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Increased cost sharing and changes in noncompliance with specialty referrals in The Netherlands

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ABSTRACT

Introduction: The compulsory deductible, a form of patient cost-sharing in the Netherlands, has more than doubled during the past years. There are indications that as a result, refraining from medical care has increased. We studied the relation between patient cost-sharing and refraining from medical care by evaluating noncompliance with referrals to medical specialists over several years.

Methods: Noncompliance with specialty referrals was assessed in the Netherlands from2008 until 2013, using routinely recorded referrals from general practitioners to medical specialists and claims from medical specialists to health insurers. Associations with patient characteristics were estimated using multilevel logistic regression analyses.

Results: Noncompliance rates were approximately stable from 2008 to 2010 and increased from 18% in 2010 to 27% in 2013. Noncompliance was highest in adults aged 25–39 years. The increase was highest in children and patients with chronic diseases. No significantly higher increase among patients from urban deprived areas was found.

Discussion/conclusion: Noncompliance increased during the rise of the compulsory deductible. Our results do not suggest a one-to-one relationship between increased patient cost-sharing and noncompliance with specialty referrals. In order to develop effective policy for reducing noncompliance, it is advisable to focus on the mechanisms for noncompliance in the groups with the highest noncompliance rates (young adults) and with the highest increase in noncompliance (children and patients with chronic diseases).

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1. INTRODUCTION

The compulsory deductible, a form of patient cost-sharing in the Netherlands, has more than doubled during the past years. In the Netherlands, basic health insurance is obligatory for all citizens. The basic package is defined by the government and covers among others medical care provided by general practitioners (GPs), medical special-ists and midwives, and pharmaceutical care. For this basic package a compulsory deductible (amount of expenses that must be paid out-of-pocket before an insurer will pay any expenses) is charged for all adult residents for all covered care, except general practice, community nursing and maternity care [1]. This compulsory deductible increased from D 150 in 2008, via D 220 in 2012 and D 350 in 2013,to D 385 yearly in 2016 (Fig. 1). For citizens with lower incomes, possibilities for compensation exist [1]. The aim of this increment is to control health-care expenditures, both through a funding shift and by increasing patients cost awareness [2]. In response to the economic crisis, several other governments (e.g., of Denmark, Greece, Ireland, Russian Federation, Switzerland, and Turkey) increased or introduced patient cost-sharing [3].

[FIGURE 1]

Although patient cost-sharing reduces individual medical spending [4], it has drawbacks too. Macro effects on health care expenditures generally prove to be limited [5,6] and there are indications that patient cost-sharing leads to health inequalities between groups of patients [4,5] and delayed needed care [7]. In the Netherlands, GPs state that as a result of the increased compulsory deductible, refraining from medical care has increased [8]. Furthermore, surveys among Dutch health-care users indicate increased refraining from health care because of the costs involved [9–11]. For example, not picking up medication, not following referrals to medical specialists, or avoiding visiting GPs because of expected follow-up costs. Also in other European countries people experience unmet health-care needs because of costs [12]. Refraining from medical care may have a negative impact on the well-being of the population [13], through negative consequences for both clinical outcome and health-care costs [14]. The above-mentioned outcomes are based on self-reports. Insight in the relation between the increased compulsory deductible and refraining from medical care based on objective and comparable figures over years is not yet available. The present paper provides insight in this relation by evaluating noncompliance with referrals to medical specialists over the years. In the Netherlands, GPs decide whether or not to refer patients to medical specialists. They function as gatekeepers, like they do in many European health-care systems and several health plans in the US [15,16]. The Dutch compulsory deductible is charged for medical specialist care, but not for GP consultation. GPs can be visited free of charge and patients decide to comply with a GP referral or not. The compulsory deductible is charged if patients follow the referral. Noncompliance with specialty referrals is therefore a form of refraining from medical care that may be affected by the increased compulsory deductible. Compliance with specialty referrals in the Netherlands is previously reported as 86.6% in 2008–2010 in a cross-sectional study [17], which is higher than compliance rates generally found in the US (63–83% [18–20]). The present paper is the first in which the development of noncompliance with specialty referrals over years, is related to the increased compulsory deductible. The association between the increased compulsory deductible and refraining from

medical care is expected to differ between patient groups. Refraining is found to be related to economic factors [21,22], and patient cost-sharing tends to be associated with reduction in health-care use especially in lower income groups [23,24]. So, we expect the influence of the increased compulsory deductible on noncompliance to be larger in patients from urban deprived areas, who generally have lower incomes [25]. Because of the nature of the Dutch compulsory deductible, its influence on noncompliance is also expected to differ with age and having chronic diseases. Noncompliance or refraining is known to be higher among younger patients [17,26]. Nevertheless, as the compulsory deductible is charged for individuals aged 18 years or older, its rise is not expected to further increase noncompliance in children. Moreover, the compulsory deductible is often easily met for patients with more chronic diseases, as a result of their high health-care costs [27–29]. Accordingly, the influence of the compulsory deductible on noncompliance can be expected to be smaller for these patients than for patients without chronic diseases. To gain further insight in the effect of the increased patient cost-sharing on refraining from medical care, we investigate the associations between patient characteristics (age, having chronic diseases, and the indicator 'living in an urban deprived area' [25]) and noncompliance with specialty referrals over years. We aim to answer the following questions:

• Is the development of noncompliance with specialty referrals over years in the Netherlands in line with the development of the compulsory deductible? We hypothesize that noncompliance increased throughout the years and that it increased most in 2012 and 2013, when the compulsory deductible increased most (see Fig. 1).

•How did associations between patient characteristics and noncompliance with specialty referrals develop over years in the Netherlands?
We hypothesize that noncompliance with specialty referrals increased more in adults than in children, more in patients without chronic diseases than in patients with chronic diseases and more in patients from urban deprived areas than in patients from other areas.

[BOX 1]

2. MATERIALS AND METHODS

This was an observational, longitudinal study analyzing noncompliance with specialty referrals from January 2008until July 2013, using recorded referrals from GPs to medical specialists and claims from medical specialists to health insurers. Data of all patients from selected general practices with referrals to medical specialists in this period, were examined. To assess noncompliance, referrals to medical specialists and claims from medical specialists were linked. Referrals from the second half of 2013 were not included since those referrals may have been completed in 2014.At the moment of analysing, no claims were available for2014, because the process of claiming and remunerating takes up to 18 months.

2.1. Data

2.1.1. NIVEL primary care database

Starting point were referrals and patient data from routine electronic health records of patients attending general practices participating in the NIVEL Primary Care

Database [NIVEL PCD,30] (see Box 1 for information about ethics approval). This database includes longitudinal data on consultations, morbidity, prescriptions, referrals, and laboratory results. The number of participating practices changes yearly and is generally increasing. Per year (2008–2013), we included data from practices that passed several checks regarding the quality of data of morbidity and referrals [17]. All patients that were registered the full year with one of these practices were included From these patients the following data were collected:•New referrals to medical specialists: referral date and specialism. Repeat referrals were excluded because in part of the study period only new referrals were recorded and noncompliance might differ between new and repeat referrals. Repeat referrals, i.e., referrals to medical specialists that were visited by the same patient in the year before the referral, were excluded after linkage with claims of medical specialists (see below for details).Referrals to psychiatry were excluded as in part of the study period no reliable psychiatry data were available.

•Health-care use: number of contacts with the GP and number of specialty referrals.

•Morbidity: the number of chronic diseases, based on recorded diagnostic codes (according to the International Classification of Primary Care, ICPC [32]) and a list of 29chronic diseases [33].

•Demographic characteristics: gender, age, and the indicator 'living in an urban deprived area'.

The latter was derived from capitation fees, that depend on whether patients live in an urban deprived area or not. Urban deprived areas are based on the percentage non-western immigrants, percentage of residents with a low-income, percentage of residents aged 15–64 years of age without a job and the level of urbanization [25]. In 2012, recalibration of Dutch urban deprived areas took place [25].For one practice more than 50% of patients changed status after this recalibration. This practice is excluded fromanalyses.2.1.2. Claims of medical specialist care Claims of medical specialist care were available from the centre for information of Dutch health insurers, Vektis. Medical specialists in the Netherlands are paid through Diagnosis Treatment Combinations (in Dutch: DBCs), a case mix-based tariff for the entire treatment of a patient by a medical specialist. For all medical specialist care, medical specialists file claims with health insurers. If applicable, health insurers subsequently charge the compulsory deductible from patients. Vektis collects data from all health insurers in the Netherlands which includes, among others, DBCs claimed to all health insurers. Their database contains data from all insured citizens and covers 99%of the total Dutch population. For this study, begin dates and specialty from claims of medical specialist care under basic health insurance in 2007–2013 were used. The vast majority of medical care provided by medical specialists is covered in the basic health insurance [34]. Claims from2008 until 2013 were used to investigate noncompliance with new referrals from that period. Claims from 2007 were used to exclude repeat referrals from 2008.2.1.3. Linkage between referrals from the NIVEL PCD and claims of medical specialists Linkage on patient level between GP patients from the NIVEL PCD and insured patients from Vektis data was per-formed using postal code (4 digits), gender and date of birth. Patients were linked if the combination of postal code, gender, and date of birth was unique and matched between both datasets. Immediately after linkage, postal code was deleted and date

of birth was replaced by year of birth to guarantee patients' privacy. The percentage of patients that could be linked ranged from 80% to 84%per year, which is in line with previous research [17].Linked patients were representative of the Dutch population with regards to age (distribution across groups within2% of the Dutch distribution), gender (within 1% of the Dutch male/female ratio), and proportion of patients living in a urban deprived area (3-6% per year in the selection versus 5% in the Netherlands). Patients who died, emigrated or had no Dutch health insurance after their referral, were excluded from further analyses. Of the remaining patients, all patients with referrals to medical specialists were selected. The numbers of included practices and linked patients with referrals per year are shown in Table 1.

[TABLE 1]

2.1.4. Determination of noncompliance with specialty referrals

For included patients, referrals to medical specialist care were linked to claims of medical specialist care using referral date, claim date and specialty. Noncompliance with referrals was defined as not having a DBC claimed by the medical specialty to whom the patient was referred to, that started within six months after the referral.

2.2. Measurements

2.2.1. Dependent variable: noncompliance with specialty referrals (dichotomous)Noncompliance on patient level was investigated per year in all linked patients with new referrals. Per year, patients were considered noncompliant if they did not comply with one or more new referrals from that year.

2.2.2. Independent variables

To test our hypotheses, age, the number of chronic diseases, and the indicator 'living in an urban deprived area' were included as independent variables (see Supplementary Table). Additionally, gender and measures of health-care use (the number of contacts with the GP and the number of specialty referrals per year) were included as control variables.

2.3. Statistical analyses

First, descriptive analyses (Stata, version 13.1) were performed to determine noncompliance rates to specialty referrals per year. For 2013, only referrals from the first half of the year were used. This is not expected to significantly influence the results for 2013, since an evaluation of non-compliance rates per month in 2008–2013 did not show any systematic effects throughout the years. Next, noncompliance rates were calculated by patient characteristics age, morbidity and living in an urban deprived area.

After that, associations between patient characteristics and noncompliance were investigated using logistic multilevel regression analyses (MLWIN 2.30, IGLS estimation, 2nd order PQL). For each year in the study period, a separate model was estimated with noncompliance as the dependent variable and patient characteristics as predicting variables. Models contained two levels, since the data is hierarchically structured with patients nested in general practices. Multilevel analysis corrects for the cluster effect of hierarchically structured data. To determine whether the magnitudes of the coefficients and intercepts differed significantly between years, we calculated arithmetic differences between coefficients and their standard deviations [35].

3. RESULTS

3.1. Development of noncompliance with specialty referrals over time

Percentages of noncompliant patients per year of referral are shown in Fig. 2. After a decrease from 2008 (20%)to 2009 (18%), noncompliance gradually increased from18% in 2010 to 27% in the first half of 2013. These rates were based on DBC's that started within six months of the referral date. When we extended this period to one year, noncompliance rates per year decreased 1% maximum. Comparison of the intercepts of the multilevel models (see Supplementary Table) per year revealed significant differences ($p < 0.05$) between years upward of 2011. The largest rise in noncompliance took place in 2011, while the compulsory deductible was increased most in 2012and 2013. Regarding 2012 and 2013, noncompliance significantly increased between 2010 and 2012 ($p = 0.00$), and between 2011 and 2013 ($p = 0.02$), but not between subsequent years ($p > 0.05$).Noncompliance rates were calculated per year of the referral date. The compulsory deductible is charged at the moment the referral is consumed. This may be several months after referral and can thus be in the year after the referral. Evaluation of noncompliance rates per month showed that in 2011 only, noncompliance was higher for referrals from the last three months (24%, 25% and 29% for referrals from October, November, and December) than for referrals from the first nine months of that year (mean: 22%,Mann Whitney, $p < 0.05$).

3.2. Associations between patient characteristics and noncompliance with specialty referrals over years

Percentages of noncompliant patients in the first half of2013 (the most recent year with results) by patient characteristics are shown in Fig. 3. The most obvious differences are found for age and the number of chronic diseases. Noncompliance in adult patients from 25 to 39 years old (31%) is higher than in older patients (26–27%) and children(25%), while noncompliance is lower in patients with-out chronic diseases (26%) than in patients with chronic diseases (28–29%). Results from the logistic multilevel regression analyses show that these differences are significant (Supplementary Table).Associations between patient characteristics and non-compliance with specialty referrals per year, estimated using logistic multilevel regression models, are shown in a Supplementary Table.

[FIGURE 2]

[FIGURE 3]

3.2.1. Age

Noncompliance was generally higher in adults (over 18years) than in children. These differences were approximately equal in 2008, 2009, and 2010, with higher noncompliance in all groups over 18 than in children. From 2011 on, differences between all groups over 18and the under 18 reference group significantly decreased. Combined with the significantly increasing intercept, this means that the increase in noncompliance was greatest inpatients under 18, for whom the compulsory deductible is not in operation.

3.2.2. Living in an urban deprived area

The association with living in an urban deprived area was significant only in 2009 and 2012, with higher non-compliance among patients from urban deprived areas. Comparing regression results between years yielded no significant differences.

3.2.3. Morbidity

From 2008 to 2011, noncompliance in patients with chronic diseases was equal to or slightly lower than inpatients without chronic disease. In 2012 and 2013 on the other hand, noncompliance was higher among patients with chronic diseases than in patients without chronic dis-eases. Comparison of results in 2012 and 2013 with results in previous years, showed significantly increasing associations with having a chronic disease. In other words, noncompliance increased more in patients with chronic diseases than in patients without chronic diseases.

3.2.4. Control variables

No significant differences between years were found in the association between gender and noncompliance. This association was significant in 2008, 2011, and 2012:noncompliance was lower in female patients than in male patients. In most years, noncompliance was lower if patients had more contacts with their GP. This association did not change significantly over years. In all years, noncompliance was higher among patients with more referrals. This association gradually weakened from 2008 to 2013.

4. Discussion

We investigated the association between patient cost-sharing and noncompliance with specialty referrals. In the Netherlands, the compulsory deductible (a form of patient cost-sharing) more than doubled from 2008 to2013. Therefore, noncompliance with specialty referrals in the Netherlands was evaluated in that period.

4.1. Development of noncompliance with specialty referrals over time

We hypothesized that noncompliance would increase similarly to the development of the compulsory deductible. Our results showed that the largest rise in noncompliance took place in 2011 (from 18% in 2010 to 23% in 2011),whereas the compulsory deductible increased most in 2012and 2013. This increase in noncompliance in 2011 is found to be caused by a large increase of noncompliance in the last months of that year. Referrals from those months would probably have been consumed in 2012, the year in which the compulsory deductible increased to D 220 (D 170 in2011). As the compulsory deductible is charged at the moment the referral is followed, the increase in noncompliance in the last months of 2011 is possibly related to the rise of the compulsory deductible in 2012. In 2012 and2013 (when the compulsory deductible increased to D 350)noncompliance rates increased less: to 26% and 27% respectively. An explanation for this may be a natural limit to noncompliance, as the majority of patients will probably always comply.

4.2. Associations between patient characteristics and noncompliance with specialty referrals over years

We hypothesized that noncompliance with specialty referrals increased more in patients from urban deprived areas, who generally have lower incomes [25], than in other patients. As a consequence of the nature of the compulsory deductible, we also hypothesized that noncompliance increased more in adults than in children, and more inpatients without chronic diseases than in patients with chronic diseases.

Comparison of multilevel logistic regression models between years showed opposite results with respect to age and morbidity, and no significant changes regarding living in an urban deprived area. We found that noncompliance increased more in children than in adults. This, and the substantial noncompliance rate among children (25% in 2013), is unexpected and worrying. As the compulsory deductible is not in operation for this group, noncompliance in patients under 18is probably related to other than financial reasons. Further research is needed to understand this high noncompliance rate and to provide insight in the consequences. Noncompliance increased more in patients with chronic diseases than in patients without chronic diseases. This is not likely to be related to the increased compulsory deductible, which is often easily met in patients with more chronic diseases as a result of their high health-care costs[27–29]. Other patient factors, doctor factors, and factors related to the doctor-patient relationship, are found to be associated with noncompliance with prescribed medications in patients with chronic diseases [36]. Moreover, everyday self-care decision making in experienced patients with chronic diseases differs from one-time decision making in other patients [37]. Patients with chronic diseases may carry out a 'cost-benefit' analysis of each treatment. For them, the concept of compliance is shown to be largely irrelevant in decision making [38]. Further analyses may provide insight in noncompliance among patients with specific chronic diseases. Generally, differences between groups were small com-pared to the overall increase from 18% in 2010 to 27% in2013. In 2013, noncompliance rates ranged from 25% to30% with age group and from 26% to 29% with the number of chronic diseases. Altogether, the larger increases in noncompliance in children and in patients with chronic diseases are probably unrelated to the increased compulsory deductible. Nevertheless, there may be specific groups that were not distinguished in the present study (e.g., unemployed people or students), for whom the increasing compulsory deductible was a major reason not to comply with specialty referrals.

4.3. Reasons for noncompliance

Our results suggest that the rise of the compulsory deductible is to some extent related to the increase in non-compliance. This is supported by surveys among Dutch health-care users that indicate increased refraining from health care because of the costs involved [9–11]. How-ever, the faint relation from the present study and the fact that a recent survey showed that only about half of the respondents were aware of the height of the compulsory deductible [39], indicate that there must be other reasons too. One possible complimentary reason is the financial crisis, which took place during the same period [3]. Furthermore, research from the US revealed the patient's belief that the health problem had resolved and lack of time as the most common reasons for noncompliance with specialty referrals [40]. Moreover, healthcare avoidance in general proves to be related to sociodemographic factors, personal barriers (including costs), provider issues, and administrative issues [13]. Further research on the reasons for noncompliance with specialty referrals is necessary to gain more insight in the effect of increasing patient cost-sharing and the interaction between patient cost-sharing and other factors.

4.4. Implications

Effects of noncompliance with specialty referrals are unclear. Although it is known that refraining from medical care may have negative consequences for both clinical out-come and health-care costs, less is known about the effects of noncompliance

with specialty referrals [14]. Though not yet investigated, noncompliance is likely to have an adverse impact as well. The increase we found can thus be considered undesirable and strengthens the urgency for research on the effects of noncompliance. For instance, comparisons of longitudinal health-care use between compliant and noncompliant patients can provide insight in the implications of noncompliance. Moreover, noncompliance rates by specialty and diagnosis can give information about the severity of the health problem for which patients were referred. Andersen and Newman state in their framework for health-care use that in the ideal situation with equitable distribution of services, the effect of enabling factors such as income, should be minimized [40]. As there were no significant changes regarding the indicator 'living in an urban deprived area' (related to income), we found no direct indications for a worsening equitable distribution of services as a result of the increased compulsory deductible. However, this indicator is a rough approximation of income. Previous surveys did show a relation between income and refraining from health care because of the costs involved in The Netherlands [9]. Because the compulsory deductible also increased after 2013 it is recommended to continue monitoring noncompliance if more recent data are available. Like in many other European health-care systems and several health plans in the US [15,16], Dutch GPs function as gatekeepers: they decide whether or not to refer patients to medical specialists. The Dutch compulsory deductible is in operation for medical specialist care and other types of care, but not for GP consultation. As a substantial proportion of patients did not comply with referrals to medical specialist care, and GPs are assumed to refer to necessary medical care only, it is questionable whether the benefits of this type of patient cost-sharing outweigh the adverse effects such as refraining from necessary medical care.

4.5. Comparison with existing literature

Noncompliance rates of 18–20% in 2008–2010 seem higher than reported by van Dijk et al. [17] who found that87% of referrals were followed. However, van Dijk et al. reported the number of referrals, while we report the number of patients that did not comply with at least one referral. Our approach leads to higher noncompliance if patients have more referrals and do not comply with only one referral. In the present study population, 37% of the patients had more than one referral in a specific year. Our non-compliance rates cannot be compared directly to results from most other studies (noncompliance rates of 17–37%[18–20]) because many studies are conducted in the US where unmet care needs are probably higher [41], or use other research methods such as surveys. The associations between patients characteristics and noncompliance we found are broadly in line with results from previous studies. The higher noncompliance or refraining among young adults we found in the entire study period, is reported previously [17,26]. The higher non-compliance in patients with more chronic diseases was significant in 2013, but not in most groups and years in2008–2010 (Supplementary Table), which is in line with van Dijk et al. [17]. Finally, several previous studies report associations between economic factors and noncompliance or refraining [21,22]. van Dijk et al. [17] reported higher noncompliance with specialty referrals among patients living in an urban deprived area in 2008–2010. Being significant in 2009 and 2012 only, this association is partly reproduced in the present study (Supplementary Table).Possible explanations for differences between both studies are analyses of patients vs. referrals (see above),

slightly different selections of general practices and the inclusion of health-care use control variables in the present study but not in the study by van Dijk et al. [17].

4.6. Strengths and limitations

The main strength of the present study is the dataset we used. We used a large dataset with routinely recorded referrals and claims that enabled us to investigate noncompliance objectively and comparably across years, which was to our knowledge never done before. There are also some limitations. First, we examined noncompliance aggregated across all patients with referrals. However, the effect of the compulsory deductible may depend on the time of the year and previous individual health-care costs in that year. Hence, analyses per month, taking into account individual previous health-care costs, may provide better insight in the effect of the compulsory deductible on noncompliance. Also, we were not able to assess reasons for noncompliance, which complicates the interpretation of our results. Moreover, the noncompliance rates we report are upper limits, since referral scan wrongly be considered as 'not completed' because of the dependence on basic insurance claims of medical specialists. Besides data inaccuracies that could have led to unjustified noncompliance, in exceptional cases it is possible that patients were referred for treatments that were not covered in the basic insurance or that patients were treated abroad. Finally, patients who do not want to pay the compulsory deductible, may refrain from visiting the GP to avoid being referred to a medical specialist. These patients were not included in the present analyses. The same holds for patients who are not referred because they indicated that they cannot afford it.

5. Conclusions

Noncompliance with specialty referrals in the Netherlands gradually increased from 2010 to 2013,the period in which the Dutch compulsory deductible, a form of patient cost-sharing, increased substantially. Highest noncompliance rates are found among young adults. Noncompliance increased most among patients under18 and among patients with chronic diseases, although differences between groups are relatively small. These results do not suggest a one-to-one relationship between increasing patient cost-sharing and noncompliance with specialty referrals, but do not rule out an effect of patient cost-sharing on noncompliance either. The increase we found strengthens the urgency for further research on the effects of noncompliance. In order to develop effective policy for reducing noncompliance, it is advisable to focus on mechanisms for noncompliance in the groups with the highest noncompliance rates (young adults) and with the highest increase in noncompliance (children and patients with chronic diseases).

Conflict of interest

The authors have no conflict of interest to declare related to the content of the manuscript.

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Supplementary data

Supplementary data associated with this article can be found, in the online version, athttp://dx.doi.org/10.1016/j.healthpol.2016.12.001.

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TABLES AND FIGURES

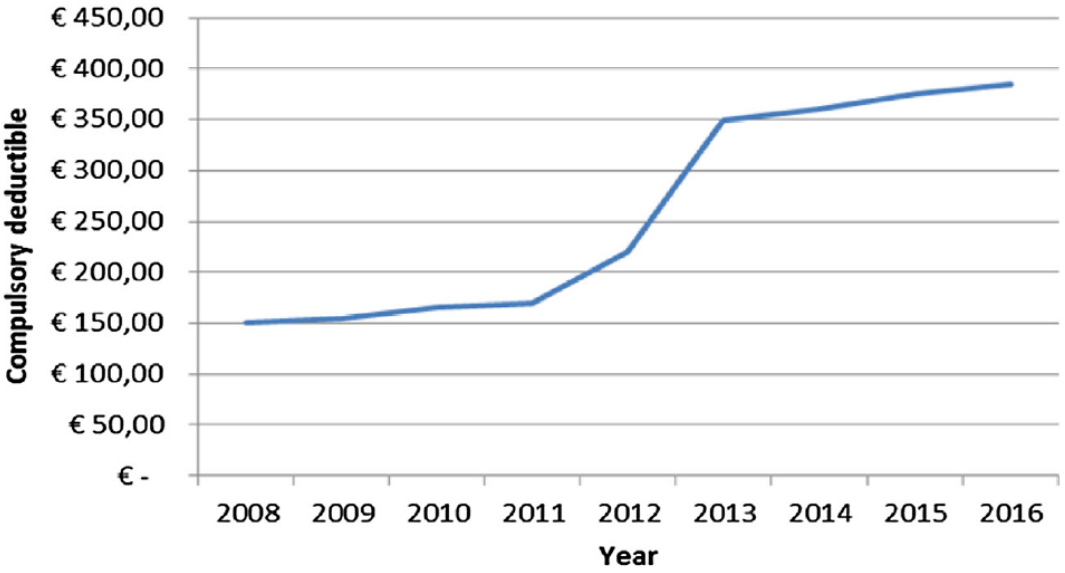

Fig. 1. Dutch compulsory deductible, 2008–2016.

Box 1: Ethics approval

Participating general practices were contractually obliged to inform their patients about their participation in the NIVEL Primary Care Database and to inform patients about the possibility to opt-out if they objected to their data being included in the database. Dutch law allows the use of extracts of electronic health records for research purposes under certain conditions. According to Dutch legislation, neither obtaining informed consent nor approval by a medical ethics committee is obligatory for this kind of observational studies [31]. This study has been approved by the applicable governance bodies of NIVEL Primary Care Database (no. 003.15.035).

Table 1
Numbers of included general practices and linked patients with referrals to medical specialist care.

	2008	2009	2010	2011	2012	First half of 2013
Number of included general practices	24	29	41	54	61	84
Number of linked patients with new referrals	13028	13335	20087	29724	29909	27673

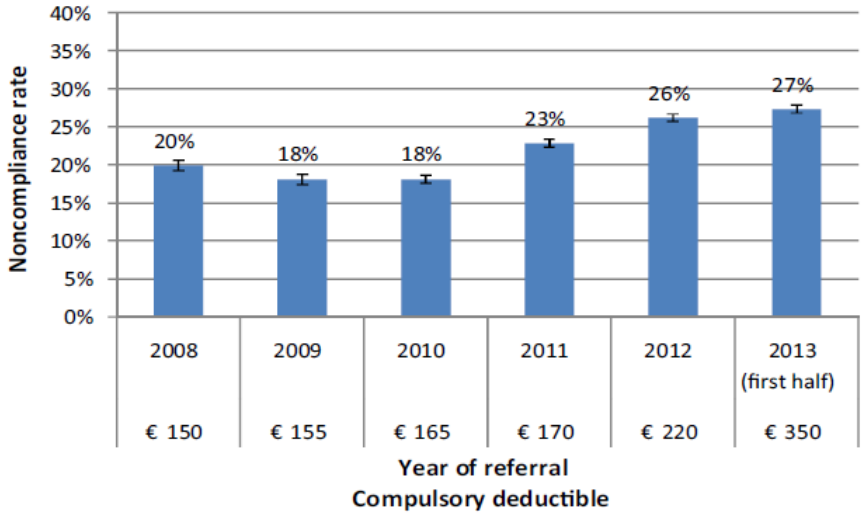

Fig. 2. Percentage of patients with new specialty referrals that did not comply with at least one of these referrals (noncompliance rate), per year and the height of the compulsory deductible per year (bottom line). Error bars represent 95% confidence intervals.

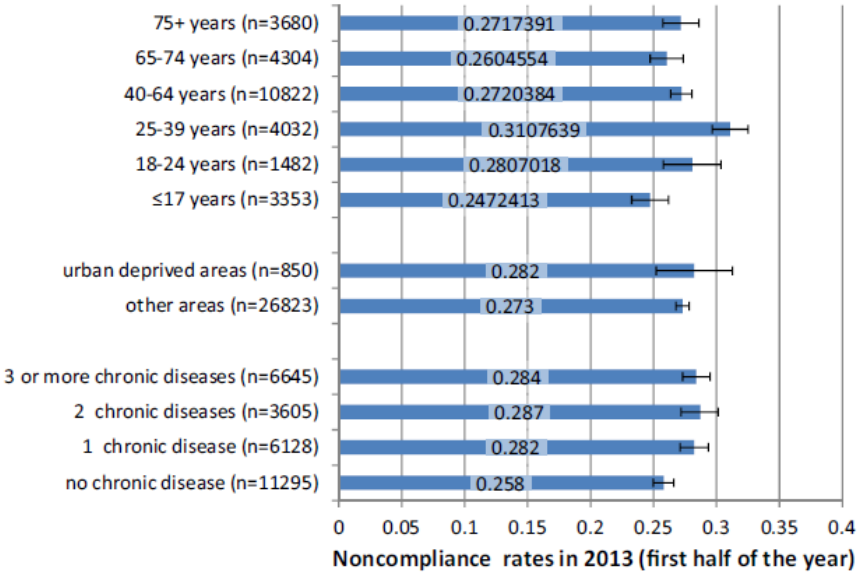

Fig. 3. Percentage of patients with new specialty referrals that did not comply with at least one of these referrals in the first half of 2013 (noncompliance rate), by patient characteristics. "*n*" denotes the number of patients with a new referral in 2013. Error bars represent 95% confidence intervals.