Barriers to Routine Risk-Score Use for Healthy Primary Care Patients

Survey and Qualitative Study

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Background: Risk scores for the primary prevention of chronic diseases in healthy adults are frequently recommended but often underused by general practitioners (GPs). The objectives of this study were to assess the use of and attitudes regarding the use of risk scores among GPs and to identify possible barriers to use.

Methods: Between November 7, 2007, and April 4, 2008, 68 GPs in Berlin, Germany, participated in the survey, and 24 were additionally invited to participate in focus groups. Quantitative data were analyzed descriptively and qualitative data were analyzed according to grounded theory.

Results: Survey data of 42 GPs indicated that physicians regularly perform risk assessments for healthy patients, although most did not use risk scores. The usefulness of risk scores was rated largely positive. Focus groups revealed some confusion about the definition of risk scores and that participants resisted general use. Barriers to risk-score use were lack of lifestyle recommendations, regulatory constraints, the patient’s role, and lack of accuracy. Suggestions for improvement included computerized risk prediction for multiple diseases simultaneously, better computer-generated visual presentation, and the integration of lifestyle recommendations.

Conclusions: The GPs perceive the routine use of risk scores as infeasible because of regulatory constraints and the nature of the physician-patient relationship. These factors need to be considered to increase risk-score use. Training of physicians could also help somewhat to overcome underuse. Use of computerized approaches that enable the prediction of risks for several chronic diseases simultaneously and improved computer-generated visual presentation may increase acceptance. Risk profiles should further be related to recommendations for health-behavior modification.

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In most industrialized countries, chronic diseases are responsible for most disease-related morbidity and mortality.1 Because single risk factors are usually poor predictors of future disease risks, risk assessments combining risk factors have been identified as more appropriate strategies.2,3 To perform these risk assessments in a systematic and accurate way, various prediction instruments (risk scores) have been developed. These risk scores aim to provide individuals with a quantitative estimate of their future disease risk. In primary prevention, they predict the probability of a healthy patient developing a certain disease or event within a specified time frame.3,5 In doing so, they identify individuals at increased risk for whom preventive strategies such as lifestyle changes, medical management, or further diagnostic tests are most appropriate. The European Society of Cardiology, the National Cancer Institute, and many other professional associations therefore promote or recommend the regular use of risk scores for chronic diseases in healthy adults.3,8 To improve primary prevention, some statutory health insurance organizations have also started to promote risk-score use in the German primary care setting.

Since the first risk score was derived from the Framingham Heart Study,9 a variety of risk scores have been developed to predict the risk of coronary heart disease, cardiovascular disease (CVD), cancers, diabetes mellitus, dementia, osteoporosis, fracture, depression, and other conditions.10-16 Despite the recommended use of risk scores, survey results from different countries indicate that most general practitioners (GPs) do not routinely use them.17,18 Although some reasons for this underuse have been discussed in the literature, including uncertainty regarding the target population, the lack of accuracy of risk esti-
mates, and the need for additional interventions promoted to GPs, few in-depth investigations of barriers to risk-score use in primary care have been conducted.17,18

The aim of the present study was therefore to assess the use of and attitude toward the use of risk scores for major chronic diseases among GPs in Germany. We also aimed to identify potential barriers to the use of risk scores for healthy adults in primary care.

METHODS

SAMPLE

A purposive sample of German GPs was chosen. These GPs were identified through the largest German statutory health insurance organization and the Department of Primary Health Care of the Charite´ University Medical Centre Berlin. Inclusion criteria were qualifying as a GP, working in private practice in networks associated with the statutory health insurance organization or working in association with the Department of Primary Health Care, residing in Berlin, and being willing to participate in the study. In total, 77 GPs were associated with the statutory health insurance organization; 59 worked in physician networks and were therefore eligible. The Department of Primary Health Care was additionally approached to better reflect total GPs in Berlin. Of 87 GPs, 9 were willing to participate. This resulted in an overall sample of 68 primary care physicians who, after their agreement to participate, received a mailed survey. After completion of the survey, a subsample of 24 GPs, 15 associated with the statutory health insurance organization and 9 with the Department of Primary Health Care, additionally received a letter inviting them to participate in focus group discussions.

SURVEY

The survey was developed by a multidisciplinary team of researchers and physicians to assess knowledge and use of primary prevention risk scores for major chronic disease groups. On the basis of the importance for GPs, the following disease groups were selected: CVD, diabetes mellitus, osteoporosis and fracture risk, falls, depression, and dementia. The survey included questions related to physician qualifications, practice and patient characteristics, risk assessments, risk-score use, and usefulness of risk scores. Survey question topics were as follows:

• GP’s qualifications
• Number of patients in his or her practice (per 3-month period)
• Age distribution of patients
• Frequency of selected chronic diseases among patients
• Whether GP performs individual risk assessments for healthy adults
  • If he or she does, how patient risk is assessed
  • Whether GP uses established risk scores
  • If he or she does, name(s) of risk score(s) used in his or her practice
• For each risk score, indication of the frequency of use in his or her practice (as a proportion of all eligible patients)
• Rating of the usefulness of risk scores for healthy adults on a 5-point scale (ranging from “not useful” to “useful”)
• Statement of pros and cons of risk-score use in private practice

All GPs received mailed surveys between November 7, 2007, and April 4, 2008. If they failed to return the survey, they were reminded once.

Descriptive analyses of quantitative data were conducted anonymously using SPSS statistical software, version 16.0 (SPSS Inc, Chicago, Illinois). Continuous data are presented as mean and standard deviation and categorical data are presented as the proportion of participating GPs (in percentages). To compare the estimated usefulness of risk scores across selected disease groups, the nonparametric Friedman test was used. P < .05 was considered statistically significant.

FOCUS GROUP

After completion of the survey, physicians were invited to participate in 1 of 3 focus groups. These groups allow for an identification of themes and categories in which research participants think about a certain subject matter; in this case, the use of risk scores in general practices. Invited GPs were selected such that focus group composition was similar regarding primary care practice characteristics, including size of the practice, patient age, and prevalence of addressed disease groups. The focus groups were led by a trained focus group moderator according to topics specified previously. After an introduction, GPs were asked to discuss the following topics:

• Familiarity and experience with risk scores
• Kinds of risk scores used and for which patients
• Pros and cons of risk-score use
• Suggested presentation and contents of risk scores
• Overall judgment of risk-score use
• Suggestions for improvement of available risk scores

A member (F.M.-R.) of the research team observed the discussions. The moderator and observer wrote a protocol regarding the discussion. The focus group discussions were audiotape-recorded, transcribed verbatim, and entered into the analysis software atlas.ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany) for coding and analysis according to grounded theory.19,20 Two members (C.H. and H.K.) of the research team coded the materials. Differences in coding were resolved in discussion. Categories and themes were then identified and refined in a continuous and iterative process.21-22 The focus group protocols were compared with the analysis of the focus group discussions to support and refine the analysis.

RESULTS

SAMPLE

Of 68 eligible GPs practicing in Berlin, 42 (62%) returned the completed survey. Most (62%) eligible GPs were women. With regard to the size of private practices, physicians had, on average, 996 patient contacts per 3-month interval (reimbursement period). The GPs reported that more than half their patients were older than 60 years and that CVD is the most prevalent chronic disease among their patients. Characteristics of primary care practices and their patients are presented in the Table.

SURVEY: RISK ASSESSMENT

As illustrated in Figure 1, most GPs perform regular systematic risk assessments for healthy patients to predict their future disease risk for addressed chronic diseases. Most frequently, this was reported for CVD and diabetes mellitus, followed by osteoporosis and fracture risk, depression, dementia, and falls (Figure 1). Review
of the instruments used for risk assessment by GPs showed that 60% of physicians named actual risk scores for CVD, only 17% for diabetes mellitus, and 7% for osteoporosis and fracture risk. The remaining physicians did not use risk scores but performed history taking, physical examination, screening tests, laboratory tests, or other diagnostic evaluations to assess patients’ risk. None reported use of actual risk scores to predict the risk for depression, dementia, or falls. Among the 26 physicians who reported using risk scores and named specific risk scores, the average proportion of healthy patients for whom they used risk scores was below 20%. Physicians considered the use of risk scores largely useful in CVD, diabetes mellitus, and osteoporosis and fracture risk assessment, whereas usefulness was regarded at a somewhat less positive level in depression and dementia (Figure 2).

FOCUS GROUP

Most physicians knew each other, which facilitated a lively discussion in all focus groups. Two GPs worked in the same practice. All 3 groups had diverse opinions on the theme because of the group dynamics and interaction with the moderator. This diversity allows us to portray a complex picture of the use of risk scores in primary care settings.

It became apparent in the discussion that, from the perspective of a GP, the differentiation between risk score and risk assessment is not meaningful. The use of risk assessments in general was seen as positive and helpful to supplement clinical expertise. They described different functions for which they sometimes used risk scores in their practice. This included the use of risk scores as a counseling instrument, an educational tool, a diagnostic instrument to aid decision making, and a screening instrument. However, overall GPs were doubtful about the use of currently existing risk scores. From their perspective, the introduction of risk scores into primary care practice has implications that reach deep into the physician-patient relationship and into the understanding of

Table. Characteristics of General Practices and Patients in Participating Practices

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Finding</th>
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</thead>
<tbody>
<tr>
<td>Participating GPs, No./total No. (%)</td>
<td>42/68 (62)</td>
</tr>
<tr>
<td>Women GPs, No./total No. (%)</td>
<td>42/68 (62)</td>
</tr>
<tr>
<td>Patients treated by participating GPs, No.</td>
<td>996 (400-2600)</td>
</tr>
<tr>
<td>(patient contacts per 3-mo period, range)</td>
<td></td>
</tr>
<tr>
<td>Patient age, mean (SD), y</td>
<td></td>
</tr>
<tr>
<td>≤20</td>
<td>8 (5)</td>
</tr>
<tr>
<td>21-40</td>
<td>17 (8)</td>
</tr>
<tr>
<td>41-60</td>
<td>26 (8)</td>
</tr>
<tr>
<td>61-80</td>
<td>38 (14)</td>
</tr>
<tr>
<td>≥81</td>
<td>11 (8)</td>
</tr>
<tr>
<td>Frequency of selected diseases, mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>42 (21)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>23 (16)</td>
</tr>
<tr>
<td>Osteoporosis and fracture risk</td>
<td>9 (6)</td>
</tr>
<tr>
<td>Depression</td>
<td>14 (12)</td>
</tr>
<tr>
<td>Dementia</td>
<td>7 (6)</td>
</tr>
</tbody>
</table>

Abbreviation: GP, general practitioner.

Figure 1. Frequency of regular systematic risk assessments in healthy patients (n=42).

Figure 2. Perceived usefulness of risk scores for different chronic diseases according to general practitioners (n=42) (P<.001).

the functions of a GP. Such use would, therefore, change their practice profoundly. The following major barriers to routine risk-score use in the primary care setting were identified in the analysis.

Lack of Lifestyle Recommendations

Scores that mainly concentrate on risk factors not directly related to behavioral aspects, such as blood pressure, increased cholesterol levels, or age, were considered inappropriate in primary prevention and assumed to be associated with a medicalization of patient treatment. The GPs thought that to be of use, risk scores should link estimated risks with appropriate recommendations for lifestyle changes or recommendations to participate in intensified programs intended to improve unhealthy lifestyles.

A portion of the GP focus group discussion with regard to this topic is as follows:

OK, listen, if he smokes, he has an 18-times-greater risk of so and so, then those are the sorts of numbers that he finds interesting, or if he were to lose 10 kilos, then perhaps he won’t need any blood pressure tablets in the coming year, see, those are the sorts of numbers, that’s what he finds interesting, and that’s what I don’t get from the scores, see, and therefore I hardly ever use them.
... what was missing completely until now is an instrument, where we can ... these things, such as physical activity, for instance, or smoking, directly include in such a thing: there is always data, that's the effect of a drug, how many percentages or how many per-mil improvement causes that and so; there is, so far, almost no data about this much, much more important area, which are also much, much more effective...

**Legal and Regulatory Constraints**

The GPs pointed out that the health-care system, at present, is not equipped for routine risk-score use in primary care and questioned the GP's role in primary prevention. They emphasized a lack of reimbursement for time and resources spent, as well as probable increases in medication prescription and diagnostics. They also mentioned a lack of appropriate preventive programs for those patients identified as being at increased risk and thus in need of intensified behavioral interventions or regular checkups.

Well, but our health care system is not set up in this way, we don't do primary prevention, that in everybody we, who somehow comes along, perform the maximum program [ ... ] and you can't [evaluate] every healthy person on such a score—you may be able to do that in the context of studies or, I don't know, but not in the primary care practice. That's completely impracticable, well, really.

... they come because they are sick, primarily we do not examine healthy, no, that's a health, political, societal, or whatever task, school, district registration office, don't know! But not the practice!

**Patient Role**

The GPs highlighted the active role of the patient in the treatment decision-making process. They suggested that a general and regular application of risk scores in primary care neglects the specific physician-patient interaction in which the patient comes for particular reasons and may be suspicious if other themes are addressed that may take consultation time away from his or her stated concern. This active patient role may hinder a standardized approach to risk-score use. The GPs argued that the standardized use of these instruments could adversely affect the physician-patient relationship and result in non-attendance or less favorable treatment outcomes.

Many just don't want to hear that sort of thing. (Yeah!) "I already know that I'm too fat and I smoke. So? So, and?" And they're off! (Exactly!)

"And I haven't been seeing you for half a year because every time, you tell me I should stop smoking!"

**Lack of Accuracy of Risk Scores**

Physicians challenged the evidence base of risk scores for their particular patient population. They emphasized that risk scores are developed outside a specific physician-patient interaction and that an individual's risk may differ substantially from the risk predicted by a population-based instrument. Similarly, they argued that they usually know substantially more about their patients than the information needed to determine risk scores. So, at best, risk scores may aid diagnosis as a supplement to the clinical expertise of the physician. However, most physicians did not see any added value of using risk scores in their regular case-history compilation. The only area in which some suggested an added value was the prevention of coronary heart disease. In this case, they saw risk scores as a means to differentiate better between patients who would benefit from medication and those who would not.

The uncertainty regarding the appropriateness of risk-score use for their patient population, in conjunction with their clinical knowledge, makes GPs reluctant to use such a score when they, in fact, are facing individuals about whom they may already have a lot of information.

[... ] when you try to do a normal examination, then even with lab-type measurements and a normal clinic and with proper case histories, including whether they smoke and what food and drink they have, and how much exercise they do—"What sort of sports do you do?" and so on, then I don't need a score, I don't need an index, I can just go along with my medical knowledge and give them advice. The scores and such indices are there for me, although I don’t really need them; well, it's really scientific, and the patient often wouldn't even understand them.

In addition to barriers that keep GPs from using risk scores regularly, they suggested the following 2 improvements to existing risk scores, which could help overcome some of the aforementioned barriers. First, risk scores should be computerized instruments, which can easily be handled and visualized to patients. These instruments should simultaneously be able to calculate risks for different diseases, based on routine medical record data, and make these risks readily available to physicians and patients. Second, risk scores should include specific recommendations for behavior modification or for participation in appropriate preventive programs.

**COMMENT**

The GPs interviewed rarely use primary preventive risk scores for the prediction of chronic disease risk in healthy patients. Although approximately 60% of GPs indicated use of cardiovascular risk scores and named specific risk scores, their use in other disease groups was considerably less frequent. However, even with physicians who actually used risk scores, they applied them only for a small proportion of healthy patients. Our findings, therefore, indicate underuse of risk scores among German GPs, similar to results found in other countries.¹⁷,¹⁸ These findings further highlight some uncertainty regarding the definition and use of risk scores among primary care physicians. In addition, findings from the qualitative analysis provide considerably more insight into the specific reasons for the rarity of their use in primary care.

The findings show that lack of knowledge is only 1 reason for the underuse of risk scores. The GPs acknowledged the usefulness of risk scores in certain situations but formulated specific reasons explaining why the use of risk scores on a general basis in primary care is problematic. Barriers mentioned were the lack of lifestyle recommendations included in risk scores, regulatory and legal constraints within the primary care setting, the patient’s role in the physician-patient interaction, and the perception that risk scores lack accuracy in their patient population.

To overcome some of these barriers, the GPs suggested a better link between risk estimates and lifestyle recommendations. They also favored the use of comput-
erized instruments that allow time-saving and practical risk calculations, ideally for different diseases simultaneously based on medical record data, and improved computer-generated visual presentation of risk estimates. In part, these suggestions find confirmation in recent developments, investigations, and discussions concerned with the application of risk scores in primary care. For instance, some up-to-date risk scores increasingly incorporate lifestyle factors into the estimation of risks or include aspects of behavior modification as part of the presentation of risk estimates. Also, a recent study from New Zealand found that the use of computerized risk-prediction instruments can considerably increase the frequency of risk-score use and documentation of a patient’s risk in private practice. In addition, the practicality of current cardiovascular risk scores was challenged in a recent editorial.

Furthermore, GPs’ concerns regarding the evidence base of available risk scores coincide with a discussion of the appropriate use of absolute risk-prediction models for individual decision making. Despite these limitations of population-based instruments in the prediction of individual risks, substantial efforts directed at the development and validation of more up-to-date and more accurate risk scores for various populations and population groups have helped to improve the availability of risk scores in recent years. Appropriate information and training of GPs regarding current risk scores, their evidence base, and appropriate application could therefore help overcome some uncertainties and improve the use of risk scores in the primary care setting.

However, physicians also raised important concerns regarding legal and regulatory constraints they face in primary care and the active physician-patient relationship. In addition to the development of improved risk scores and appropriate training of GPs, further factors need to be considered before risk scores will be used on a regular basis. These factors include the GP’s role in the primary prevention of chronic diseases, reimbursement or incentives for risk-score use, and patients’ attitudes toward risk-score use.

However, these issues are complex and require political decisions to create appropriate changes within health care systems. Guidelines that recommend routine use of risk scores on a broad population basis usually do not address these concerns.

Major strengths of the present study are that it investigated the use of risk scores across a variety of chronic diseases and combined the use of quantitative and qualitative methods. There are certain limitations associated with this approach. Because of the relatively small sample size, generalizability is limited. However, on the basis of information about participating primary care practices, these GPs do not seem to differ notably from other physicians residing in Berlin. Also, although the obvious resistance to risk-score use and the barriers mentioned in the focus groups may differ somewhat in other settings, we think they highlight important concerns likely to reflect the reality of everyday routine care across a variety of primary care settings. Another limitation is that our study focused on the perspective of primary care physicians. Future research should also consider the perspective of healthy adults who are the target population for primary prevention risk scoring.

Despite these limitations, we believe the present study has considerably improved our understanding of primary preventive risk-score use in general practice. It shows the routine use of risk scores was perceived as infeasible in the GP setting because of the political and structural framework in which GPs act and the intimate nature of the physician-patient relationship. To improve the acceptability of risk scores, the perspectives of physicians and patients should be taken into account. In addition to the development of more accurate risk scores, information and training of physicians could help overcome underuse. However, our findings highlight the opinion that a restructuring of risk scores seems warranted before they can successfully be transferred into routine clinical practice. Ideally, computerized approaches based on medical record data would enable risk prediction for different chronic diseases simultaneously. Also, we suggest improvements in the communication of risk-score results, possibly by means of computer-generated visual presentation, as well as a better link between risk scores and recommendations for behavior modification.

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