us why?"*
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43 This led to the collection of up to five responses per patient.
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45 *Coding*

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47 All the responses were entered into a database and coded, using a constant comparison process
48 without predetermined categories. This generated an initial list of codes. The initial coding was
49 performed independently by two teams of researchers (JPL/VY and IAA/AM) using a qualitative
50 analysis software package (NVivo 9.2®, QSR International Pty Ltd, Doncaster, Australia; 2011). The
51 two lists were then combined into one final codebook. Discrepancies were resolved by discussion,
52 and remaining disagreements went to arbitration with a fifth researcher (JSC).
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57 *Attributes and types*

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3 A matrix was constructed, where codes were the columns and GPs were the rows. The number in
4 each cell was the number of occurrences of the code found in the responses of each GP. In order to
5 have as much data as possible in a manageable size, a submatrix of the 10 GPs who provided the
6 greatest number of codes was first analysed to characterize GPs types and start constructing the
7 typologies. From this submatrix, researchers defined relevant codes as major or minor attributes to
8 construct and define types. The decision to use a given code as a major or minor attribute of a type
9 was taken independently by the two teams of researchers (JPL/VY and IAA/AM), and then
10 discussed with the arbitration of a third team (JSC and DP) for a final consensus. The types thus
11 defined were then applied to 30 other randomly allocated GPs (10 for each of the three teams), to
12 check for other emerging types and characterize them.
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19 *Typology*

20 The types were applied to the whole matrix, and every GP that provided sufficient data was
21 allocated to one type.
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25 Finally, we checked for consistency per GP of belonging to one type over time and from one patient
26 to another. In order to have sufficient data for this, we selected and checked the GPs who provided
27 more than 50 coded references.
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31 *Registration*

32 The Institutional Review Board of Versailles approved the ESCAPE trial, which included this
33 qualitative study. The ESCAPE trial was registered with ClinicalTrials.gov, number NCT00348855.
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37 **Results**

38 *Data collection*

39 The 125 GPs performed 4295 visits for the ESCAPE trial for 905 patients, and gave 2638 answers
40 (from 1 to 59) to the open-ended question. Responses were transcribed verbatim to form the
41 database. Qualitative analysis of the database provided the results.
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48 *Coding*

49 Initial coding resulted in a list of 69 codes in the final codebook, representing 4764 coded
50 references from the responses (Table 3).
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54 *Attributes and types*

55 The matrix was constructed (Additional file 1), and the submatrix of the 10 GPs who provided the
56 largest numbers of codes (from 85 to 173) was extracted to define each type and its attributes. Both
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3 teams of researchers determined the same five types, with slight differences in the major and minor
4 attributes that characterized these types. Discussion and arbitration with the third team resolved the
5 final definition of 6 six types (“procrastinators” was split in “checkers” and “negotiators”). Belonging
6 to one type depended on fulfilling at least one of the two or three major attributes, and at least three
7 of the minor attributes defining that type (Table 4).
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11 Application of the templates to the subsequent 30 randomly allocated GPs lead to the emergence of
12 a 7th type (“Scientists”).
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14 *Typology*

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16 Applying the attributes to the whole database allowed the classification to one of the seven
17 response types for 100 of the 125 GPs. The 25 remaining did not have enough data to allow a
18 classification using attributes (Figure 1). For the 100 GPs allocated to a type, the mean number of
19 patient was 8.0 (range 2-18).
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24 The “Optimists” were the largest group (28 GPs). Great expectations related to the patient’s recent
25 or expected lifestyle changes were their central characteristics: *“Repeating the lifestyle*
26 *recommendations should be enough to reach the HbA1c target”*. Three GPs had a “Negotiator”
27 tendency, but the negotiations were mostly focused on lifestyle too: *“We insisted again on diet and*
28 *exercise”*. Follow-up visits for re-evaluations were often scheduled.
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32 Twenty GPs were classified as “Negotiators”. Difficulties in negotiating the treatment (including
33 lifestyle changes) with the patient were the main argument for not changing it: *“no aspirin: says he*
34 *won’t take it anyway...”*. “Partial modification” was a frequent way to overcome these difficulties: *“he*
35 *finally accepted the statin, so I did not insist on aspirin”*. Two GPs in this group had a profile close to
36 the “Optimists”: *“so I finally asked for lifestyle modification, which, after all, might do...”*.
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41 Fifteen GPs were “Checkers”. TI was justified by results that were either close to the targets or
42 questionable with regards to the usual results: *“BP usually not as high. Will check in 6 months and*
43 *ask for a home measurement if still as high”*.
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46 “Contextualizers” accounted for 13 of the GPs. Abnormalities in measurement results were
47 attributed to either associated events (including the circumstances of measurement) or socio-
48 professional context: *“High BP, but drove a long way to the practice, and waited a long time in the*
49 *overheated waiting room”*; *“Is in the middle of a political campaign”*. Intercurrent medical events
50 could be seen either as a cause for bad results or as priorities that justified postponing any other
51 medical intervention: *“Very anxious about the surgery (and so am I). I didn’t even mention the high*
52 *BP”*.
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3 The “Cautious” type included 11 GPs. Fear of adverse effects was their main characteristic.
4 Possible gastric adverse effect of aspirin, muscular adverse effect of statins and orthostatic
5 hypotension were the most frequently invoked reasons: “*no aspirin because of gastrointestinal*
6 *history*”; “*statins might not be well tolerated*”. Of note, one GP in this group reported that all of his six
7 diabetic patients “allergic to aspirin”.
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11 Eight GPs were “Rounders”. They had a tendency to consider the results as close enough to the
12 targets to justify inaction: “*BP close to target. HbA1c is getting better. LDL-c is very close to target*”.
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15 The “Scientists” included five GPs. Their reasons for inaction were based on evidence, which could
16 be new studies, new guidelines, or specialists’ advices: “*The cardiologist he met in January said: no*
17 *aspirin*”. Three GPs defended their disagreement with the guidelines by providing the contradictory
18 results of more recent publications: “*I disagree with the guidelines regarding aspirin: read the recent*
19 *New England article!*”. While the attributes for this type were few, these GPs were quite consistent
20 in showing these attributes only.
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25 No GP fulfilled the attributes to belong to two different types. However, 27 had a tendency to relate
26 to another type (one major attribute, and one or two minor). Table 5 summarizes the interrelations
27 between the types.
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30 For the 36 GPs that provided 50 or more coded references, analysis of the code evolution over time
31 and from one patient to another showed consistency with their initial type for any given GP.
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34 Discussion

35 Main findings

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37 A typology including seven types was constructed from the qualitative analysis of GPs reported
38 reasons for not initiating or reinforcing cardiovascular primary prevention drug treatment. For the
39 GPs who provided enough data to allow such an analysis, the type of responses given was
40 consistent over time, and across patients.
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45 Detailed findings and comparison with existing literature

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47 Defining a typology regarding the reasons provided for not initiating or increasing the treatment of a
48 cardiovascular risk factor when indicated has not been done previously. The survey study of
49 Oliveira *et al.* did ask the physician the reasons of the decision for a given patient, but was not
50 conducted in a framework where the physician was specifically urged to give guideline-based
51 care³². While our results cannot be confronted with previous results of the exact same nature, the
52 various factors and behaviours involved in the inaction process have all been described before.
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3 Reviewing the whole database for a first impression, the overwhelming confidence in lifestyle
4 counselling is striking. Diets of all kinds, physical exercise, weight loss and various other lifestyle
5 modifications expected or prescribed were cited very often as reasons to delay a drug prescription.
6 Although most guidelines do recommend lifestyle counselling as the first intervention, such a
7 confidence in its effectiveness for high-risk hypertensive or type 2 diabetic patients is not supported
8 by clinical evidence³³. Moreover, recent results suggest very little effect on clinical outcomes, if any,
9 of lifestyle interventions in diabetic patients³⁴. This confidence relates to the broader “overestimation
10 of care provided” issue, already described by Phillips et al. as a cause of TI^{15,35}.

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16 Regarding the need to check blood pressure, home or ambulatory blood pressure measurement
17 (HBPM or ABPM) is now the recommended procedure^{36,37}. Taking in account HBPM or ABPM
18 should therefore be regarded as appropriate, as long as it is not indefinitely repeated. In this study,
19 very few physicians disregarded the results of such measurements. Nevertheless, a few “Checkers”
20 did check values above targets up to 5 times for the same patient, without increasing the treatment
21 over 2 years, which can hardly be justified. This also happened with LDL-cholesterol and HbA1c
22 values.
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28 Negotiation is the core of the patient-centred shared decision-making. Negotiating the primary
29 prevention of cardiovascular risk in a consultation raises some specific issues³⁸. Cardiovascular risk
30 prevention means lifestyle modifications and drug treatments for a benefit that remains hypothetical,
31 and usually not discernible. Further, most patients will not agree with all the lifestyle or drug options
32 available. This ambivalence relates to the controversy that arose when, in order to overcome clinical
33 inertia, Phillips and Twombly suggested to “run the numbers first and deal with blood pressure and
34 glucose before asking about other problems”³⁹. A number of researchers and physicians protested
35 that such an attitude would oversimplify primary care and go against the principles of patient
36 centeredness⁴⁰. Elements of negotiation were present in a very large proportion of the GPs
37 responses gathered here, and most of them sounded relevant at first sight. However, GPs in the
38 “Negotiators” group seemed to lead, with any given patient, the same negotiation about the same
39 drug every six months for two years. In these cases, negotiating did not actually lead to any further
40 action.
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49 The “rounding phenomenon” refers to three different behaviours, related to three possible reasons
50 for inaction. The first one is the end-digit preference, or tendency of physicians to round down the
51 results of measurement⁴¹. For BP measurement the results are usually rounded to the lower
52 multiple 10 or 5. Although the use of an electronic device reduces this tendency, it still exists, and
53 can significantly delay the initiation or reinforcement of a recommended treatment^{41,42}. The second
54 one is the “close enough to target” issue, already extensively described^{23,32,43}. It was mentioned
55 here at least once by each of the “Rounders”. Although its consequences have not been as
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3 precisely assessed as with end-digit preference, it is likely to have the same effect. The third one is
4 the “mental adjustment” described by participants in the study by Howes *et al.*, where physicians
5 described how they mentally adjust down the BP actually measured to “better represent the true
6 BP” of the patient²³. Although such a behaviour was not as clearly described here, it seemed to
7 underlie the decision of some “Rounders”. Overall, rounding, in any of these three ways, might be a
8 way to avoid a difficult or time-consuming negotiation.
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12 The context of the measurement provided a wide variety of reasons why the results were not
13 regarded as reliable. At the time of the study, ambulatory measurements were not mandatory, and
14 the three measurements made in the office were the standards for the study. Therefore, contextual
15 reasons ranging from “waited too long in the waiting-room” to “didn’t have enough time in the
16 waiting room” are now outdated. Still, the “Contextualizers” paid much attention to any kind of stress
17 that the patient was going through, regarding elevated BP as a consequence. This has probably
18 much to do with a coincidence of words in French, where BP, muscular tension, and psychological
19 stress share the same denomination (“*tension*”). Supporting this hypothesis, the findings of
20 Nicodème *et al.* in France⁴⁴, stressing the high impact of the “immediate” context on the physician’s
21 decision of inaction, differ from those in English-speaking countries, where context refers more to
22 the initial reason for consultation or to other medical priorities^{23,27}.
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31 Questioning the content of the guidelines is also a very common reason invoked by professionals
32 for not following them¹⁹. The usual criticism relates to their complexity, inapplicability in general
33 practice real-life, and outdated evidence basis^{19,23}. This study did not find any rejection of the
34 guidelines related to either their complexity or their inapplicability in daily practice. This unusual
35 result may be due to the framework of the ESCAPE trial, where the GPs in the intervention group
36 attended a one-day training about these guidelines and the way they should be followed. Therefore,
37 the “Scientists” typology included GPs that criticized the validity of the guidelines on the basis of
38 new scientific evidence. Indeed, during the 2 years of the study, 2 articles were published that
39 concluded that low-dose aspirin for hypertensive diabetic patients should be prescribed under
40 certain conditions only^{45,46}. At the same time, a controversy arose about the maximum BP values
41 that should be tolerated before initiating or increasing a treatment. A popular French evidence-
42 based medicine journal advocated values above those defined in the guidelines⁴⁷. There were only
43 five “Scientists” in our sample, but this should not be understood as a lack of scientific attitude in
44 this GP population, since the typology related only to reasons for inaction.
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55 *Strengths and limitations*

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3 It should be noted that the names given to the types are actually nicknames referring to responses
4 and not to the person, and therefore should not be considered as semantic description of the GPs
5 included.
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8 The GPs included were all investigators in the ESCAPE trial, and as such were recruited by the
9 French National College of Teachers in General Practice. Many of them hosted a general practice
10 trainee in their practice, and a substantial number of them were involved to various extents in
11 teaching. Furthermore, they were all randomized in the intervention group of the trial, and
12 underwent a training seminar. Their involvement and motivation in treating cardiovascular risk
13 factors was therefore different from the general population of GPs.
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18 Results of LDL-cholesterol, HbA1c and BP measurements were included in the CRF, but the
19 prescriptions were not, so it was not possible to know if a reason for not modifying therapeutics was
20 given every time it should have been.
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24 Two key points in the analysis process could introduce considerable subjectivity: initial coding and
25 definition of the types. Modelling of the analysis by the researchers' assumptions is a bias nested in
26 the core of qualitative analysis. We tried as much as possible to overcome this by blinded coding
27 and analysis by separate teams of researchers. Both the initial coding and the types initially
28 described separately by the two teams were remarkably consistent, although we had as little
29 discussion as possible on the matter before the analysis.
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33 Although many of the reasons given by the GPs for inaction were questionable, the analysis came
34 across very few that could be regarded as definitely unacceptable, such as "no time" or "not in the
35 mood". One can imagine that in writing down the reasons for inaction, a physician would consider
36 the acceptability of the response. This social desirability bias may have influenced the content of the
37 data. Indeed, the typology here defined described the way GPs rationalized their decision of
38 inaction, and thus may not elucidate underlying factors or motivations, especially those that might
39 be considered socially unacceptable. Nevertheless, while it may not provide complete insight to the
40 intimate mechanisms of inaction, it does provide a practical classification of justifications.
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46 *Perspectives*

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48 The answers given by the GPs were related to typical clinical inertia¹⁵. Interventions so far have
49 aimed at reducing inertia as a whole, but chances are that a proportion of the recorded inaction is
50 actually appropriate patient-centred care^{20,40}. This typology could help GPs elucidate their personal
51 decision-making processes, and help design physician-centred interventions aiming at reducing
52 inappropriate inaction only.
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3 Concerted and repeated efforts in implementing up-to-date guidelines have proven effective in
4 addressing the recurrent issue of poor blood pressure control, but have still left room for
5 improvement⁴⁸. Our results suggest that a well-defined set of doctor-related determinants are
6 important. This reinforces the need for education and interventions aiming at the physician's
7 behaviour.
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11 More work is needed to understand the mechanisms of inaction in GPs decision-making. First, the
12 validity of this typology should be confirmed. One way could be to propose clinical case vignettes to
13 these GPs, and check for the consistence of their declared behaviour with the attributes of the type
14 they belong to. Second, a thorough exploration of their representations and inner feelings in these
15 situations must be conducted.
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20
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23 Daher for reviewing the manuscript.
24
25
26

27 **Footnotes**

28
29 **Contributors** JPL, JSC, DP, VY, IAA and AM designed the study and carried out the data collection and
30 analysis. HVR, ER, RR, EV and KH audited the whole methodological process. All authors contributed to the
31 interpretation of findings and to the final construction of the typology. All authors contributed to the
32 development of the manuscript. All authors had full access to all of the data in the study, and can take
33 responsibility for the integrity and accuracy of the analysis. The first author declares that the article is an
34 honest, accurate and transparent account of the study.
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42 publication of the study, without any intervention from the two partners.
43
44

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46 from the corresponding author) and declare that:

- 47 - JPL and DP have support from Pierre Fabre Medicaments[®] for the submitted work;
- 48 - They have no relationships with companies that might have an interest in the submitted work in the
49 previous 3 years;
- 50 - Their spouses, partners, or children have no financial relationships that may be relevant to the
51 submitted work;
- 52 - They have no non-financial interests that may be relevant to the submitted work.
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Ethics approval The Institutional Review Board of Versailles (France) approved the ESCAPE trial, which included this qualitative study. All patients gave written informed consent for their data to be used for this study. The ESCAPE trial was registered with ClinicalTrials.gov, number NCT00348855.

Provenance and peer review Not commissioned; external peer reviewed.

Data sharing Full datasets and coding tables are available from the corresponding author at jean-pierre.lebeau@univ-tours.fr. All these data are anonymised, and risk of identification is low.

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Characteristics		n	%
<i>Overall</i>		125	100
Gender	M (%)	100	80
	F (%)	25	20
Mean age (SE)		50.2 (±5.4)	
Mean years of practice (SE)		21.0 (±6.5)	
Area of practice	Urban	67	53.6
	Semi-rural	40	32.0
	Rural	18	14.4
Conditions of practice	Joint	91	72.8
	Single	34	27.2

Table 1. Characteristics of the GPs

Characteristic	<i>n</i> = 905 N (%)
Male, n (%)	575 (63.5)
Mean age, years (SD)	62.1 (7.9)
Body Mass Index, kg/m ² (SD)	30.7 (5.2)
Mean systolic blood pressure, mmHg (SD)*	145.9 (15.3)
Mean diastolic blood pressure, mmHg (SD)*	83.7 (11.7)
LDL, mmol/L (SD)	3.19 (1.02)
MDRD-estimated glomerular filtration rate, ml/min (SD)	79.6 (19.6)
Left ventricular hypertrophy, n (%)	150 (16.6)
Family history of early cardiovascular event, n (%)	225 (24.9)
Albuminuria ≥ 20 mg/L, n (%)	186 (22.3)
Mean years since diagnosis of hypertension (SD)	10.5 (7.8)
Smoker status	
Current n (%):	193 (21.3)
Past smoker < 3 years n (%):	72 (8.0)
Non-smoker n (%):	640

Characteristic	<i>n</i> = 905 N (%)
	(70.7)
Number of antihypertensive drugs, <i>n</i> (SD)	2.16 (1.04)
Type-2 diabetes, <i>n</i> (%)	527 (58.2)
Mean years since diagnosis of type-2 diabetes, (SD)	6.9 (6.1)
HbA1c, % (SD)	7.0 (1.1)
Cardiovascular risk factors, <i>n</i> (%)	
Men > 50 or women > 60 years old	779 (86.1)
Current smoker or past smoker < 3 years	265 (29.3)
LDL \geq 4.14 mmol/L or treatment	692 (76.5)
HDL \leq 1.04 mmol/L	189 (20.9)
Number of cardiovascular risk factors, <i>n</i> (%)	
≤ 2	259 (28.6)
3	319 (35.2)
4	222 (24.5)
≥ 5	105 (11.6)

Characteristic	<i>n</i> = 905 N (%)
Mean 10-year Framingham-Anderson risk score, (%)	17.5

Table 2. Characteristics of the patients

For peer review only

Codes	Number of references
Exercise and/or diet in progress	203
Lifestyle changes instructions first	129
Recent changes	122
Patient's promise	25
Expectations	20
Just wait and see	5
Scheduled reevaluation	277
Referral	121
Scheduled change	38
Other specialist's advice	63
GP's opinion	45
Selected result	37
Partial modification	36
Omission	33
Minor modification	24
Other scientific reasons	13
Doubt on treatment effectiveness	7
No time	1
Lifestyle rules	588
Weight loss	53
Dietician	34
Alternate treatment	11
Adverse effect	196
Long prescription/Polypharmacy	85
Precautions of use	69
Insulin	48
Maximal treatment	36
Adherence to non-drug treatment	298

Adherence to drug treatment	89
Treatment interrupted	40
Patient's preferences	123
Psychological profile	110
Alcohol	57
Socio-professional context	43
Familial context	29
Stress	27
Hopeless	10
Professional risk	6
Age	5
Other intercurrent disease	158
Depressive disorder	24
Sleep Apnea	7
Drug related medical intercurrent event	30
Non medical intercurrent event	119
Organizational issue	101
Other medical priority	46
Sleep issues	6
HBPM* unknown procedure	161
HBPM* incorrect procedure	45
HBPM* correct procedure	26
Recent cardio check-up	92
ABPM**	23
Echocardiography	2
Borderline results	136
Unusual results	123
« Not so bad » results	65
Preference for manual device	71
Inadequate arm cuff	38

Unreliable measurement device	19
Preference for another electronic device	13
Missing results	44
White coat effect	36
Circumstances of measurement	33
Not estimable LDL cholesterol	15
Preference for self-measured glycaemia	12

Negotiation	83
Limitation of instructions	39
Hierarchical organisation	29
Confidence	12
69 codes	4764

Table 3. Final code book. The number of references for a given code represents the number of sections of the initial verbatim allocated to that particular code

*HBPM: home blood pressure measurement; **ABPM: ambulatory blood pressure measurement

peer review only

Types	Codes defined as major attributes	Codes defined as minor attributes
Optimists	<p>Physical exercise</p> <p>Preference for exercise and diet</p>	<p>“Not so bad” results</p> <p>Hygienic rules</p> <p>Weight loss</p> <p>Exercise and/or diet in progress</p> <p>Scheduled re-evaluation</p> <p>Patient’s preference</p> <p>Recent changes</p> <p>Expectation</p>
Negotiators	<p>Negotiation</p> <p>Hierarchical organisation</p> <p>Limitation of instruction</p>	<p>Patient’s promise</p> <p>Adherence (drug or non-drug)</p> <p>Treatment interrupted</p> <p>Psychological profile</p> <p>Insulin</p> <p>Hopeless</p> <p>Circumstances of measurement</p>
Checkers	<p>BP self-measurement</p> <p>Scheduled re-evaluation</p>	<p>Unusual results</p> <p>Referral</p> <p>Scheduled change</p> <p>Scheduled re-evaluation</p> <p>Borderline results</p> <p>Circumstances of measurement</p>
Contextualizers	<p>Non medical intercurrent event</p> <p>Intercurrent disease</p> <p>Socio-professional context</p>	<p>Psychological profile</p> <p>Stress</p> <p>Familial context</p> <p>Adherence to treatment (drug or non-drug)</p> <p>Treatment interrupted</p> <p>Scheduled re-evaluation</p> <p>Alcohol</p> <p>Unusual results</p> <p>Other medical priorities</p> <p>Hierarchical organisation</p>
Cautious	<p>Precautions of use</p> <p>Adverse effects</p>	<p>Drug related intercurrent event</p> <p>Partial modification</p> <p>Minor modification</p> <p>Long prescription</p> <p>Maximal treatment</p> <p>Lifestyle changes first</p>

Rounders	<i>Borderline results</i>	“Not so bad” results Unusual results Circumstances of measurement Scheduled re-evaluation
Scientists	<i>Other scientific reason</i> <i>Other specialist’s advice</i>	Doubt on treatment effectiveness BP self-measurement

Table 4. Attributes for the 7 types

Belonging to a type meant fulfilling at least one major and three minor attributes (one major and two minor for the “Scientists” type).

Types	Optimists	Negotiators	Checkers	Contextualizers	Cautious	Rounders	Scientists
Optimists		2 (10%)	2 (13.3%)	2 (15%)	0	0	0
Negotiators	3 (10.7%)		0	0	1 (9.1%)	1 (12.5%)	0
Checkers	1 (3.6%)	2 (10%)		0	1 (9.1%)	1 (12.5%)	1 (20%)
Contextualizers	1 (3.6%)	0	1 (6.7%)		0	2 (25%)	0
Cautious	0	0	0	2 (15%)		1 (12.5%)	1 (20%)
Rounders	1 (3.6%)	1 (5%)	0	0	0		0
Scientists	0	1 (5%)	0	0	1 (9.1%)	0	
None	22 (78.6%)	14 (70%)	12 (80%)	9 (69%)	8 (73%)	3 (37,5%)	3 (60%)
Total=92	28	20	15	13	11	8	5

Table 5. Interrelations between the types

27 GPs had a tendency - defined as one major attribute, and one or two minor - to relate to another type

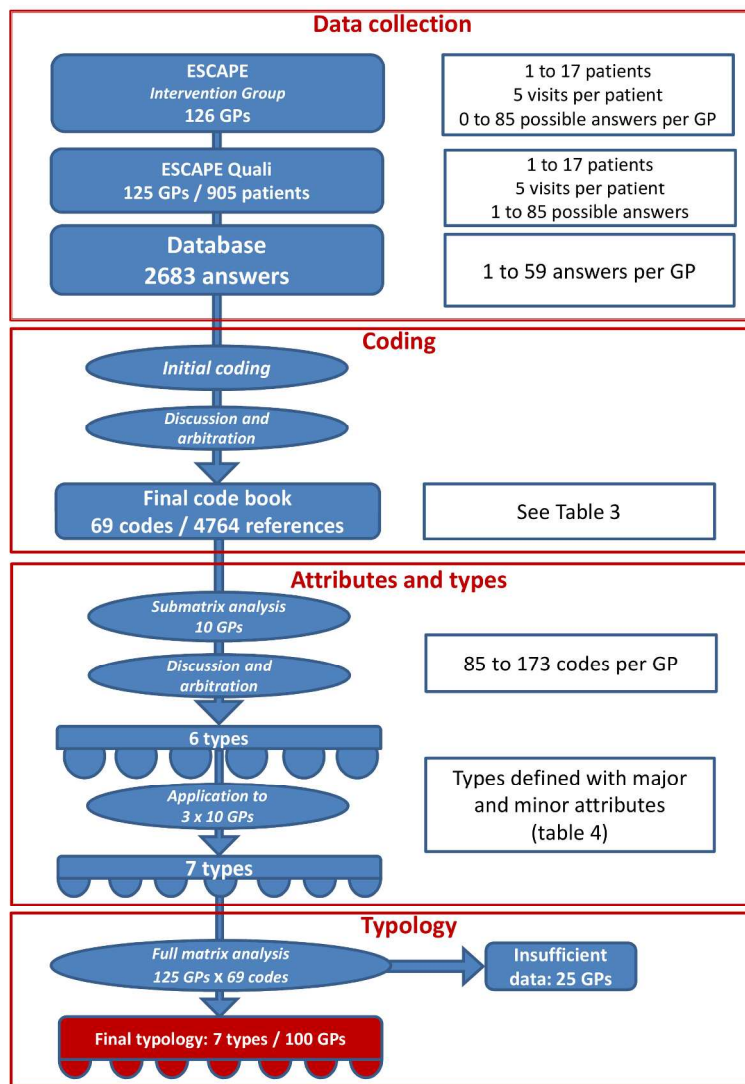


Figure 1. Study flowchart
210x297mm (300 x 300 DPI)

Categories
GP categories

GP's	Codes	Wait and see									GP					Others
		Exercise and-or diet in progress	Lifestyle changes instructions first	Recent changes	Patient's promise	Expectations	Just wait and see	Scheduled reevaluation	Referral	Scheduled change	Other specialist's advice	GP's opinion	Selected result	Partial modification	Omission	
1:	1002	1	2	6	1	2	0	5	0	0	0	5	2	0	0	
2:	1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:	1004	3	2	1	0	0	0	14	1	1	0	1	3	1	0	
4:	1006	4	0	2	1	1	0	3	1	0	0	0	0	0	0	
5:	1007	3	1	1	0	0	0	7	4	0	1	2	1	0	0	
6:	1008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:	1009	0	1	0	1	0	0	0	0	0	0	0	0	1	0	
8:	1010	0	0	2	0	0	0	0	1	0	0	0	0	0	0	
9:	1011	0	0	6	0	0	0	1	0	0	0	0	1	0	0	
10:	1012	0	1	1	1	2	0	2	1	0	0	1	3	1	0	
11:	1013	1	0	0	0	0	0	1	0	0	0	0	1	0	0	
12:	1014	1	2	2	1	0	0	4	0	0	0	5	3	1	0	
13:	1015	1	2	1	0	0	0	3	1	0	1	0	0	1	0	
14:	1016	0	0	1	0	0	0	3	1	0	0	0	0	0	0	
15:	1101	7	2	3	0	0	0	0	0	0	0	1	1	0	0	
16:	1102	0	1	0	0	0	0	0	0	0	0	0	0	0	2	
17:	1103	0	0	1	1	0	0	1	0	0	0	0	0	0	0	
18:	1104	1	3	1	0	0	0	1	0	0	0	0	0	2	0	
19:	1105	0	0	2	0	0	0	3	1	0	0	0	0	0	0	
20:	1106	1	1	1	0	0	0	1	0	0	0	0	1	0	0	
21:	1107	2	1	2	0	2	0	2	1	3	0	2	1	0	5	
22:	1108	2	2	0	0	0	0	2	0	0	0	0	0	0	0	
23:	1109	2	2	1	0	0	0	2	0	0	0	0	0	0	0	
24:	1110	3	0	1	0	0	0	0	0	0	0	0	1	0	0	
25:	1111	7	1	4	0	1	0	2	4	0	0	0	0	0	0	
26:	1114	1	2	4	2	0	0	5	0	0	2	0	1	1	1	
27:	1202	1	2	0	0	0	0	3	0	0	0	1	0	0	0	
28:	1203	2	0	3	0	0	0	1	2	0	3	0	0	0	0	
29:	1206	2	1	1	0	0	0	5	1	1	0	1	0	1	1	
30:	1207	2	0	2	1	0	0	6	0	1	0	0	2	0	2	
31:	1208	4	2	2	0	0	0	7	3	0	0	2	1	1	2	
32:	1209	1	1	2	1	0	0	2	0	0	1	1	1	0	0	
33:	1210	5	0	1	0	0	0	3	0	0	1	3	0	0	0	
34:	1211	1	0	1	0	0	0	5	6	1	2	0	0	0	0	
35:	1212	0	0	0	0	0	0	3	0	0	0	0	1	0	0	
36:	1213	4	2	0	0	1	0	9	1	0	0	0	0	0	0	
37:	1214	10	0	2	0	1	0	2	1	0	0	0	0	0	0	
38:	1301	3	3	2	0	0	0	4	3	0	2	1	0	0	0	
39:	1302	1	5	1	0	0	0	3	0	0	0	0	0	0	0	
40:	1304	4	1	0	0	0	0	2	2	0	0	0	0	0	0	
41:	1305	4	0	0	1	0	0	3	1	0	0	0	0	0	0	
42:	1306	0	0	0	0	0	0	1	2	0	3	0	0	0	1	
43:	1307	1	4	1	1	0	0	2	0	0	0	0	0	1	0	
44:	1308	1	0	1	0	0	0	1	0	0	0	0	0	0	0	
45:	1310	8	1	1	0	0	0	1	2	0	1	0	0	0	0	
46:	1311	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
47:	1312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
48:	1313	2	1	1	0	0	0	4	0	0	0	0	0	0	0	
49:	1314	0	0	2	1	0	0	4	4	0	1	0	0	0	0	
50:	1403	5	3	1	1	0	0	6	1	0	0	0	0	0	0	
51:	1404	0	0	1	0	0	0	2	2	0	0	0	0	0	0	
52:	1407	3	3	2	0	0	1	7	2	1	2	1	1	2	0	
53:	1408	2	1	1	0	0	0	2	0	0	0	0	1	0	1	
54:	1409	1	1	0	0	0	0	0	2	0	0	0	0	0	0	
55:	1416	0	0	0	0	0	0	0	5	1	3	0	0	0	0	
56:	1417	1	0	1	0	0	0	1	3	0	0	0	0	0	0	
57:	1418	1	2	0	0	0	0	1	0	0	0	0	0	0	0	
58:	1419	0	0	2	0	1	2	2	0	0	0	0	0	0	1	
59:	1502	3	2	1	0	0	0	2	0	0	1	1	0	0	0	
60:	1503	1	3	0	0	0	0	0	0	0	0	0	0	0	0	
61:	1504	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
62:	1505	11	2	0	1	3	0	4	0	1	0	0	0	0	0	
63:	1506	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
64:	1507	2	0	1	0	0	0	1	0	1	3	0	0	0	0	
65:	1508	0	0	1	0	0	0	2	0	0	1	0	0	0	0	
66:	1509	1	1	0	0	0	0	0	0	0	0	1	0	0	0	
67:	1510	1	1	3	0	0	0	4	2	0	0	2	7	0	0	
68:	1511	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
69:	1512	0	0	1	0	0	0	1	0	0	0	0	1	0	0	
70:	1514	1	0	0	2	0	0	0	0	0	0	0	0	1	1	
71:	1516	2	0	1	0	0	0	7	0	3	0	0	0	0	0	
72:	1517	4	1	2	0	0	0	0	0	1	0	2	0	0	0	
73:	1602	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
74:	1603	1	2	4	1	0	0	9	1	5	0	2	0	0	0	
75:	1604	0	0	0	0	0	0	1	1	0	1	0	0	2	2	
76:	1605	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
77:	1606	0	1	0	1	0	0	0	0	0	1	0	0	0	0	
78:	1607	2	1	0	0	1	0	3	0	0	0	0	0	0	0	

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79 : 1608	2	0	3	0	0	0	2	2	1	2	0	0	0	0
80 : 1610	0	0	1	0	0	0	0	0	0	0	0	0	0	0
81 : 1611	1	0	0	0	0	0	0	0	0	0	0	0	0	0
82 : 1613	0	1	0	0	0	0	0	0	0	0	1	0	1	1
83 : 1614	0	2	1	0	0	0	2	3	0	0	1	1	2	0
84 : 1615	1	1	0	0	0	0	0	0	0	0	0	0	0	0
85 : 1702	0	0	0	0	0	0	2	0	0	1	0	0	0	0
86 : 1703	0	2	1	0	0	0	0	0	0	1	0	0	1	0
87 : 1704	9	7	6	3	1	0	12	12	8	12	3	2	1	3
88 : 1706	10	3	3	1	0	1	1	5	0	0	0	0	1	0
89 : 1802	1	0	0	0	0	0	0	0	0	0	0	0	0	0
90 : 1803	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91 : 1806	1	0	1	0	0	0	2	0	0	1	0	0	0	1
92 : 1807	0	1	0	0	0	0	0	1	0	0	0	0	0	0
93 : 1808	0	2	0	0	0	0	5	0	0	2	0	0	0	0
94 : 1901	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95 : 1903	0	0	0	0	0	0	0	1	0	0	0	0	0	0
96 : 1904	1	0	0	0	0	0	0	0	0	0	0	0	1	0
97 : 1905	0	1	1	0	0	0	2	5	0	0	0	0	1	0
98 : 1906	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99 : 1907	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100 : 1908	3	4	2	0	0	0	6	2	3	1	0	0	0	0
101 : 1909	2	0	2	0	0	0	2	0	1	0	0	0	1	0
102 : 1911	0	2	0	0	0	0	1	0	0	0	1	0	0	2
103 : 1912	2	0	0	0	0	0	7	2	0	0	0	0	0	0
104 : 2003	7	3	1	0	0	0	0	0	0	0	0	0	0	0
105 : 2004	2	5	2	2	0	0	2	4	0	1	0	0	0	0
106 : 2005	0	0	0	0	0	0	1	0	0	0	0	0	0	0
107 : 2007	0	3	0	0	0	0	3	0	1	1	0	0	2	1
108 : 2008	2	1	2	0	0	0	2	0	0	0	0	0	2	0
109 : 2009	1	1	0	0	0	0	0	0	0	0	0	0	0	0
110 : 2010	0	0	0	0	0	0	0	0	0	1	0	0	0	0
111 : 2011	1	3	0	0	0	0	4	0	0	0	0	0	0	0
112 : 2012	1	1	0	0	0	0	1	0	1	0	0	0	0	0
113 : 2013	1	6	1	0	0	0	4	1	0	0	0	0	0	0
114 : 2014	3	1	0	0	2	0	4	0	1	0	0	0	1	2
115 : 2015	1	1	0	0	0	0	4	2	0	1	0	0	2	0
116 : 2016	0	0	1	0	0	0	1	0	0	1	0	0	0	0
117 : 2017	0	0	0	0	0	0	1	1	0	0	0	0	0	0
118 : 2018	1	0	0	0	1	0	1	0	0	1	0	0	0	3
119 : 2019	0	0	0	0	0	0	0	1	0	0	0	0	0	0
120 : 2103	2	2	0	0	1	0	1	0	0	0	1	0	0	0
121 : 2104	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122 : 2105	0	0	2	0	0	0	2	3	0	5	0	0	2	0
123 : 2106	9	1	3	0	0	1	4	1	2	2	3	0	0	0
124 : 2107	0	2	0	0	0	0	4	9	0	0	0	0	2	0
125 : 2109	1	0	0	0	0	0	5	1	0	0	0	0	0	0
126 : 1113	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	203	129	122	25	20	5	277	121	38	63	45	37	36	33

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Page 29 of 36				Treatment									Adherence			
Minor modification	Other scientific reasons	Doubt on treatment effectiveness	No time	Non drug treatment			BMJ Open			Drug treatment			Adherence to non-drug treatment	Adherence to drug treatment	Treatment interrupted	
				Lifestyle rules	Weight loss	Dietician	Alternate treatment	Adverse effect	Long prescription / Poly pharmacy	Precautions of use	Insulin	Maximal treatment				
1	1	0	1	0	2	4	0	0	2	0	0	1	1	2	0	0
2	0	2	0	0	0	0	0	0	1	2	0	0	1	0	0	2
3	0	1	0	0	9	0	0	0	9	3	10	0	1	7	2	1
4	1	0	0	0	17	2	4	0	1	1	0	0	0	8	1	0
5	0	0	0	0	5	1	0	0	0	1	0	0	0	1	0	0
6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
7	0	0	0	0	3	1	0	0	1	0	1	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	1	0	0	0	3	1	1	0	1	1	3	0	0	3	0	0
10	0	0	0	0	2	0	0	0	1	0	0	0	0	4	0	0
11	0	0	1	0	9	0	0	0	6	0	0	0	0	1	0	0
12	0	0	0	0	5	1	0	0	0	2	0	1	1	2	4	1
13	0	0	0	0	2	0	1	0	0	0	0	1	0	0	1	0
14	1	0	0	0	11	2	0	0	1	0	0	1	0	5	0	0
15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	3	1	0	0	0	0	0	3	0	2	0	0
17	1	0	0	0	5	0	0	0	2	5	2	0	0	3	1	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
19	2	0	0	0	4	0	0	0	3	0	0	0	0	1	2	0
20	0	0	0	0	14	1	1	0	4	0	0	0	0	9	1	0
21	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
22	1	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0
23	0	0	0	0	9	2	6	0	1	3	0	0	0	5	2	0
24	0	0	0	0	5	0	0	1	5	0	0	1	0	3	0	1
25	1	0	0	0	5	1	0	0	5	5	2	0	2	0	0	0
26	0	0	0	0	10	0	3	0	6	1	1	4	0	4	5	0
27	0	0	0	0	2	0	0	0	0	4	2	0	0	2	0	0
28	0	0	0	0	6	0	0	0	0	1	0	0	0	2	0	0
29	0	0	0	0	11	0	0	1	3	2	2	2	2	4	2	1
30	2	0	0	0	8	0	0	1	2	1	1	0	2	1	1	3
31	0	0	0	0	6	0	0	0	3	1	2	0	0	3	0	0
32	0	0	0	0	5	0	0	0	0	0	0	0	0	0	1	0
33	2	0	0	0	7	0	0	0	1	1	0	0	0	6	1	0
34	0	0	0	0	1	0	0	0	2	0	1	0	1	1	2	0
35	0	0	0	0	6	0	0	0	4	0	2	0	0	3	2	2
36	0	0	0	0	3	0	0	0	1	0	0	0	0	1	0	0
37	0	0	0	0	18	4	0	1	2	0	1	4	0	12	3	0
38	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
40	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
41	1	0	0	0	4	0	0	0	0	0	0	0	0	6	1	1
42	0	0	0	0	12	2	1	0	1	1	0	0	0	0	3	0
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44	1	0	0	0	14	1	1	0	4	1	3	0	1	8	2	2
45	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0
46	0	0	0	0	7	1	0	1	1	0	0	0	0	11	1	0
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49	0	0	0	0	6	0	0	0	2	1	0	0	1	3	2	1
50	0	0	0	0	0	0	0	0	2	0	1	0	0	3	0	1
51	0	0	0	0	9	0	0	0	1	0	0	0	0	2	0	0
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53	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	1	0	0	1	0	2	0	1	0	4	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	2	1	0	0	1	0	1	0	0	1	0	0
57	0	0	0	0	2	0	0	0	1	0	0	0	0	1	1	2
58	0	0	0	0	5	2	0	0	0	2	1	0	1	1	0	1
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	5	1	1	0	6	2	0	2	0	8	1	1
	0	0	0	0	1	0	0	0	0	5	0	0	1	0	0	0
	0	0	0	0	3	0	0	0	0	0	0	3	0	1	0	0
	0	2	0	0	1	2	0	0	1	0	0	0	0	0	0	0

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0	0	0	0	1	0	0	0	0	0	0	1	0	0	1
0	0	0	0	3	0	0	0	0	4	0	0	0	3	1
0	0	0	0	6	0	0	0	3	2	1	0	0	4	0
0	0	0	0	2	0	0	0	6	0	1	0	0	2	0
0	0	0	0	2	0	1	0	0	0	0	0	0	0	1
0	0	0	0	4	0	0	0	4	0	2	0	0	4	0
0	3	4	0	11	2	2	0	5	0	1	0	0	8	5
1	0	0	0	25	0	0	0	2	0	0	0	0	9	0
0	0	0	0	2	0	0	0	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	4	1	0	0	4	0	0	0	0	6	3
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	2	0	0	0	0	0	0	1	0	1	0
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	2	0	1	0	0	0	1
0	0	0	0	5	2	0	0	0	3	0	2	3	4	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0	0	0	4	0
0	0	0	0	7	1	0	0	1	1	1	0	0	4	1
0	0	0	0	4	0	0	0	2	0	0	0	0	1	0
0	0	0	0	7	0	0	0	0	1	1	1	0	5	1
1	0	0	1	3	0	0	0	2	0	0	0	0	2	0
0	0	0	0	15	1	0	1	0	0	0	0	0	4	0
1	0	0	0	13	0	1	1	0	1	0	0	0	2	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2	0	0	0	3	0	0	1	0	0	0	1	0	2	2
0	0	0	0	6	1	0	0	1	0	0	0	0	3	2
0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
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0	0	0	0	4	0	0	0	0	0	0	0	0	2	0
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0	0	0	0	5	0	0	0	2	0	0	0	0	2	2
0	0	0	0	2	0	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
0	2	0	0	22	0	2	1	3	1	1	2	6	10	1
0	0	0	0	11	0	0	0	1	0	0	2	0	3	2
0	0	0	0	2	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	13	7	1	588	53	34	11	196	85	69	48	36	298	89

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Patient

BMJ Open

Intercurrent event

Patient									BMJ Open						Intercurrent event				
Patient's preferences	Psychological profile	Alcohol	Socio-professional context	Others				Professional risk	Age	Medical intercurrent event (not priority)				Other					
				Familial context	Stress	Hopeless	Professional risk			Age	Other intercurrent disease	Depressive disorder	Sleep Apnea	Drug related medical intercurrent event	Non medical intercurrent event	Organization issue			
1	0	2	1	0	0	1	0	0	1	0	0	0	0	0	1				
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3				
0	10	2	1	1	8	0	0	1	2	1	0	2	7	2					
4	1	4	1	0	0	1	1	0	0	0	0	0	0	0	0				
0	2	0	1	1	0	0	0	0	0	0	0	0	2	0	0				
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	1				
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1				
2	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1				
0	0	0	0	0	0	0	0	0	3	0	0	1	2	2	2				
0	3	2	2	1	0	0	0	0	1	1	0	0	3	0	0				
4	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0				
0	1	0	1	1	0	0	0	1	1	0	0	0	2	0	0				
1	1	0	0	0	0	0	0	0	0	0	0	0	2	1	1				
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1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1				
3	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0				
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2	3	1	0	0	0	0	0	0	3	2	0	0	1	2	2				
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4	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0				
1	1	2	0	0	0	0	0	0	2	0	1	2	2	3	3				
1	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0				
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1	0	0	1	1	0	0	0	0	1	0	0	0	1	2	2				
1	2	0	1	0	0	0	1	0	2	0	0	0	0	1	0				
0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1				
4	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1				
1	1	1	0	0	0	0	0	0	4	0	0	0	2	4	4				
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2	3	2	0	0	0	0	0	0	1	0	0	0	1	2	2				
0	6	1	0	0	1	0	0	0	1	2	0	0	0	0	0				
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0	0	0	0	0	2	0	0	0	4	0	0	0	0	0	0				
0	2	2	0	0	1	0	1	0	0	0	0	0	1	0	0				
6	1	0	0	0	0	0	0	0	4	0	0	0	0	2	2				
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2	2	5	1	0	0	0	2	0	5	0	0	0	7	0	0				
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1				
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1	2	0	0	1	0	0	0	0	0	2	0	0	2	0	0				
2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1				
0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	2				
5	2	2	0	1	0	0	0	0	1	1	0	0	1	1	1				
1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0				
0	2	1	3	4	0	0	0	0	3	0	0	0	4	2	2				
0	2	1	1	0	0	0	0	0	5	0	0	1	0	0	0				
0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2				
0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1				
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0				
2	1	0	1	0	0	0	0	1	2	0	0	0	0	0	0				
0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	2				
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0				
3	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0				
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	1				
2	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1				
0	1	0	1	1	0	0	0	0	3	0	0	0	1	1	1				
0	0	0	0	0	0	0	0	0	4	0	0	0	1	1	1				
0	1	0	0	1	0	0	0	0	0	0	0	0	3	1	1				
4	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0				
2	2	0	0	0	3	0	0	0	5	0	0	3	0	1	1				
0	0	1	0	0	0	0	0	0	3	0	0	2	1	0	0				
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1				
4	4	0	1	1	0	0	0	0	4	0	0	0	1	1	1				
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
3	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0				
1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0				

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0	1	0	1	0	0	0	0	0	1	0	1	0	3	2
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6	2	0	1	0	0	0	0	0	1	0	0	1	2	3
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0	4	2	1	0	0	0	0	0	2	2	0	0	1	0
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2	2	2	6	2	0	0	0	0	0	0	0	0	5	3
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0	1	0	0	1	0	0	0	0	3	0	0	1	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
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2	2	2	1	2	2	0	0	0	5	1	0	0	4	1
1	2	0	0	2	0	1	0	0	4	0	0	0	3	0
0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	110	57	43	29	27	10	6	5	158	24	7	30	119	101

Diagnosis of risk factor Results Measurement

Table with 16 columns: Other medical priority, Sleep issues, HBPM correct procedure, HBPM uncorrect procedure, HBPM unknown procedure, Recent cardio checkup, ABPM, Echo cardio graphy, BMJ Open (Borderline, Not so bad, Unusual results), Measurement device (Preference for manual device, Inadequate arm cuff, Unreliable measurement device, Preference for another electronic device, Missing results). Rows 1-60 contain data, with rows 21-22 and 49-50 marked with dashed lines.

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2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1
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3	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
0	0	2	2	2	9	1	0	1	4	2	0	0	0	0	1
0	0	0	0	0	3	2	0	3	2	0	0	0	0	0	0
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0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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1	0	0	0	0	2	0	0	0	2	1	0	0	0	0	0
1	0	0	1	0	0	1	0	1	3	0	0	0	0	0	2
0	0	0	0	0	0	0	0	2	0	3	0	0	0	0	3
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1	0	0	1	0	0	1	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	4	3	2	0	0	0	2	2	9	0	2	0	0
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0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	3	0	0	0	3	0	3	0	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0
0	0	0	2	1	0	1	0	4	0	0	0	0	0	0	0
0	1	0	3	5	2	0	0	0	0	2	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
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0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
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0	0	1	0	1	2	1	0	9	0	1	1	0	0	0	0
2	0	0	1	0	3	0	0	2	1	7	8	0	1	1	2
0	0	0	0	0	5	0	0	1	0	1	0	0	0	0	0
0	0	0	0	2	1	0	0	0	0	2	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	6	26	45	161	92	23	2	136	65	123	71	38	19	13	44

Others

Relationship BMJ Open

Patient ID	Others				Relationship				Total	Type	Trend	Number of patients
	White coat	Circumstances of measurement	Not estimable LDL cholesterol	Preference for self-measured glycaemia	Negotiation	Limitation of instructions	Hierarchical organisation	Confidence				
1	1	0	0	1	0	0	0	0	64	Scientist		7
2	0	0	0	0	0	0	0	0	19	Scientist +		12
3	0	7	0	0	2	1	0	0	145	Cautious	Rounder	12
4	0	0	0	0	4	1	0	0	69	Negotiator		10
5	0	0	0	1	0	0	0	0	56	Rounder	Checker	10
6	0	0	0	0	0	0	0	0	1			2
7	0	0	0	0	5	2	1	0	29	Negotiator		6
8	0	0	0	1	0	0	0	0	6			3
9	0	0	0	0	0	1	0	0	45	Cautious		10
10	0	1	0	1	0	0	0	0	38	Optimist		7
11	1	0	0	0	2	0	0	0	29	Contextualizer		5
12	0	0	0	0	1	1	1	0	63	Negotiator	Scientist	9
13	0	0	1	0	1	0	0	0	45	Contextualizer		6
14	0	0	0	1	1	0	0	1	20	Contextualizer	Optimist	6
15	0	1	0	0	1	0	0	1	50	Optimist		6
16	0	0	0	0	0	0	0	0	16		Scientist	6
17	0	0	0	0	0	1	1	0	20		Negotiator	3
18	0	1	1	0	1	2	0	0	48	Rounder	Negotiator ?	6
19	0	1	0	0	0	0	0	0	14	Checker		3
20	0	0	0	0	1	0	0	0	28	Optimist	Negotiator	6
21	0	0	1	0	1	0	0	0	66	Cautious	Scientist	8
22	0	0	0	0	0	0	0	0	8		Optimist	6
23	0	0	0	0	1	0	0	0	13		Checker	6
24	0	0	0	0	0	0	0	0	19	Optimist		5
25	0	0	0	0	3	1	0	0	77	Optimist		8
26	0	1	0	0	0	0	0	0	70	Optimist		7
27	0	0	0	0	0	2	1	0	29	Negotiator	Optimist	9
28	1	0	0	0	0	0	0	0	51	Optimist	Negotiator	7
29	0	0	0	0	1	0	0	0	56	Cautious		10
30	0	1	0	0	0	1	0	0	63	Optimist	Checker	9
31	0	0	4	0	0	0	1	0	85	Optimist	Rounder	11
32	0	0	0	0	0	0	0	0	37	Optimist		8
33	2	0	0	0	0	0	0	0	82	Checker		8
34	0	0	0	0	2	0	0	0	79	Negotiator		6
35	0	0	0	0	0	0	0	0	35	Rounder	Contextualizer	8
36	1	0	0	0	0	0	0	0	39	Checker ++		7
37	0	0	0	1	1	0	0	0	98	Checker	HBPM +++	12
38	6	0	2	1	0	1	1	1	85	Checker (HBPM)	Contextualizer	12
39	0	0	0	1	1	0	0	0	31	Cautious	Checker	6
40	2	1	0	0	0	0	0	0	27	Optimist		5
41	0	0	0	0	1	0	0	0	38	Optimist	Contextualizer	6
42	0	0	0	0	0	0	0	0	35	Negotiator +		5
43	0	0	0	0	0	0	0	0	37	Optimist		7
44	0	1	0	0	1	0	0	0	20	Optimist		3
45	1	0	0	0	0	0	2	1	97	Optimist		9
46	0	0	0	0	0	0	0	0	4			4
47	0	0	0	0	0	0	0	0	7		Cautious	2
48	1	0	0	0	0	0	0	0	19	Checker		8
49	0	0	0	0	1	0	0	0	38	Checker	Optimist	6
50	0	0	0	0	1	1	0	1	53	Optimist		11
51	2	0	0	0	0	0	0	0	28	Rounder		4
52	1	0	0	0	2	5	0	0	96	Negotiator	Optimist	12
53	1	1	0	0	0	0	0	0	39	Checker		18
54	0	0	0	1	1	0	0	0	49	Contextualizer		12
55	0	0	0	0	0	0	0	0	39	Contextualizer		9
56	0	0	0	0	0	0	0	0	19		Scientist	7
57	1	0	1	0	0	0	0	0	36	Optimist		6
58	0	0	0	0	1	1	1	0	22	Cautious		3
59	0	1	0	0	1	1	1	0	38	Optimist	Negotiator	6
60	1	0	0	0	0	0	0	0	12	Optimist		5
61	0	0	0	0	0	0	1	0	8			4
62	0	0	1	0	1	0	0	0	84	Cautious		12
63	0	0	0	0	0	0	0	0	11	Negotiator		10
64	0	0	0	0	0	0	0	0	29	Scientist		9
65	0	0	1	0	0	0	0	0	19	Negotiator		7
66	0	0	0	0	3	0	1		23	Negotiator		9
67	2	0	0	0	0	1	1	0	65	Rounder		8
68	0	0	0	0	0	0	0	0	22	Contextualizer		9
69	1	0	0	0	0	0	0	0	14	Contextualizer		5
70	0	0	0	0	2	1	0	0	20	Negotiator		6
71	0	1	0	0	0	0	0	0	41	Checker		12
72	0	0	0	0	0	0	0	1	33	Optimist		6
73	0	0	0	0	0	0	0	0	6			3
74	0	1	0	0	9	0	2	0	108	Negotiator	Checker	11
75	0	0	0	0	0	0	0	0	33	Checker		12
76	0	0	0	0	0	0	0	0	18	Negotiator		9
77	3	0	0	0	0	0	2	0	34	Checker		12

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0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0
1	0	0	0	4	0	0	0
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0	0	2	0	2	0	0	0
0	0	0	0	10	1	2	1
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0	1	0	0	0	0	0	0
0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0
36	33	15	12	83	39	29	12

41	Contextualizer	Cautious	8
7	Cautious		7
5	Optimist		5
18	Cautious		5
64	Cautious	Negotiator	11
23	Rounder	Cautious	8
12			7
38	Contextualizer	Cautious	6
173	Scientist	Checker	12
82	Optimist		9
11	Optimist		6
4			5
43	Negotiator		8
4			1
23	Negotiator	Rounder	7
4			3
5		Checker	3
10	Cautious		6
40	Checker	Optimist	7
0			2
12			3
107	Checker		14
34	Contextualizer		8
45	Optimist		10
52	Contextualizer		7
38	Optimist		5
47	Optimist		7
2			2
60	Negotiator	Checker	9
35	Negotiator		7
7		Optimist	6
16		Negotiator	3
40	Rounder	Contextualizer	6
17	Optimist		8
51	Contextualizer		12
48	Scientist	Cautious	8
39	Checker		6
7	Negotiator		4
8			6
49	Negotiator		8
8			5
20	Optimist		4
8		Negotiator	4
42	Rounder +		10
134	Contextualizer	Optimist	12
58	Negotiator		8
21	Checker		10
0			6
4764			905