

Article

Low-value clinical practices and harm caused by non-adherence to ‘do not do’ recommendations in primary care in Spain: a Delphi study

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Abstract

Objective: To determine the non-adherence to the primary care ‘do not do’ recommendations (DNDs) and their likelihood to cause harm.

Design: Delphi study.

Setting: Spanish National Health System.

Participants: A total of 128 professionals were recruited (50 general practitioners [GPs], 28 pediatricians [PEDs], 31 nurses who care for adult patients [RNs] and 19 pediatric nurses [PNs]).

Interventions: A selection of 27 DNDs directed at GPs, 8 at PEDs, 9 at RNs and 4 at PNs were included in the Delphi technique. A 10-point scale was used to assess whether a given practice was still present and the likelihood of it causing of an adverse event.

Main outcome measure: Impact calculated by multiplying an event’s frequency and likelihood to cause harm.

Results: A total of 100 professionals responded to wave 1 (78% response rate) and 97 of them to wave 2 (97% response rate). In all, 22% (6/27) of the practices for GPs, 12% (1/8) for PEDs, 33% (3/9) for RNs and none for PNs were cataloged as frequent. A total of 37% (10/27) of these practices for

GPs, 25% (2/8) for PEDs, 33% (3/9) for RNs and 25% (1/4) for PNs were considered as potential causes of harm. Only 26% (7/27) of the DNDs for GPs showed scores equal to or higher than 36 points. The impact measure was higher for ordering benzodiazepines to treat insomnia, agitation or delirium in elderly patients (mean = 57.8, SD = 25.3).

Conclusions: Low-value and potentially dangerous practices were identified; avoiding these could improve care quality.

Key words: overuse, patient safety, quality assurance, primary care, Delphi technique

Introduction

At the beginning of this decade, we witnessed a change in the manner of dealing with medical overuse, and sought to eliminate clinical diagnoses and treatment practices of low value and for which overwhelming evidence shows that they should not continue [1]. Since then, a large number of institutions, scientific societies and health foundations have highlighted clinical practices that should be discontinued.

In Europe, the UK's National Institute for Health and Care Excellence [2] (NICE) compiled a number of practices that either did not provide value or whose benefits outweigh their risks; they were called 'do not do' recommendations (DNDs). Today, the NICE webpage contains some 900 DNDs. In the USA and Canada, the American Board of Internal Medicine Foundation (ABIM) led the initiative through interest, the Choosing Wisely campaign [3–6], which is present in 19 countries and has compiled a set of 535 DNDs.

In Spain, the Spanish Society of Internal Medicine was a pioneer in creating a set of DNDs and, along with the Ministry of Health, Social Services and Equality, launched the Commitment to Quality of Scientific Societies initiative in 2013. Its purpose was to reduce those interventions for which there was broad consensus about their null, scarce or doubtful effectiveness.

Do not dos in primary care

Primary care, particularly in countries where it constitutes the gateway to the health system, plays a key role in reducing practices of low value [7]. This is due both to its capacity to determine whether ordering tests, procedures or referrals is actually necessary, and its inclusion of dialogs with patients, which reduce overuse [8].

In 2011, The National Physicians Alliance identified five practices [9] that should be avoided in primary care. For its part, the Choosing Wisely campaign incorporated a set of 15 recommendations seeking to reduce overuse. In 2014, the Swiss Society of General Internal Medicine launched Smarter Medicine, which identified five diagnostic and therapeutic procedures of low value. In Italy, the Slow Medicine campaign had similar objectives [10].

In 2014 in Spain, the Spanish Society of Family and Community Medicine (semFYC) agreed on an initial list of 15 recommendations on what should not be done in primary care [11]. This list currently includes 30 DNDs [12], and it recently prioritized 15 DNDs adapted to urgent care in primary care [13]. The Spanish Society of Pediatrics (AEP), also in 2014, produced five DNDs [14], of which four were applicable to primary care pediatricians. The Essential Project included an evaluation of 30 DNDs aimed at primary care physicians [15, 16].

Do not dos' impact

The frequency of overuse has been systematically studied by the Less is More Medicine [17] movement. In studies carried out in America and Europe, it has been shown that institutional campaigns to reduce overuse are known to less than half of professionals [18, 19]. In Spain, only 56% of general practitioners and 34% of pediatricians claim to be aware of the Commitment to Quality initiative [20].

Some of these DNDs are more easily accepted than others by patients [21, 22] and professionals [3, 23], and even though significant progress has been made, overuse persists in clinical practice [17, 24–27]. Professionals tend to overestimate the benefits and underestimate the harm of unnecessary practices [28].

Do not dos and patient safety

In addition to the unnecessary financial burden that overuse puts on health organizations [29], doing things that should not be done can cause harm (adverse event) [30]. However, this aspect has barely been studied [31, 32].

Aim

This study's objective was to determine, through consensus among professionals, the frequency of certain do-not-dos occurring in primary care in Spain and their likelihood of causing and an adverse event.

Method

This study used the Delphi technique [33], carried out between September and December 2017. The study protocol was approved by the Ethics Committee of Research on Primary Care in the Valencian Community.

Definitions

An adverse event was defined as unintentional harm caused to the patient as an unexpected clinical result of medical care provided and that may or may not be associated with a clinical error [34].

A DND was defined as a diagnostic or therapeutic practice for which extensive evidence exists that it does not provide any benefit to patients, or whose benefits do not outweigh the risks it entails [35]. These DNDs had to be included in the proposals about what should not be done prepared by either national or regional agencies or scientific societies [36, 37].

Scope of the study

Four care contexts were considered: general practice (GP), pediatrics (PED) (in Spain, pediatricians provide care for patients from birth up to 14 years of age), pediatric nursing (PN) and nursing for adult patients (RN).

Subjects

Using snowball sampling, 128 primary care professionals were recruited from the Spanish National Health System. These included 50 GPs, 28 PEDs, 31 RNs and 19 PNs. All of the participants fulfilled the specified inclusion criteria of at least 10 years' experience in primary care and experience carrying out teaching activities aimed at health professionals. Participation was voluntary; they were informed of the objectives of the study and the methodology that was going to be applied.

Delphi questionnaire

For each context, a Questionnaire 0 was designed, following the same procedure, to apply the Delphi technique. The elements in this questionnaire were chosen from the DNDs of the semFYC [12], the AEP [14], the health services of Aragón, Castilla La Mancha, Catalonia, the Valencian Region and the Madrid region; and from a nursing group with training and experience in patient safety [8].

In all, 45 DNDs were selected. This set of recommendations was initially analyzed by 10 primary care professionals (4 GPs, 2 PEDs, 2 RNs and 2 PNs), each with more than 15 years of clinical experience, to ensure its legibility and suitability. From this review, similar DNDs related to requests for diagnostic tests that primary care physicians could no longer order were eliminated. This group recommended more specificity in the drafting of seven DNDs, and to exclude one, and add four. The definitive Questionnaire 0 contained 27 DNDs directed at GPs, 8 at PEDs, 9 at RNs and 4 at PNs. All DNDs considered in this study are included in Appendix I.

Response scale

The participants assessed the frequency that each selected practice was still present in clinical practice. Here, a scale from 0 to 10 (with 0 = 'hardly occurs' and 10 = 'occurs very frequently') was

employed. They also assessed the likelihood of these selected practices being the cause of an adverse event (regardless of whether the harm caused was serious or minor). This used a similar scale, where 0 meant there was no likelihood and 10 meant that the selected practice was highly likely to cause the patient harm.

Procedure

The subjects who agreed to participate in the study received instructions by email as well as a link to the online questionnaire. They had four weeks to respond to version 0 of the questionnaire (first wave). As many as three reminders were given to improve the response rate. The second wave began in late November 2017. Wave 2 only included the elements that had not shown an acceptable degree of agreement in the preceding wave, and the very same response scale was used. Wave 2 was only sent to the participants who responded to the first wave. In wave 2, the participants were informed about their scores in wave 1 along with the mean from their group in order to be able to score the second time. Once again, three reminders were given.

Consensus

It was thought that there was an acceptable degree of consensus among the participants for scores between the percentile ≥ 25 and the profile ≥ 65 of the coefficient of variation (CV).

Expected impact of DND

To determine which DND kept occurring in practice and whether they caused harm, a measurement of the impact was calculated by multiplying the scores of the frequency that they kept occurring and the possibility of causing harm. This measure of impact was calculated when the DND had a frequency or a possibility to cause harm equal to or higher than 6 points. This new measure had a maximum of 100 points.

Results

In the first wave, 100 professionals responded: 38 GPs (76% response rate), 22 PEDs (78.6% response rate), 26 RNs (83.9% response rate) and 14 PNs (73.7% response rate).

Table 1 Results from the first and second waves of the Delphi study

	General practitioners (N = 38)				Pediatricians (N = 22)			
	Do not do frequency		Likelihood of causing an AE		Do not do frequency		Likelihood of causing an AE	
	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Mean	4.2	4.1	5.6	5.5	3.1	2.9	5.9	5.9
Median	3.8	3.7	5.8	5.8	2.6	2.4	5.6	5.6
Standard deviation	1.7	1.8	1.3	1.4	1.9	2.0	1.6	1.7
Coefficient of variation (median)	68.1	56.5	38.2	35.5	108.9	90.9	45.0	41.5
Percentile 65	75.1	59.5	40.6	36.5	127.3	97.5	47.5	45.1
	Nurses caring for adult patients (N = 26)				Pediatric nurses (N = 14)			
	Do not do frequency		Likelihood of causing an AE		Do not do frequency		Likelihood of causing an AE	
	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Mean	4.3	4.3	4.6	4.6	3.1	3.1	3.9	3.9
Median	3.7	3.7	3.2	3.2	2.7	2.7	2.5	2.5
Standard deviation	2.0	2.0	2.3	2.3	1.0	1.0	2.7	2.7
Coefficient of variation (median)	78.5	65.0	86.0	65.6	73.8	73.8	59.4	59.4
Percentile 65	82.5	70.0	87.6	67.8	74.8	74.8	62.1	62.1

Scale from 1 to 10.

In the first wave, a consensus was reached on 12 out of 27 (44.4%) practices in the case of GPs, in 5 out of 8 (62.5%) in the case of PEDs, in 4 out of 9 (44.4%) for RNs and none of the PNs. The scores for the set of DNDs on the scales of frequency and likelihood of causing an adverse event in the first wave are shown in Table 1. These scores showed great diversity in the assessments of the frequency with which they were thought to still occur in clinical practice and in the likelihood that they would result in harming a patient, especially among PEDs.

In the second wave, 97 professionals responded: 38 GPs (100% response rate), 22 PEDs (100% response rate), 24 RNs (92.3% response rate) and 12 PNs (85.7% response rate). The mean scores for the set of DNDs hardly changed (Table 1). The coefficients of variation among the scores of the four groups of participants in the second wave were reduced significantly, both for that related to the frequency of occurrence in clinical practice (89.9 versus 67.5; 95% confidence interval for the difference, 17.5–27.2, *T*-test 9.4; *P*-value <0.0001) and for that related to their potential to cause harm (58.4 versus 42.6; 95% confidence interval for the difference; 11.9–19.4, *T*-test 8.4; *P*-value <0.0001).

Most frequent DNDs

In all, 22% (6/27) of the practices of GPs, 12% (1/8) of those directed at PEDs, 33% (3/9) of those directed at RNs, and none of those directed at PNs were cataloged as occurring frequently in daily practice of primary care (score ≥ 6). Table 2 shows the scores when the frequency or potential harm was assessed as equal to or higher than 6.

Among GPs, prescribing benzodiazepines to treat insomnia, agitation, or delirium in elderly patients (mean = 7.1, SD = 2.5) was the DND assigned the greatest frequency; for PEDs, it was combining or alternating treatment between ibuprofen and paracetamol (mean = 6.2, SD = 3.2). RNs indicated overuse of monitoring blood pressure, heart rate, weight or blood sugar monitoring at the patients' request (mean = 7.1, SD = 2.8); and among PNs, no frequency scores were equal to or higher than 6.

DNDs' harm

The DND that could cause the most harm and occurred more frequently in daily clinical practice for GPs was ordering benzodiazepines to treat insomnia, agitation, or delirium in elderly patients (mean = 7.9, SD = 1.3) (Table 2). For PEDs, it was delaying empiric antibiotherapy when invasive meningococcal disease was suspected (mean = 9.2, SD = 1.5); for PNs and RNs, it was administering injections without consultation for possible allergies (mean = 8.5, SD = 0.8; mean = 8.7, SD = 1.9, respectively).

DNDs' impact

Table 2 shows a measure of the impact of each of these DNDs. Only 7/27 (25.9%) of the DNDs for GPs showed scores equal to or higher than 36 points. These were related to inadequate use of benzodiazepines, proton pump inhibitors antimicrobials, non-steroidal anti-inflammatory drugs, acetylcholinesterase inhibitors, and paracetamol, or inadequate performance of prostate cancer screenings.

Discussion

Prescribing benzodiazepines to elderly persons, prescribing antimicrobials or drugs to interrupt the production of stomach acid in the

absence a definite indication, and indicating screening for prostate cancer in asymptomatic patients are, according to this study, the overuse practices with the greatest negative impact on patient safety. In the case of PEDs, ensuring the correct use of antimicrobials and eradicating the combination of ibuprofen and paracetamol are priority objectives for achieving better practice. Total immobilization of first-degree sprained ankles, the custom of inserting urinary catheters routinely, and administering injections at the request of patients who do not show signs of possible allergies are relatively frequent practices that are also highly likely to cause harm that nursing professionals should stop doing.

The appropriate use of antimicrobial guidelines [17, 26], and proton pump inhibitors [26], and ordering screenings for prostate cancer [26, 38], constitute three of the practices that receive the most attention in overuse studies. This and other studies [39] highlighting them as priority objectives in attempts to prevent inappropriate use of resources and to increase patient safety in primary care. Furthermore, this study also addresses overuse by other primary care professionals (PEDs, RNs and PNs), an aspect that has been studied less.

Primary care physicians occupy a strategic position in health care systems, and their actions are decisive when it comes to overuse [7]. Most studies have shown their greater willingness toward informative campaigns about what should not be done [40, 41], and their greater response to interventions intended to ensure that the number of inappropriate antimicrobial prescriptions is reduced [42]. However, one must also consider that pressure from patients who demand these types of treatment, along with defensive medical practices, also play a part in accounting for the overuse figures [8]. Thus, interventions intended to eradicate low-value practices must not be directed at the professionals only [26, 43]. Health authorities and those responsible for campaigns to reduce overuse could consider the results of this study and focus their attention on those DNDs that can cause greater harm. The number of DNDs and the institutions that determine their own DNDs have grown exponentially since 2011 [39, 44], although there is only clear evidence to support two-thirds of these DNDs. This study fixed its target on those relatively frequent practices for which there is sufficient evidence about their risks or lack of effectiveness and, it thus seeks to attract attention from professionals for the sake achieving changes in clinical practice routines.

The results suggest that there is significant variability between GPs and PNs in their assessment of the frequency with which these practices persist in clinics (a variability in the estimation of the frequency was 37%) and in the likelihood that adverse events associated with them occur (as much as 17 percentage points). The differences in the acceptability of the DNDs observed in other studies [28] could explain these results.

This approach permits the establishment of priorities in attempts to reduce practices that should not be done, as has been suggested by other investigators [7, 45]. In this case, the focus is placed on those practices that persist in daily primary care activities, as they have a greater potential to cause an adverse event.

This is the first study conducted on the national level in Spain that analyzes the frequency and potential adverse events related to low-value practices in primary care related to general practitioners, pediatricians and nurses. This approach to identifying what should not be done addresses part of the overuse issue, which represents one of the problems in all health systems due to its impact on safety and sustainability [2–4].

Table 2 Harm, frequency and impact of the do not dos analyzed in this study (only harm or frequency scores equal to or higher than 6 have been included)

	HARM					FREQUENCY				IMPACT**			
	N	Range	Mean*	SD	CV	Range	Mean*	SD	CV	Range	Mean ^S	SD	CV
General practitioners													
21. Prescribe benzodiazepines to treat insomnia, agitation or delirium in elderly persons.	38	5	7.9	1.3	17	9	7.1	2.5	35	94	57.8	25.3	43.8
25. Maintain treatment with proton pump inhibitors without proven indication.	38	9	6.2	2.2	36	10	6.3	2.7	43	100	39.8	25.8	64.7
8. Order antibiotic treatment for acute bronchitis without comorbidity.	38	7	5.9	2.2	37	9	6.2	2.4	39	90	38.5	23.7	61.5
16. Prescribe non-steroidal anti-inflammatory drugs (NSAIDs) for patients with cardiovascular disease, chronic kidney disease, hypertension, heart failure or liver cirrhosis.	36	6	7.8	1.6	21	10	4.9	2.6	53	100	38.3	22.8	59.6
24. Maintain treatment with acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine) in Alzheimer's patients over 85 years of age.	38	9	5.8	2.3	39	10	6.3	2.8	45	100	38.1	24.9	65.0
4. Perform prostate cancer screening in asymptomatic patient through PSA or a rectal examination.	37	8	5.5	2.0	35	7	6.6	1.8	28	58	37.6	18.3	49.0
9. Systematically recommend taking 1 g doses of paracetamol.	38	9	5.9	2.0	34	10	6.4	2.7	42	90	37.3	22.1	59.1
14. Prescribe antibiotics in asymptomatic bacteriuria cases for the following population groups: non-pregnant premenopausal women, diabetics, the elderly, institutionalized elderly, patients with spinal cord injuries and patients with urinary catheters.	38	8	6.2	1.9	30	9	5.2	2.5	48	80	32.3	19.6	60.8
11. Recommend oral corticosteroids for more than 7–10 days to patients with exacerbation from chronic obstructive pulmonary disease.	38	8	6.1	2.1	34	10	4.4	2.7	62	70	28.7	21.6	75.5
10. Prescribe drugs with potential extrapyramidal side effects (antiemetic, antivertiginous, prokinetic) to patients with Parkinson's disease.	37	9	7.1	1.9	27	8	3.4	2.3	70	80	23.6	19.4	82.4
19. Prescribe bisphosphonates to patients with low fracture risk.	38	7	6.0	1.4	24	8	3.7	2.1	58	64	23.1	16.3	71
23. Prescribe glitazones to diabetics with heart failure.	37	5	6.6	1.3	20	7	1.9	1.6	83	49	13.3	11.8	89
22. Routinely establish the association of a direct renin inhibitor and an angiotensin-converting-enzyme inhibitor (ACE inhibitor) or antagonist of angiotensin II receptors (AGTR2).	37	4	6.6	1.0	16	6	1.4	1.3	95	48	9.6	9.7	101
15. Utilize hormone therapy (estrogen or estrogen with progestogen) with the objective of preventing cardiovascular disease, dementia or impairment of cognitive function in postmenopausal women.	37	8	6.4	1.8	28	6	1.2	1.3	106	42	8.0	9.1	114
Pediatricians													
6. Combine or alternate treatment between ibuprofen and paracetamol.	22	7	4.4	2.0	46	10	6.2	3.2	52	70	27.0	20.1	74
3. Delay empiric antibiotherapy when invasive meningococcal disease is suspected by having cultures (blood and/or spinal fluid) obtained.	22	7	9.2	1.5	16	7	1.3	1.6	119	70	11.9	15.2	128
4. Routinely prescribe antibiotics for boys and girls with stomach flu.	21	8	7.2	2.0	28	4	0.8	1.0	126	28	5.4	7.1	131
Nurses caring for adult patients													
3. Apply total immobilization to first-degree sprained ankles.	25	9	6.6	2.2	34	10	4.8	3.1	65	90	33.0	24.9	75
5. Administer medical injections without consultation for possible allergies.	26	8	8.7	1.9	22	8	3.4	2.7	79	72	29.4	24.7	84
1. Routinely insert urinary catheters in cases of acute ischemic stroke or urinary incontinence.	23	5	6.5	1.4	22	8	3.6	2.0	57	56	23.5	14.3	61
2. Provide glucometers and test strips to diabetics with hypoglycemic agents.	24	8	2.8	2.1	74	10	6.3	2.5	40	64	18.0	16.4	91

Table continued

Table 2 Continued

Nurses caring for adult patients	N	Range	Mean*	SD	CV	Range	Mean*	SD	CV	Range	Mean [§]	SD	CV
4. Measure BP/HR/weight/blood sugar routinely in patients who request it.	26	6	2.2	1.8	86	9	7.1	2.8	40	48	15.4	14.0	91
9. Monitor blood pressure, blood sugar and weight every 3 months for chronic patients who are in a stable condition.	24	7	3.1	2.0	66	8	6.5	2.2	34	25	6.3	6.7	106
Pediatric nurses	N	Range	Mean*	SD	CV	Range	Mean*	SD	CV	Range	Mean [§]	SD	CV
11. Administer medical injections without consultation for possible allergies.	11	3	8.5	0.8	10	5	2.4	1.4	60	35	19.2	11.0	57

*Scale from 1 to 10.

§Scale from 1 to 100.

**IMPACT score in frequency multiplied by the score of the likelihood to cause harm.

CV, coefficient of variation; BP, blood pressure; HR, heart rate.

Limitations

In interpreting data, we must consider the tendency of professionals to underestimate the frequency of DNDs [28]. Also, the dissemination of DNDs is fundamentally accomplished through the websites of professional organizations and national agencies concerned with patient safety, whose access and consultation can determine the success of their dissemination [47], and this aspect was not controlled in this study. The methodology employed does not permit us to establish the magnitude of the impact of continuing to do what should not be done. The number of experts in the PN group was under 20, which limits the strength of the conclusions in their case. Most of the DNDs included in this study were related to prescription, because scientific societies and institutions are focused on them. Among the analyzed DNDs, referrals to other specialists were not included, even though they may be the origin of the unnecessary tests or over-treatments mentioned in other overuse studies [48].

Conclusion

This study allowed us to identify low-value practices in primary care in Spain that are potentially dangerous to patients, these should be the focus of efforts to improve quality. Future studies could consider making a quantitative estimation of the magnitude of their impact in clinical and economic terms. If, generally speaking, doing what should not be done is unnecessary and inefficient, in the case of health interventions it must be considered that it can also compromise the health and well-being of people.

Supplementary material

Supplementary material is available at *International Journal for Quality in Health Care* online.

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References

1. Brody H. Medicine's ethical responsibility for health reform—the Top Five List. *N Engl J Med* 2010;362:283–5.
2. National Institute for Health and Care Excellence (NICE). *Do not do Recommendations*. <http://www.nice.org.uk/savingsandproductivity/collection> (24 March 2018, date last accessed).
3. Martín S, Miñarro R, Cano P et al. Resultados de la aplicabilidad de las «do not do recommendations» del National Institute for Health and Care Excellence en un hospital de alta complejidad. *Rev Calid Asist* 2015;30:117–28.
4. Crema M, Verbano Ch. Lean Management to support Choosing Wisely in healthcare: the first evidence from a systematic literature review. *Int J Qual Health Care* 2017;29:889–95.
5. The ABIM Foundation. *Choosing Wisely*. <http://www.choosingwisely.org/> (24 March 2018, date last accessed).
6. Wolfson D, Sant J, Slass L. Engaging physicians and consumers in conversations about treatment overuse and waste: a short history of the Choosing Wisely Campaign. *Acad Med* 2014;89:990–5.
7. Alber K, Kuehlein T, Schedlbauer A et al. Medical overuse and quaternary prevention in primary care—a qualitative study with general practitioners. *BMC Fam Pract* 2017;18:99.
8. Mira JJ, Carillo I, Silvestre C et al. Drivers and strategies for avoiding overuse. A cross-sectional study to explore the experience of Spanish primary care providers handling uncertainty and patients' requests. *BMJ Open* 2018;8:e021339.
9. Good Stewardship Working Group. The 'top 5' lists in primary care: meeting the responsibility of professionalism. *Arch Intern Med* 2011;171:1385–90.
10. Bonaldi A, Vernerio S. Italy's slow medicine: a new paradigm in medicine. *Recenti Prog Med* 2015;106:85–91.
11. Grupo de Trabajo de la semFYC para el proyecto Recomendaciones «No hacer». *Recomendaciones «NO HACER*. Barcelona: semFYC ediciones, 2014.
12. Grupo de Trabajo de la semFYC para el proyecto Recomendaciones «No hacer». *Recomendaciones «NO HACER» 2.ª Parte*. Barcelona: semFYC ediciones, 2015.
13. Grupo de Trabajo de la semFYC para el proyecto Recomendaciones «No hacer». *15 Recomendaciones «No hacer» en urgencias*. Barcelona: semFYC ediciones, 2016.
14. Asociación Española de Pediatría (AEP). *Recomendaciones de 'no hacer' en Pediatría* 2014. <http://www.aeped.es/documentos/recomendaciones-no-hacer-en-pediatria> [26 March 2018, date last accessed].
15. Caro-Mendivelso J, Almazán C, Parada-Martínez I et al. Identificación y priorización de prácticas clínicas de poco valor: los profesionales de atención primaria deciden. *Aten Primaria* 2017. doi:10.1016/j.aprim.2017.08.006.
16. Essencial. <http://essencialsalut.gencat.cat/ca/inici> [28 March 2018, date last accessed].

17. Rosenberg A, Agiro A, Gottlieb M *et al*. Early trends among seven recommendations from the Choosing Wisely Campaign. *JAMA Intern Med* 2015;175:1913–20.
18. PeryUdem Research/Communication. Unnecessary Tests and Procedures In the Health Care System: What Physicians Say About The Problem, the Causes, and the Solutions: Results from a National Survey of Physicians. ABIM Foundation, 2014 May.
19. Zambrana-García JL, Lozano Rodríguez-Mancheño A. Actitudes de los médicos hacia el problema de las pruebas y los procedimientos innecesarios. *Gac Sanit* 2016;30:485–6.
20. Mira JJ, Carillo I, Silvestre C *et al*. Grado de conocimiento entre médicos de familia, pediatras y enfermería de la campaña Compromiso por la Calidad y de recomendaciones No hacer para Atención Primaria. *An Sist Sanit Navar* 2018. doi:10.23938/ASSN.0228.
21. Silverstein W, Lass E, Born K *et al*. A survey of primary care patients' readiness to engage in the de-adoption practices recommended by Choosing Wisely. *BMC Res Notes* 2016;9:301.
22. Kevin S, Cornuza J, Cohidon C *et al*. How do Swiss general practitioners agree with and report adhering to a top-five list of unnecessary tests and treatments? Results of a cross-sectional survey. *Eur J Gen Pract* 2018;24:32–8.
23. Zikmund-Fisher BJ, Kullgren JT, Fagerlin A *et al*. Perceived barriers to implementing individual Choosing Wisely® Recommendations in two national surveys of primary care providers. *J Gen Intern Med* 2016;32:210–7.
24. Sabbatini AK, Tilburt JC, Campbell EG *et al*. Controlling health costs: physician responses to patient expectations for medical care. *J Gen Intern Med* 2014;29:1234–41.
25. Hong AS, Ross-Degnan D, Zhang F *et al*. Small decline in low-value back imaging associated with the 'Choosing Wisely' Campaign, 2012–14. *Health Aff (Millwood)* 2017;36:671–9.
26. Selby K, Cornuz J, Cohidon C *et al*. How do Swiss general practitioners agree with and report adhering to a top-five list of unnecessary tests and treatments? Results of a cross-sectional survey. *Eur J Gen Pract* 2018; 24:32–8.
27. Zalts R, Buchrits S, Khateeb J *et al*. Diagnostic process-how to do it right? The SMART medicine initiative. *Eur J Intern Med* 2017;46:e11–2.
28. Hoffmann TC, Del Mar C. Clinicians' expectations of the benefits and harms of treatments, screening, and tests. *JAMA Intern Med* 2017; 177:407–19.
29. Nassery N, Segal JB, Chang E *et al*. Systematic overuse of healthcare services: a conceptual model. *Appl Health Econ Health Policy* 2015;13:1–6.
30. Gibson R. The human cost of overuse. *Br Med J* 2014;348:g2975.
31. Zapata JA, Lai AR, Moriates C. Is excessive resource utilization an adverse event? *J Am Med Assoc* 2017;317:849–50.
32. Mira JJ, Carrillo I, Gea MT *et al*. Protocol for a retrospective cohort study. When doing what should not be done goes wrong in primary care. The SOBRINA Spanish Study. (In evaluation).
33. Mira JJ, Pérez-Jover V, Lorenzo S *et al*. Investigación cualitativa: una alternativa también válida. *Aten Primaria* 2004;34:161–9.
34. World Health Organization. Conceptual framework for the International Classification for Patient Safety. *Final technical report*. Geneva: World Health Organization, 2009.
35. Chassin MR, Galvin RW. The urgent need to improve health care quality. Institute of Medicine National Roundtable on Health Care Quality. *J Am Med Assoc* 1998;280:1000–05.
36. Grady D, Redberg RF. Less is more: how less health care can result in better health. *Arch Intern Med* 2010;170:749–50.
37. Otte J. *Less is More*. <http://www.lessismoremedicine.com/> (24 March 2018, date last accessed).
38. Jessen K, Søndergaard J, Larsen PV *et al*. Danish general practitioners' use of prostate-specific antigen in opportunistic screening for prostate cancer: a survey comprising 174 GPs. *Inter J Family Med* 2013;2013: 540707.
39. García-Mochón L, Olry de Labry A, Bermúdez-Tamayo L. Priorización de actividades clínicas no recomendadas en Atención Primaria. *An Sist Sanit Navar* 2017;40:401–12.
40. Colla CH, Kinsella EA, Morden NE *et al*. Physician perceptions of Choosing Wisely and drivers of overuse. *Am J Manag Care* 2016;22: 337–43.
41. Sirovich BE, Woloshin S, Schwartz LM. Too little? Too much? Primary care physicians' views on US Health Care. *Arch Intern Med* 2011;171: 1582–5.
42. Légaré F, Labrecque L, Cauchon M *et al*. Training family physicians in shared decision-making to reduce the overuse of antibiotics in acute respiratory infections: a cluster randomized trial. *CMAJ* 2012;184: e726–34.
43. Moro ML, Marchi M, Gagliotti C *et al*. Why do paediatricians prescribe antibiotics? Results of an Italian regional Project. *BMC Pediatr* 2009;9:69.
44. Steel N, Abdelhamid A, Stokes T *et al*. A review of clinical practice guidelines found that they were often based on evidence of uncertain relevance to primary care patients. *J Clin Epidemiol* 2014;67:1251–7.
45. Morgan DJ, Leppin AL, Smith CD *et al*. A practical framework for understanding and reducing medical overuse: conceptualizing overuse through the patient-clinician interaction. *J Hosp Med* 2017;12:346–51.
46. Morgan D, Dhruva S, Coon E *et al*. 2017 Update on medical overuse: a systematic review. *JAMA Intern Med* 2018;178:110–5.
47. Lorenzo S, Mira JJ. Are Spanish physicians ready to take advantage of the Internet? *World Hosp Health Serv* 2004;40:31–5.
48. de Prado-Prieto L, García-Olmos L, Rodríguez-Salvanes F *et al*. Evaluación de la demanda derivada en atención primaria. *Aten Primaria* 2005;35:146–51.

Appendix I Do not do recommendations for primary care included in this study

General practitioners

- Do not perform imaging tests on non-specific low back pain without warning signs within 6 weeks.
- Do not routinely order densitometry in postmenopausal women to assess the risk of osteoporotic fracture without first performing a risk factor assessment.
- Do not order imaging tests for headache without complications.
- Do not perform prostate cancer screening in asymptomatic patient through PSA or a rectal examination.
- Do not perform sinus x-rays to diagnose probable acute bacterial rhinosinusitis.
- Do not perform thyroid ultrasound in subclinical hypothyroidism.
- Do not treat bronchial asthma with half-life/long-life bronchodilators without inhaled corticosteroids (long-acting beta-agonists (LABAs) on a regular basis as sole treatment for asthma in adults).
- Do not order antibiotic treatment for acute bronchitis without comorbidity.
- Do not systematically recommend taking 1 g doses of paracetamol.
- Do not prescribe drugs with potential extrapyramidal side effects (antiemetic, antivertiginous, prokinetic) in patients with Parkinson's disease.
- Do not recommend oral corticosteroids for more than 7–10 days to patients with exacerbation from chronic obstructive pulmonary disease.
- Do not systematically prescribe bronchodilator treatment with b2-adrenergic agonists for acute bronchiolitis.
- Do not prescribe antibiotics in tonsillopharyngitis cases without suspicion of streptococcal etiology.
- Do not prescribe antibiotics in asymptomatic bacteriuria cases for the following population groups: non-pregnant premenopausal women, diabetics, the elderly, institutionalized elderly, patients with spinal cord injuries and patients with urinary catheters.
- Do not utilize hormone therapy (estrogen or estrogen with progestogen) with the objective of preventing cardiovascular disease, dementia or impairment of cognitive function in postmenopausal women.
- Do not prescribe non-steroidal anti-inflammatory drugs (NSAIDs) for patients with cardiovascular disease, chronic kidney disease, hypertension, heart failure or liver cirrhosis.

- Do not systematically prescribe lipid lowering agents for the primary prevention of cardiovascular events in people over 75 years of age.
- Do not use rifampicin together with pyrazinamide in primary chemoprophylaxis of tuberculosis in immunocompetent adults.
- Do not prescribe bisphosphonates to patients with low fracture risk.
- Do not routinely use calcium channel antagonists to reduce cardiovascular risk after a myocardial infarction.
- Do not prescribe benzodiazepines to treat insomnia, agitation or delirium in elderly persons.
- Do not routinely establish the association of a direct renin inhibitor and an angiotensin-converting-enzyme inhibitor (ACE inhibitor) or antagonist of angiotensin II receptors (AGTR2).
- Do not prescribe glitazones to diabetics with heart failure.
- Do not maintain treatment with acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine) for Alzheimer's patients over 85 years of age.
- Do not maintain treatment with proton pump inhibitors without proven indication.
- Do not indicate self-monitoring of capillary glycaemia for type 2 diabetic patients without hypoglycemic treatment.
- Do not perform more than two HbA1c controls per year in diabetics with good control.

Nurses caring for adult patients

- Do not routinely insert urinary catheters in cases of acute ischemic stroke or urinary incontinence.
- Do not provide glucometers and test strips to diabetics with hypoglycemic agents.
- Do not apply total immobilization to first-degree sprained ankles.
- Do not measure BP/HR/weight/blood sugar routinely in patients who request it.
- Do not administer medical injections without consultation for possible allergies.

- Do not replace wet wound dressings daily as in the case of dry wound dressings.
- Do not repeat the test of basal blood sugar rate with different glucometers to compare results.
- Do not repeat INR if the value is in the range (2–3, 2.5, 3.5).
- Do not monitor blood pressure, blood sugar and weight every 3 months for chronic patients who are in a stable condition.

Pediatricians

- Do not routinely perform chest x-rays in cases of acute bronchiolitis.
- Do not order complementary tests at the request of the parents: blood tests for non-specific symptoms or signs, x-rays for respiratory tract infections or ultrasound for intestinal symptoms.
- Do not delay empiric antibiotherapy when invasive meningococcal disease is suspected by having cultures (blood and/or spinal fluid) obtained.
- Do not routinely prescribe antibiotics for boys and girls with stomach flu.
- Do not prescribe antibiotics for pharyngitis even if the patient does not test positive for strep.
- Do not combine or alternate treatment between ibuprofen and paracetamol.
- Do not prescribe mucolytic, antitussive or antibiotic drugs for upper respiratory tract infections.
- Do not schedule face-to-face consultations of complacency with no specific care objective.

Pediatric nurses

- Do not revaccinate for tetanus with each wound.
- Do not perform weekly weight measurement on normally developing infants.
- Do not administer vaccinations prescribed by doctors or pediatricians in their private practice.
- Do not administer injections without consultation for possible allergies.