Are we giving patients enough information on how to use topical treatments? Analysis of 767 prescriptions in psoriasis

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Summary

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Background Unclear instructions probably contribute to the suboptimal efficacy and adherence to topical agents in psoriasis.

Objectives To analyse the quality of prescriptions for topical therapy in psoriasis and to determine factors associated with high-quality prescription writing.

Methods We made a systematic analysis of 767 topical prescriptions written by dermatologists and general practitioners (GPs). The following parameters were recorded: writing mode (electronic vs. hand written), indication of formulation, frequency of administration, duration of treatment, indication of areas to be treated, and indication of amount of product to be used. We considered prescriptions of high quality to be those including at least four of the five prospectively defined quality parameters.

Results Only 35·7% of prescriptions fulfilled the definition of a high-quality prescription. Quality of prescription writing was significantly influenced by two factors: electronic writing [odds ratio (OR) 3·04, 95% confidence interval (CI) 2·2–4·21; $P < 10^{-4}$] and specialty of the prescriber, dermatologists writing higher quality prescriptions compared with GPs (OR 1·61, 95% CI 1·54–2·14; $P < 10^{-4}$).

Conclusions Almost two-thirds of topical prescriptions are not adequately written and do not include the required information to help patients manage their topical treatment in psoriasis correctly. The quality of topical prescriptions could be improved by making the use of electronic prescriptions widespread and by the development of aids for easy evaluation of the right amount of topical treatment to be applied according to body surface area involved.

Topical agents represent the first-line treatment for most patients with mild to moderate psoriasis.[1,2] Epidemiological studies have shown that the efficacy of topical treatment in psoriasis in everyday practice is frequently suboptimal.[3] There are several potential explanations for the limited efficacy of topical treatment in a given patient. One of the most frequent issues is nonadherence to topical treatment, which may be observed in 40–70% of patients with psoriasis.[4–6] Many factors associated with poor adherence to topical treatment in psoriasis have been identified:[7] amount of time required for application of topical agents on large areas, inconvenience of topical formulations which may be messy and stain clothes, fear of side-effects, high frequency of administration, interfer-

ence with daily activities, cost of therapy. Previous studies also suggest that unclear instructions could contribute to incorrect usage of topical medications, particularly in patients with low literacy.[8] A study showed that almost 80% of patients misunderstood the oral instructions for taking medication at the first time of instruction.[9]

The clarity of instructions given in written prescriptions may be important to promote adherence to treatment and to guide patients towards an optimal therapeutic outcome. Ideally, a topical prescription should contain a core set of instructions regarding treatment modalities including amount of product to be applied, areas to be treated and frequency of applications. In addition, written elements of treatment

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strategy may be useful to help patients to manage their disease appropriately in the long term.[10] To our knowledge, there has not been any study analysing the quality of topical treatment prescriptions in psoriasis as written by physicians. The aim of our study was to analyse the quality of prescriptions for topical therapy in psoriasis in a sample of physicians and to determine factors associated with quality of prescription writing.

Materials and methods

We analysed topical prescriptions for psoriasis written in 2008 and 2009 by dermatologists and general practitioners (GPs) selected randomly and prospectively by Intercontinental Marketing Services (IMS) Health from a panel of French physicians. These prescriptions were identified by IMS Health based on the Etude Permanente de la Prescription Médicale (EPPM; Permanent Survey of Medical Prescription) 2008 and 2009: GPs and dermatologists. The main purpose of the IMS Health EPPM is to monitor how physicians are prescribing treatments and to determine the relationships between diagnosis and prescription practice. The EPPM is conducted every 3 months for a sample which includes 400 GPs, 38 dermatologists and some other specialists. The panel is representative of all office-based physicians in France, in terms of age, sex, population, region and activity (only for GPs).

For each prescription we collected the following data: specialty of the prescribing physician (dermatologist vs. GP), type of prescription (treatment initiation vs. treatment renewal) and writing mode of prescription (hand writing vs. electronic writing). The following five criteria were prospectively defined by the research team as critical to guide patients and pharmacists concerning topical treatment delivery and usage: (i) indication of the formulation; (ii) frequency of administration; (iii) duration of treatment; (iv) areas to be treated; and (v) number of treatment units needed per unit of time. We attributed to each prescription analysed a score between 0 and 5 according to the number of quality criteria fulfilled. We considered prescriptions of high quality to be those fulfilling at least four of the five previously defined quality criteria. Factors associated with high-quality prescriptions were subsequently analysed.

Statistical analysis

For the analysis of covariates associated with high-quality prescription: a bivariate analysis was conducted to quantify the strength of the association between each covariate and high-quality prescriptions. The following covariates were studied for their association with high-quality prescriptions: speciality of the prescriber and type of prescription (handwritten vs. electronic). Odds ratios (ORs) were provided, with 95% confidence intervals (CIs) and the corresponding uncorrected P-values. The frequency of each quality criterion was compared between GP and dermatologist using the χ^2 test. In addition, a multivariate logistic regression model was defined by stepwise approach in order to estimate and test the

influence of all covariates on prescription quality. Both backwards and forward stepwise regressions were used to assess the validity of the multivariate logistic model. The covariates exclusion cut-off limit was defined as $P = 0.05$. The following variables were included in the model as potential covariates: speciality of the prescriber and type of prescription (handwritten vs. electronic). To account for the difference in the type of prescription between dermatologists and GP (i.e. dermatologists were more frequently treatment initiators and GP wrote a majority of renewals) we performed a sensitivity analysis considering only new prescriptions. Conditional logistic regression was also used to assess the robustness of the estimates given the potential intraphysician correlation structure of the data. All computations were performed in STATA 10.0 SE software Release 10, 2007 (StataCorp LP, College Station, TX, U.S.A.). All P-values are two-sided and are given uncorrected.

Results

Prescription characteristics

In total, 767 prescriptions were analysed. Fifty-three per cent (n = 404) were written by dermatologists, 47% (n = 363) by GPs. In 49% of cases the prescription concerned initiation of treatment and in 46% a treatment renewal. In 5% of cases it was not specified. The prescriptions were hand written in 63% of cases, and electronically written in 37%.

Analysis of individual quality criteria showed that the topical formulation was not mentioned in 26% of prescriptions, frequency of administration was not specified in 18%, the area to be treated was not indicated in 77%, and the number of units of treatment to be delivered by the pharmacist was not written in 55% of prescriptions.

Differences between general practitioners and dermatologists

Comparison between dermatologists and GPs showed that dermatologists were more often initiators of topical treatment in psoriasis (64%) whereas GPs wrote renewals in 61% of cases (P < 0·05) (Table 1). Areas to be treated and number of units to be delivered were more often specified in dermatologists' prescriptions compared with GP prescriptions (respectively, 35% vs. 10%, and 53% vs. 37%; $P < 10^{-4}$). Formulation specification, frequency of administration and duration of treatment were specified in the majority of prescriptions, with no differences between physician specialties (Table 1). The majority of both dermatologists and GPs issued mainly handwritten prescriptions (64% and 61%).
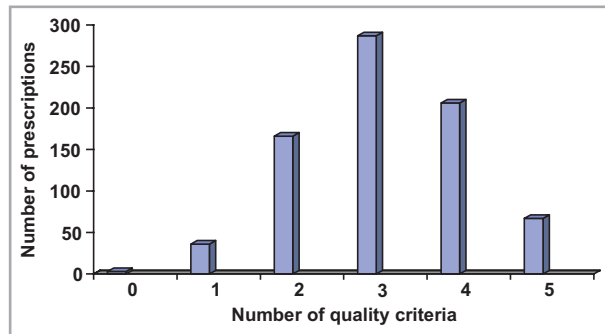
Factors associated with high-quality prescription writing

When considering the quality criteria defined prospectively, 273 (35·7%) prescriptions fulfilled the definition of a high-quality prescription (Fig. 1). One-fourth of the topical

Table 1 Comparison of dermatologist and general practitioner (GP) prescription characteristics

Characteristic of prescriptions	% of dermatologists' prescriptions (n = 404)	% of GPs' prescriptions (n = 363)
Type: initiation/renewal	64/32*	31/61*
Writing mode: electronic /hand written	36/64	39/61
Formulation specified	79	70
Frequency of administration specified	84	80
Duration of treatment specified	89	86
Areas to be treated specified	35**	10**
Number of units to be delivered specified	53**	37**

*$P < 0.05$; **$P < 10^{-4}$.

Fig 1. Distribution of topical prescriptions according to number of quality criteria.

Table 2 Covariates associated with high-quality prescriptions

Variables	Bivariate analysis OR (95% CI), $P < 10^{-4}$	Multivariate analysis OR (95% CI), $P < 10^{-4}$
Electronic vs. hand-written prescriptions	2·71 (1·99–3·69)	3·04 (2·2–4·21)
Speciality of prescriber: dermatologist vs. GP	1·71 (1·46–1·99)	1·61 (1·54–2·14)

OR, odds ratio; CI, confidence interval; GP, general practitioner.

Table 3 Sensitivity analysis taking into account only treatment initiation prescriptions

Variables	Bivariate analysis OR (95% CI), $P < 10^{-4}$	Multivariate analysis OR (95% CI), $P < 10^{-4}$
Electronic vs. hand-written prescriptions	2·40 (1·69–3·41)	2·79 (1·92–4·07)
Speciality of prescriber: dermatologist vs. GP	1·81 (1·51–3·41)	1·92 (1·59–2·31)

OR, odds ratio; CI, confidence interval; GP, general practitioner.

prescriptions reviewed fulfilled only two or fewer of the five quality criteria.

When analysing explanatory variables associated with high-quality prescriptions, two parameters were predictors of prescription quality in the bivariate analysis: speciality of the prescriber (dermatologist vs. GP; OR 1·71, 95% CI 1·46–1·99; $P < 10^{-4}$) and type of prescription (electronic vs. hand-written; OR 2·71, 95% CI 1·99–3·69; $P < 10^{-4}$).

Both parameters remained significantly associated with a high-quality prescription in the multivariable analysis (Table 2). In the logistic conditional regression analysis, an electronic prescription was the only factor significantly associated with high quality (OR 4·54, 95% CI 1·38–14·87; $P = 0.012$). Sensitivity analysis, taking into account only new prescriptions, showed again that electronic prescription was associated with high quality (OR 2·40, 95% CI 1·69–3·41; $P < 10^{-4}$ in bivariate analysis, and OR 2·79, 95% CI 1·92–4·07; $P < 10^{-4}$ in multivariate analysis). In addition, specialty of the prescriber (being a dermatologist) remained associated with prescription quality (OR 1·81, 95% CI 1·51–3·41;

$P < 10^{-4}$ in bivariate analysis, and OR 1·92, 95% CI 1·59–2·31; $P < 10^{-4}$ in multivariate analysis) (Table 3).

Discussion

Our study shows that only a minority of topical prescriptions contains sufficient information about topical treatment to help patients in using their medication. In the present study, quality of prescription writing was influenced by two main factors: electronic writing and specialty of the prescriber, dermatologist prescriptions displaying slightly higher quality compared with GP prescriptions.

Unclear prescriptions certainly contribute to the poor adherence observed with topical therapy in psoriasis. Prescribing a topical treatment requires a precise evaluation of skin area affected by psoriasis in order to advocate the right amount;[11] it may therefore be considered as difficult, and may require a specific expertise. Different methods are available in daily practice to evaluate the surface of skin area involved by the disease, such as the rule of hand, and the rule of nines.[12] However, there is no gold standard, and training is necessary to evaluate involved body surface area correctly. Based on the body surface area affected, physicians have to determine the most adequate amount of topical product to be prescribed. The rule of hand combined with the fingertip unit can be helpful,[13,14] but in daily practice it is mostly based on the physician's own professional experience, and the variability

between users is high. Developing standardized easy-to-use aids to automate product quantity calculation according to surface area involved could help physicians to improve the quality of prescriptions.

To improve therapeutic outcome, patient education about disease and treatment is essential.[15–20] Patients should be instructed regarding the amount to apply according to body surface area affected, the areas to be treated, the frequency of application and the duration of treatment. In daily clinical practice, a majority of prescriptions appears to be vague and may fail to guide patients.

One potential limitation of the study is the absence of information concerning demographic characteristics of the prescribers. As per contract, such information could not be obtained to preserve anonymity of the participating physicians. Quality of prescription might be influenced by other factors not taken into account in our study such as age of prescriber, time elapsed since medical degree, type of practice: office-based vs. hospital-based, country, total number of patients treated per year. In addition, physicians from our study were selected based on their voluntary contribution to the IMS panel. In fact, each participating physician is monitored for 7 days and is expected to supply details for every patient examined. These include patients' social and demographic characteristics, information on the reasons for consultation, diagnosis, and information on the effect of any drug treatment prescribed. In addition, the physician provides duplicate copies of all prescriptions issued. Larger studies may be more appropriate to propose a finer statistical model of the determinants of prescription quality at physician, patient and consultation levels. Physicians in our study might not be fully representative of the general population of physicians. This selection bias may have underestimated the magnitude of the problem because physicians from the panel were aware their prescriptions would be analysed, introducing a socially expected response bias. However, physicians were not informed about the nature of the current study and could not specifically adapt their behaviour to the study objectives.

Taking into account the results of our study, we anticipate increased doctors' awareness of the importance of a clear, complete, well-written prescription. Two key elements could improve the quality of prescription: the electronic writing mode, and the development of efficient and easy-to-use aids for prescribers to determine the right quantity of topical product needed, based on the body surface area affected by psoriasis. A higher quality of written prescription containing clear instructions for the patient may help to enhance adherence to topical therapy in psoriasis.

What's already known about this topic?

- Nonadherence to topical treatments in psoriasis is a well-documented problem.
- Unclear instructions probably contribute to the suboptimal efficacy and adherence to topical agents.

What does this study add?

- This study shows only a minority of topical prescriptions written by dermatologists and general practitioners to be well written, providing clear instruction on how to use topical medications in psoriasis.
- Two factors significantly influence the quality of topical prescriptions: electronic writing and the specialty of the prescriber.
- The study results suggest strategies and tools that need to be developed to improve the quality of topical prescription writing.

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