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Time and feasibility of prevention in primary care

Sophie Bucher[1,2], Arnaud Maury[3], Julie Rosso[3], Nicolas de Chanaud[3], Géraldine Bloy[4], Isabelle Pendola-Luchel[2], Raphaëlle Delpech[2], Sylvain Paquet[2], Hector Falcoff[3], Virginie Ringa[1] and Laurent Rigal[1,2]

[1]INSERM, CESP Centre for Research in Epidemiology and Population Health, U1018, Gender, Sexual and Reproductive Health Team, University of Paris-Sud, Le Kremlin-Bicêtre, France, [2]General Practice Department, Paris-Sud Faculty of Medicine, University of Paris-Sud, Le Kremlin-Bicêtre, France, [3]Department of general practice, Sorbonne Paris Cité, Paris Descartes University, Paris, France and [4]LEDi, Université de Bourgogne, UMR Cnrs 6307 Inserm 1200, Dijon, France.

*Correspondence to Sophie Bucher, General Practice Department, Paris-Sud Faculty of Medicine, University of Paris-Sud, 63 rue Gabriel Peri, 94275 Le Kremlin-Bicetre Cedex, France; Email: sophie.bucher@u-psud.fr

Abstract

Background. Prevention is an essential task in primary care. According to primary care physicians (PCPs), lack of time is one of the principal obstacles to its performance.

Objective. To assess the feasibility of prevention in terms of time by estimating the time necessary to perform all of the preventive care recommended, separately from the PCPs and patient's perspectives, and to compare them to the amount of time available.

Methods. A review of the literature identified the prevention procedures recommended in France, the duration of each procedure and its recommended frequency, as well as PCPs' consultation time. A hypothetical patient panel size of 1000 patients, representative of the French population, served as the basis for our calculations of the annual time necessary for prevention for a PCP. The prevention time from the patient's perspective was estimated from data collected from a previous study of a panel of 3556 patients.

Results. For PCPs, the annual time necessary for all of the required preventive care was 250 hours, or 20% of their total patient time. For a patient, the annual time required for prevention during encounters with a PCP ranged from 9.7 to 26.4 minutes per year. The mean total encounter time was 75.9 minutes per year. Nearly 73% of patients had a prevention-to-care time ratio exceeding 15%.

Conclusion. Feasibility thus differs substantially between patients. These differences correspond especially to disparities in the annual care time used by each patient. Specific solutions should be developed according to the patients' utilization of care.

Key words: General practice, guidelines, prevention.

Introduction

Dispensing preventive care is an important task of the health care system, one assigned principally to primary care physicians (PCPs)—in France, GPs (1). Even though these PCPs report a high level of investment in this assignment, the proportion of the recommended preventive care actually performed remains low (2). They report a lack of time as the principal explanation of their difficulty in providing prevention (3,4).

To our knowledge, only one study has focused specifically on estimating the prevention workload of PCPs. It estimated that a specific group of US PCPs—family practitioners—would have to spend 7.4 hours a day on prevention to provide their patients with all of the recommended care (3). It thus demonstrated that the prevention burden does not fit into PCPs' actual working time. This US survey nonetheless presents two limitations. First, in terms of

generalizability, the number of guidelines for prevention and the tasks allocated to PCPs differ from country to country. There are fewer guidelines in France, for example, than in the USA (5). Second, this study analyzed the issue of allocation of time during encounters only from the PCPs' point of view: do PCPs have enough time to provide all of the recommended preventive care to their patients? It did not examine the issue from the patients' perspective: do patients see their PCPs often enough to be able to receive all of the preventive care recommended? Preventive needs, however, as well as the time PCPs and patients spend together during encounters, that is, their encounter time, vary according to the patient. It has been shown that the patients who see their PCPs most frequently receive the most preventive care (6). The fit between the time spent with each individual patient and the time necessary to meet that person's preventive needs may be good for some but not for others.

Our global objective was to study the feasibility in terms of time of performing the recommended preventive care, that is, whether PCPs have the consultation time necessary to do all of the preventive care recommended in France. More specifically, our objective was to analyze this question of availability from the separate perspectives of PCPs and of patients. Despite careful searching, we have found no study reporting such an estimate from the patients' point of view.

Methods

An analysis of the literature allowed us to obtain the data required to calculate the time necessary to execute all of the recommended preventive procedures (that is, the duration and frequency of each).

Review and analysis of the preventive procedures

An examination of all the guidelines issued through the end of 2014 by the various French health authorities (National Authority for Health, National Institute of Prevention and Health Education, the National Institute of Public Health Surveillance and the French National Cancer Institute) enabled us to select the preventive procedures recommended for individuals age 16 years or older, defined as all of the medical procedures intended to prevent the onset of or to screen for a disease.

These guidelines not only specify preventive procedures, but rank the grade of the recommendation (that is, the level of evidence supporting it), and characterize the eligible population according to sex and age.

Some preventive procedures are to be performed in different versions, according to the patients' characteristics. For smoking prevention, for example, we took into account that after the initial screening question ('Do you smoke?'), the rest of the procedure would differ depending on the patient's response. If the patient's answer was no, the goal of this particular procedure had been (insofar as the objective of non-smoking was already met). If the response was positive, however, the procedure should continue with at least a 'brief intervention', as recommended (7). The time required for this procedure thus differs according to the patient's smoking status. The proportion of individuals (from the eligible population) [p] who should receive each version of the procedure was estimated from epidemiologic data. As the prevalence of smoking in France is around 30% (8), 30% of the patients (the smokers) would have the 'screening + brief intervention' version of the procedure and 70% (the non-smokers) the screening version only.

The French guidelines frequently specified the annual frequency [f] of each preventive procedure, but provided its duration [t] less often. When this information was not available, review of guidelines from Britain (National Institute for Health and Care Excellent),

the USA (US Preventive Services Task Force), Australia (the Royal Australian College of General Practitioners) and Canada sometimes found it. In the absence of data from the English-speaking literature, we used a nominal group technique to make our own estimates (9).

Prevention time for a PCP

The estimation of the time a PCP should spent on prevention annually (Table 1), that is, the time necessary to perform all of the preventive procedures recommended for a patient panel, depended on the hypotheses about panels. In this analysis, each PCP had a theoretical panel of 1000 patients older than 16 years, and they were representative of the French population (10) (Institut national de la statistique et des études économiques). In France, all individuals older than 16 years must report a PCP to the National Health Insurance Fund (or be penalized by reduced reimbursements). On average, each French PCP has a panel list of slightly fewer than 1000 patients. Rounding to 1000 facilitated the comparisons.

This theoretical patient panel made it possible to determine the number of people requiring each procedure [n]. Multiplying the eligible population of 1000 by the proportion of individuals concerned [p] showed the number of patients concerned by each version of each type of preventive procedure [n.p]. The time necessary each year to perform a given version of one preventive procedure for the entire theoretical patient panel was calculated by multiplying the number of people concerned by that version [n p] by the time required to perform it [t] and its annual frequency [f]. The annual time a PCPs should spent on prevention was defined as the sum of the time calculated above for every version of every type of preventive procedure $[\Sigma_{\text{preventive procedures}} (\Sigma_{\text{versions}} (n.p.f.t))]$.

Encounter time for a PCP

This time is defined as the annual time a PCP spent in encounters with patients (Table 1). In 2009, GPs in France reported spending a mean of 6.6 hours per day with patients (11). On a basis of a work year of 46 weeks, 5 days a week, a PCP would spend 1518 hours per year with patients.

Given that PCPs available encounter time is shared by patients aged 16 years or older (who comprise their theoretical patient panel) as well as patients younger than 16 years (who account for 19.8% of the French population; because they are not required to choose a PCP, they are not included in these panels), PCPs' annual encounter time spent with these adults (those aged 16 or older) was estimated at 1267 hours per year (=1518/1198).

The study of the feasibility of prevention in terms of time (that is, whether the PCP had available the encounter time required for all of the recommended preventive care) compared the prevention time, that is, the time necessary to perform the care, with the encounter time, that is, the time available to do so. The percentage of the encounter time that should be allotted for prevention (that is, the ratio of the prevention and encounter times) was calculated.

An analysis from the patient's perspective followed that from the point of view of a PCP responsible for an average patient panel. Data from the sample of patients in the *Prev Quanti* study (12) allowed estimates of individual times and ratios rather than means, which mask the variability between patients. In this study, a sample of 3640 patients was constructed by randomly drawing 70 patients (35 men and 35 women) aged 40 to 74 years from their PCP's patient panel, furnished by the health insurance administration for each of the 52 participating PCPs.

Table 1. Prevention and encounter times from the separate perspectives of the primary care provider (PCP) and the patient

		PCP's perspective	Patient's perspective
Prevention time	Definition	Annual time a PCP should spent on prevention to perform all of the preventive procedures recommended in France	Annual time a patient should spend with his or her PCP to undergo all of the preventive procedures recommended in France Only the time during encounters is counter, not that needed for the patient's execution of the recommendation in their daily life
	Estimate	Calculated using the characteristics specified in the re recommendations (eligible population, duration, frequency…), and considering that a PCP is responsible for a theoretical patient panel of 1000 patients aged 16 years or older, representative of the general French population	Calculated as for a PCP (see the preceding column), considering this times that a PCP has a patient panel of only one patient (of the given sex and age)
		Limitations: the mean does not take into account differences in patient panels between PCPs, especially in terms of numbers, sex and age	Strength: takes the sex and age of each patient into account Limitations: mean does not take each patient's individual real preventive needs into account
Encounter time	Definition	Annual time spent by a physician in consultation—patient encounter time	Annual time spent by the patient with his or her PCP
	Estimate	Calculated from the mean reported working time with patients reported by PCPs (data from the literature), in considering	Calculated for each patient of the random sample of the *Prev Quanti* study. This is the product of the number of patient-PCP encounter during the past year times the mean duration of the PCP's encounters
		Limitations: mean not taking differences in working time between PCPs into account	Strength: individual measurements of encounter time Limitations: available only for patients aged 40 to 74 years

Prevention time for a patient

Calculation of this time for a patient of a given sex and age used the formula above, considering that a PCP's patient panel was reduced to a single patient. If the patient's sex and age considered made him or her eligible for a prevention procedure, n equaled 1 in the preceding formula, and 0 otherwise. The prevention time was thus calculated for each patient in the sample.

Encounter time for a patient

Unlike the other estimates used in this work, which come from the literature, the estimate of the patient-PCP encounter time comes from empirical data collected in the *Prev Quanti* study. The annual patient-PCP encounter time was defined for each patient as the time spent by the patient with his or her PCP. It was obtained by multiplying two data items collected from the latter: the number of times the patient saw the PCP during the previous year and the mean duration of a consultation with that PCP. The number of patient-PCP encounters was available for 3556 patients (97.7%). The mean number of encounter was 3.58 per year for the 2922 patients who saw their PCP at least once. The 52 participating PCPs reported a mean encounter duration of 21.7 minutes.

Results

Review and analysis of the preventive procedures

Table 2 presents the 23 preventive procedures selected, distributed in 37 versions (13–32). Screening for current smoking, for example, concerns all men and all women aged 16 years or older. It takes 10 seconds for non-smokers (70%) and 180 seconds for smokers (30%) and should be repeated each year.

Prevention and encounter times for a PCP

The last column in Table 2 presents the time necessary to perform each version of each procedure for a theoretical patient panel of 1000 patients representative of the French population. Times reported in a bold font come from the literature, those italicized were determined by analogy to a similar type of preventive care, and those in standard roman type were determined by the nominal group technique (33–50). The total time for smoking prevention was 16.94 hours per year. The overall annual prevention time exceeded 250.31 hours per year. Overall, prevention accounted for 20% of the physician's annual patient encounter time.

Prevention and encounter times for a patient

The mean prevention time per patient was 16.2 minutes per year (SD = 3.9). No patient could have received all of their recommended preventive care in <9.7 minutes per year (Table 3). On the other hand, all patients could have received all of it in <26.4 minutes per year.

The mean encounter time per patient was 75.9 minutes per year. This time was ≤20 minutes per year for 27.5% of patients and exceeded 40 minutes per year for 57.3% (Table 3).

The prevention time (Table 3) ranged from 0.6% to >200% of the encounter time, depending on the patient. This great variability was due principally to the substantial variations in encounter time (ranging from 0 to >150 minutes per year, depending on the patient). Differences in prevention time were substantially smaller (around 10 to 25 minutes per year, depending on the patient).

Prevention corresponded to >15% of encounter time for 72.8% of patients. Among patients who saw their PCPs at least once during the past year, this time accounted for a mean of 31.8% of their encounter time.

Table 2. Preventive procedures: characteristics and annual prevention time required for a primary care physician with a theoretical patient panel of 1000 persons[a]

Preventive procedure	Grade of recommendation[c]	Eligible population[a]			Different versions of the procedure	Proportion of individuals eligible (%) [p]	Duration (sec)[b] [t]	Annual frequency[b] [f]	Annual prevention time required for a theoretical patient panel[a] (h/year)	
		Sex	Age (years)	Number [n]					By version	By procedure
Cardiovascular risk Factors (13,33)	B	♂ + ♀	>45	550	—	100	240	1	—	36.64
Hypertension (14,34)	A	♂ + ♀	>16	1000	—	100	120	1	—	33.33
Dyslipidemia (15,35)	A	♂ + ♀	16–80	936	—	100	60	0.2	—	3.12
Type 2 diabetes mellitus (16,36)	B	♂ + ♀	>45	550	—	100	60	0.33	—	3.02
Insomnia (17)	Unspecified	♂ + ♀	>16	1000	Without insomnia / With insomnia	50 / 50	10 / 240	1 / 1	1.39 / 33.33	34.72
Melanoma (18,37)	B	♂ + ♀	>16	1000	With risk factors / Without risk factors	12 / 88	300 / 60	1 / 1	10.00 / 14.67	24.67
Drug dependence (1)	I	♂ + ♀	>16	1000	—	100	60	1	—	16.67
Alcohol (38,39)	B	♂ + ♀	>16	1000	No excessive drinkig / Excessive drinking	90 / 10	30 / 330	0.25 / 0.25	1.88 / 2.29	4.17
Smoking (7,40)	A	♂ + ♀	>16	1000	No smoking / Smoking	70 / 30	10 / 180	1 / 1	1.94 / 15.00	16.94
HIV (20,41)	A	♂ + ♀	>16	1000	—	100	60	1	—	16.67
HBV and HCV (21,42)	B	♂ + ♀	>16	1000	—	20	60	1	—	3.33
Syphilis (22,43)	A	♂ + ♀	>16	1000	—	2	60	1	—	0.33
Falls (23,37)	A	♂ + ♀	>65	224	With risk factors / Without risk factors	30 / 70	390 / 90	1 / 1	7.29 / 3.93	11.22
Cognitive decline (24)	I	♂ + ♀	>65	224	No cognitive decline / Cognitive decline	85 / 15	120 / 900	0.5 / 0.5	3.18 / 4.21	7.38
Influenza vaccine (25)	Unspecified	♂ + ♀	>65	224	—	100	120	1	—	7.48
Depression (26,44)	B	♂ + ♀	>16	1000	Without depression / Depression	90 / 10	10 / 180	1 / 1	2.50 / 5.00	7.50
Osteoporosis (27,45)	B	♂ + ♀	>50	464	—	100	240	0.2	—	6.19
Cervical cancer (28,46)	A	♀	25–65	335	—	100	180	0.33	—	5.52
Pregnancy (29,40,47,48)	A/B	♀	16–49	269	—	5, 5	1200	1	—	0.90
Colorectal cancer (30,49)	A	♂ + ♀	50–74	351	—	100	60	0.5	—	2.92
Breast cancer (31,50)	B	♀	50–74	182	—	100	60	0.5	—	1.52
dTPolio vaccine (25)	Unspecified	♂ + ♀	25, 45, 65, 75, 85, 95	62	—	100	120	1	—	2.07
Incontinence (32,37)	B	♀	16–30	111	Incontinence / No incontinence	12 / 88	180 / 10	0.5 / 0.5	0.33 / 0.14	4.00
		♀	31–50	167	Incontinence / No incontinence	31 / 69	180 / 10	0.5 / 0.5	1.29 / 0.16	
		♀	51–70	154	Incontinence / No incontinence	36 / 64	180 / 10	0.5 / 0.5	1.39 / 0.14	
		♀	>71	90	Incontinence / No incontinence	20 / 80	180 / 10	0.5 / 0.5	0.45 / 0.10	
Total										250.31

HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus.

[a]Patient panel of 1000 persons aged 16 years or older representative of the French population.

[b]The figures in bold come from the literature, those italicized were determined by analogy with a similar type of preventive care, and those in normal roman type were determined by us.

[c]Grade of recommendation: A = there is high certainty that the net benefit is substantial; Grade B = there is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial; Grade I = evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

Table 3. Prevention and encounter times for a random sample of patients[a]

Time (min/year)	Number of patients (%) with a prevention time less than the time mentioned in column 1
9.7	402 (11)
15.3	1792 (50)
18.6	2978 (84)
26.4	3556 (100)
Time (min/year)	Number of patients (%) with an encounter time less than the time mentioned in column 1
0[b]	634[b] (17.8)
10	651 (18.3)
15	700 (19.7)
20	976 (27.5)
30	1209 (34.0)
40	1518 (42.7)
50	1675 (47.1)
75	2222 (62.7)
100	2741 (77.1)
150	3158 (88.8)
>150	3556 (100)
Ratio (%)	Number of patients (%) with a prevention to encounter time ratio less than the ratio mentioned in column 1
5	79 (2.2)
10	387 (10.9)
20	1206 (33.9)
30	1868 (52.5)
45	2330 (65.5)
60	2532 (71.2)
100	2840 (79.9)
223	2922 (82.2)
+∞[b]	3556 (100)

[a]This sample, from the Prev Quanti study, was obtained by a random drawing of 70 patients (35 men and 35 women) aged 40 to 74 years in the patient panel of 52 general practitioners.

[b]Patients who have not seen a primary care physician in the past year have a care time of zero and a ratio of infinity.

Discussion

Principal results

The time necessary for a PCP to provide preventive care to a theoretical patient panel of 1000 people representative of the French population older than 16 years was ~250 hours per year, or ~20% of total patient encounter time.

Data for a random sample of patients aged 40 to 74 years showed that, for almost 73% of them, the time required for their recommended preventive care would account for >15% of the time they spent with their PCP. Our results show a clear discordance in the feasibility of prevention guidelines according to perspective: that of the PCP, where the workload appears acceptable, or that of the patient. For a minority of the latter, prevention managed from visit to visit appears possible, but for those with the least PCP encounter time, that appears more difficult, or even impossible.

Strengths and limitations

Our study is the first to analyze the time required for prevention at the patient level to determine its feasibility; other analyses have concerned only the PCP's perspective. Moreover, we used empirical individual data about patient-PCP encounter time from the patient's perspective, collected in a cross-sectional observational study designed in primary care. National means from studies of mean encounter time, which mask disparities between patients, were thus avoided.

Consistent with previous studies (3), our estimates of prevention time were minimal and based on guidelines from English-speaking countries. Nonetheless, the duration of some preventive procedures

not mentioned in the literature had to be evaluated. Ideally, preventive procedures should be observed in real life to measure the time they take. To our knowledge, such estimates are not currently available, although they could be obtained, for example, from filmed office visits.

Another limitation was that our sample did not include any patients aged 16 to 39 years for whom we could estimate encounter time. To our knowledge, no representative database contains encounter times individualized at the patient level. Estimates in the *Prev Quanti* study database apply only to individuals aged 40 to 74 years. The individual prevention times were the mean times for a person of a given sex and age. The database did not let us determine the version of the procedure to be used for each prevention procedure recommended (Table 1).

An important limitation of our work is the postulate that only PCPs provide preventive services. The work of other physicians (especially cardiologists and gynecologists) has not been taken into account. In addition, some patients with chronic diseases receive preventive procedures as part of their usual chronic disease management (for example, lipid profiles and blood pressure measurements for patients with diabetes). This may diminish the preventive burden since some of it is already performed as part of chronic disease care (51).

Comparison with other countries and generalization

Beyond the differences in guidelines between countries (4), the generalization of our results depends on variations in patient care time between countries, that is, the frequency and duration of visits in different countries. In France, the number of annual visits per

patient is close to the mean for the OECD ([52]). Nonetheless, this frequency differs substantially between countries and is clearly lower in Scandinavian and English-speaking countries. Moreover, the duration of visits is sometimes shorter than in France, where it averages 16 minutes ([53]).

Consequence for practices

PCPs can use the table (Supplementary Excel Table 1) used for the calculations to evaluate their prevention time by modifying their practice conditions..

PCPs report devoting from 11% (in the USA ([4])) to 16% (in the UK ([54])) of their patient encounter time to preventive services. In France, the median proportion of the preventive consultation was 15% ([55]). Setting a threshold for the feasibility of implementation of prevention guidelines at 15% of each patient's time with the PCP yields three patient profiles. The first comprises those whose prevention time is <15% of their total encounter time, who can receive prevention services as part of their standard care. The second, on the contrary, do not see their PCP at all or very little and therefore cannot receive preventive care. Finally, those in intermediate situations do not see their PCP often enough to receive all of the preventive care recommended. Solutions must be developed for the latter two groups. Some authors propose focusing prevention efforts on the most effective procedures ([56]), to the detriment of the others ([57]). Prioritizing some preventive procedures ([58]) appears to be an interesting possibility, but few studies have examined how physicians rank preventive procedures ([59]). This probably does not depend only on the criterion of effectiveness but also on patients' preferences ([60]). Other solutions have been suggested to help PCPs resolve this challenge: use a reminder system ([61]), propose organizational ([62]) and financial incentives ([63]), improve public awareness of the value of prevention ([64]), train PCPs differently ([65]) and delegate preventive services ([61]). The annual physical check-up or periodic health examination is another possible solution ([66]), especially for patients who come rarely for acute or chronic disease care. In France, an office visit usually lasts ~15 minutes ([58]) and could therefore suffice to perform most prevention procedures; in numerous English-speaking countries, on the other hand, a single visit would probably be too short. In addition, the number of preventive procedures provided in an office visit increase quadratically with the duration of the visit (that is, they vary linearly with the square of the duration of the visit) ([67]). It is thus very difficult to include prevention in short visits. Nonetheless, the effectiveness of this periodic prevention visit in terms of morbidity and mortality has not been demonstrated ([68]); and its utility has even been challenged because its content does not correspond to guidelines ([69]).

Conclusion

There are thus numerous pathways to help PCPs accomplish their preventive tasks. It is now essential to evaluate them better to guide the organizational choices that can make the preventive burden of PCPs acceptable from a time perspective.

Our results should encourage the organizations and agencies issuing recommendations to assess the consequences of their recommendations in terms of workload, by specifying the health care professionals involved and monitoring their accessibility to patients, especially those who see PCPs rarely. An interventional study could be envisioned that offers patients who consult little or not at all a consultation for preventive care alone, and to those who do not consult sufficiently, a consultation with, for example, a nurse, to complete their preventive management.

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