Patient-Initiated Second Opinions: Systematic Review of Characteristics and Impact on Diagnosis, Treatment, and Satisfaction

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Abstract

The impact of second opinions on diagnosis in radiology and pathology is well documented; however, the value of patient-initiated second opinions for diagnosis and treatment in general medical practice is unknown. We conducted a systematic review of patient-initiated second opinions to assess their impact on clinical outcomes and patient satisfaction and to determine characteristics and motivating factors of patients who seek a second opinion. We searched PubMed, EMBASE, Cochrane, and Academic OneFile databases using Medical Subject Headings (MeSH) indexes and keyword searches. Search terms included referral and consultation, patient-initiated, patient preference, patient participation, second opinion, second review, and diagnosis. Multiple reviewers screened abstracts and articles to determine eligibility and extract data. We assessed risk of bias using the Cochrane Risk of Bias Tool and rated study quality using Cochrane’s GRADE (Grades of Recommendation, Assessment, Development and Evaluation) approach. We screened 1342 abstracts and reviewed full text of 41 articles, identifying 7 articles that reported clinical agreement data and 10 that discussed patient characteristics, motivation, and satisfaction. We found that a second opinion typically confirms the original diagnosis or treatment regimen but that 90% of patients with poorly defined conditions remain undiagnosed. However, 10% to 62% of second opinions yield a major change in the diagnosis, treatment, or prognosis. A larger fraction of patients receive different advice on treatment than on diagnosis. Factors motivating a second opinion include diagnosis or treatment confirmation, dissatisfaction with a consultation, desire for more information, persistent symptoms, or treatment complications. Patients generally believed that second opinions were valuable. Second opinions can result in diagnostic and treatment differences. The literature on patient-initiated second opinions is limited, and the accuracy of the second opinion through follow-up is generally unknown. Standardized methods and outcome measures are needed to determine the value of second opinions, and the potential of second opinions to reduce diagnostic errors merits more rigorous evaluation.

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Patients seek a second medical opinion when their diagnosis is uncertain or when the treatment choices they face are complicated, unpleasant, or involve risks.\(^1\) Surveys have found that 1 in 6 patients who saw a doctor in the past year sought a second opinion,\(^2\) as did over half of the patients who are cancer survivors.\(^3\) Despite a growing interest in patient-centered care and health care quality, the scientific literature examining practices in this area is extremely limited.

The value of second opinions in radiology and pathology is well documented. Second reviews of anatomic pathologic diagnoses have become common within academic medical centers, and many require a second review for all external pathologic reports.\(^4\)–\(^7\) Mayo Clinic evaluated 71,811 cases and found 457 major discrepancies (0.6%), almost all of which affected prognosis and treatment.\(^8\) A review of 13 smaller studies indicated generally higher discrepancy rates of 1.3% to 14.7%, and one study from Pakistan reported a discrepancy rate of 36% in a series of 336 cases.\(^9\) The experience and expertise of the pathologists involved and the type of specimen and cancer reviewed could affect the discrepancy rate, with higher error rates (in the range of 10%-15%) encountered in lymphomas, sarcomas, and cancers of the brain, skin, and female reproductive tract.\(^10\)–\(^12\) In pathology, follow-up efforts to confirm the value of second opinions have
ARTICLE HIGHLIGHTS

- In a systematic review, we found that the literature on patient-initiated second opinions in medicine is limited and methods and outcomes used to study second opinions were heterogeneous.
- Patient-initiated second opinion consultations lead to a major change in diagnosis, treatment, or prognosis in a substantial proportion (10%-62%) of cases.
- Factors that motivate patients to seek a second opinion include diagnosis or treatment confirmation, dissatisfaction with a prior consultation, desire for more information, and persistent or unbearable symptoms or treatment complications.
- Although our review suggests that patients generally believe second opinions to be valuable, studies infrequently presented follow-up data on patient outcomes.
- Standardized metrics are needed to evaluate the effectiveness of second opinions to reduce diagnostic errors.

been made. For instance, follow-up biopsies in 86 of the 457 cases of discrepancies in the Mayo study revealed that the second opinion diagnosis was confirmed in 73 cases, but in 13 cases (15%), a new diagnosis was found or results were more consistent with the original diagnosis. Similarly, a follow-up study of second opinions on fine-needle thyroid aspiration cytology found that in 7% of cases, neither the first nor the second diagnosis was appropriate. These studies emphasize that second opinions could themselves be subject to error.

In radiology, the discrepancy rate on second readings is thought to be less than 5% for diagnostic studies. In a large study conducted by the RADPEER program of the American College of Radiology involving 14 facilities and over 20,000 second reviews, the overall disagreement rate was 2.9%. Second reviews of mammography studies have suggested that 10% to 20% of malignant tumors are missed by the first review. In research settings, where radiologists are asked to review images with a higher rate of abnormalities than would be encountered in routine practice, even higher discrepancy rates are seen, often in the range of 20% to 40%, and in one study, radiologists disagreed with their own prior interpretations one-third of the time.

Outside of these diagnostic specialties, the impact and potential benefit of second opinions for general medical or surgical conditions has not been rigorously examined. Given the frequency of second opinions, it is essential to know to what extent this practice improves the quality of patient care and whether it varies for different medical conditions. Similarly, little is known about why and when patients seek second opinions and whether they are satisfied with the outcomes. Finally, with the increasing recognition of diagnostic errors in medicine, thought to occur in 10% to 15% of all cases, obtaining a second opinion is an appealing and practical strategy patients might use to reduce the likelihood of diagnostic error.

We therefore conducted a systematic review to determine the outcomes of patient-initiated second medical opinions in general medical and surgical care. We specifically focused on determining how often the second opinion provided a major change in the diagnosis, prognosis, or treatment recommended and if patients were satisfied with the process. Our secondary objective was to determine characteristics and motivating factors of patients who seek a second opinion.

PATIENTS AND METHODS

Eligibility Criteria
We performed a systematic review following the Cochrane Handbook for Systematic Reviews of Interventions approach and used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement to report our findings. We defined a second opinion as a situation in which a patient, after getting a medical opinion from one physician, obtains a second opinion from a second physician regarding his or her diagnosis, treatment, or prognosis. Eligible studies included published journal articles that provided quantitative data on the impact of patient-initiated second opinions or described characteristics of patients who sought a second opinion, motivating factors, and/or patient satisfaction. We excluded studies that evaluated physician-initiated referrals, referrals to a physician with a greater degree of specialization (eg, a second opinion provided by a cardiologist when the first physician was a general internist), mandatory second reviews, second opinions for legal reasons, and second opinions in subspecialized domains such as dentistry and psychiatry.
Information Sources
We performed a systematic literature search of PubMed, EMBASE, Cochrane, and Academic OneFile databases using Medical Subject Headings (MeSH) indexes, keyword searches, and publication types. Search terms included referral and consultation, patient-initiated, patient preference, patient participation, second opinion, second review, and diagnosis. Detailed search criteria information can be found in Supplemental Table 1 (available online at http://www.mayoclinicproceedings.org).

Study Selection
Articles were screened for eligibility in 3 phases. In phase 1, 3 reviewers (V.L.P., A.N.D.M., M.L.G.) evaluated the title and abstract of articles identified through database searches; each reviewer screened approximately one-third of the articles. Two reviewers (V.L.P., A.N.D.M.) then independently reviewed the abstracts of all potential articles to identify those meeting inclusion criteria. Eligibility differences were reconciled through discussion. Finally, the full text of eligible articles identified in phase 2 was independently reviewed and rated by 2 reviewers (V.L.P., A.N.D.M.) in regard to study quality and bias, and differences were resolved through discussion. Article bibliographies were scanned to identify additional eligible articles.

Data Extraction and Quality Assessment
We developed, piloted, and used a data abstraction form to capture 16 data elements (Supplemental Table 2, available online at http://www.mayoclinicproceedings.org). We assessed the risk of 7 biases using the Cochrane Risk of Bias Tool31 and rated study quality using the GRADE (Grades of Recommendation, Assessment, Development and Evaluation) approach from the Cochrane Handbook for Systematic Reviews of Interventions.31 One reviewer (V.L.P.) captured all elements of the data extraction form, assessed risk of bias, and rated study quality. A second reviewer (A.N.D.M.) reviewed the article to rate risk of bias and study quality. Discrepancies of the bias and study quality ratings were resolved through discussion. Consensus was reached on all articles. Once all articles were rated and reconciled, the percentage of initial agreement was calculated.

Data Synthesis and Analysis
We constructed evidence tables detailing study characteristics, outcome measures, impact of consultation, risk of bias, and study quality. We compared and contrasted studies reporting clinical agreement data and summarized patient characteristics, motivating factors, and satisfaction of second opinion seekers.

RESULTS
Database searches identified 1336 citations, and another 6 were found from bibliography reviews. In the first phase of screening, 129 potentially relevant abstracts were identified, 41 of which met the inclusion criteria after the second screening phase. After full-text review, 28 articles were excluded, resulting in 13 articles meeting the inclusion criteria (Figure). Of these 13 articles, 7 included data on whether the second opinion agreed with the initial impression, and 10 included data on patient characteristics, motivation, and satisfaction (Table 1).

All 13 of the qualifying articles used an observational design, corresponding to a Cochrane GRADE quality score of “low” or “very low” (Supplemental Appendix, available online at http://www.mayoclinicproceedings.org). Bias scores were typically high (Supplemental Appendix), reflecting lack of randomization, unblinded study formats, small number of patients, single study sites, lack of control groups, and the use of evaluation instruments lacking validation. The agreement between reviewers for risk of bias and study quality was 64.4% and 69.2%, respectively.

Studies Reporting Clinical Agreement
Results from the 7 articles reporting data on clinical agreement are presented in Table 2. The studies describe 3 types of patients: those with cancer, those seeking a second opinion about elective surgery, and patients with other general medical concerns.

Second Opinions Regarding Cancer. Mellink et al34 studied a series of 403 consecutive patients seeking a second opinion in a cancer clinic. Most (87%) were women, 83% of whom had breast cancer, and 20% of all patients had metastatic disease. The review consisted of second readings of histologic, cytologic, and radiologic diagnostic tests and review by an oncologist. In 517 patients for whom the second opinion could be directly
compared with the first, there was no change in 68%, a minor discrepancy in 16%, and a major discrepancy (a major change in treatment or prognosis) in another 16%. Of 321 cases in which pathology slides were reviewed, disagreement was noted in 11 (3%), and of 247 cases in which imaging studies were reviewed, 4 reviews (2%) resulted in major changes.

Of 77 patients attending a medical oncology clinic for a second opinion, Tattersall et al. found a change in treatment for 32 (42%). In a study by Ramsey et al. of second opinions in 143 men with local-stage prostate cancer, second opinions were more likely to recommend surgery (91% vs 71% from the first opinion) over other treatment options.

Second Opinions for General Medical Concerns. Sutherland and Verhoef provided second opinions to 19 patients seeking a second opinion for gastrointestinal symptoms. Findings indicated complete agreement with the referral assessment in 12 patients (63%) and minor disagreement in the remaining 7 (37%). These researchers conducted the same study 5 years later to determine trends associated with second opinions. They found that the proportion of patients who seek a second opinion increased from 7.5% in 1989 to 16% in 1994. In 1989, 60% of patients indicated it was their decision to seek a second opinion (vs their...
physician’s recommendation); this figure decreased to 43% in 1994. Patients who sought a second opinion to confirm a diagnosis or treatment increased from 30% to 42.85%. Patients who were dissatisfied with the opinion of the first gastroenterologist decreased from 60% to 33%.

In a study of 201 patients in a general medicine clinic in the Netherlands, most (86%) presented for reevaluation of common symptoms such as fatigue (34%) and abdominal pain (27%). However, no clear diagnoses emerged at the time of reevaluation in 90% of the cases; new diagnoses were established in only 10%. Conversely, different therapeutic advice was provided in 22 of 31 patients (71%) seeking second opinions on treatment-related issues.

In a study by Wijers et al., 62% of 183 patients seeking a second neurologic opinion received a new diagnosis and/or treatment advice.

Studies Reporting Patient Characteristics, Motivation, and Satisfaction
An overview of the articles discussing characteristics, motivation, and satisfaction of patients seeking second opinions is presented in Table 1.

### Table 1. Article Characteristics

<table>
<thead>
<tr>
<th>Reference, year</th>
<th>No. of patients</th>
<th>Diagnosis</th>
<th>Treatment</th>
<th>Prognosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grafe et al.13 1978</td>
<td>4555</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mellink et al.20 2006</td>
<td>403</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Mustafa et al.14 2002</td>
<td>201</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wijers et al.20 2010</td>
<td>183</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ramsey et al.14 2011</td>
<td>143</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tattersall et al.20 2009</td>
<td>77</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sutherland &amp; Verhoef,15 1989</td>
<td>19</td>
<td>×</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Summary of articles by category

- **Cancer, 3 studies**
  - Breast, digestive, melanoma, sarcoma, unknown primary, other (Mellink et al.20 2006)
  - Cancer in various locations (Tattersall et al.20 2009)
  - Prostate cancer (Ramsey et al.14 2011)

- **Elective surgery, 1 study**
  - Orthopedic, cataracts, cholecystectomies, hysterectomies, other (Grafe et al.13 1978)

- **General medical concerns, 3 studies**
  - Fatigue, abdominal pain, chest pain, miscellaneous (Mustafa et al.14 2002)
  - Gastroenterology (Sutherland & Verhoef,15 1989)
  - Neurology (Wijers et al.20 2010)

### Patient characteristics, motivation, satisfaction

<table>
<thead>
<tr>
<th>Reference, year</th>
<th>No. of patients</th>
<th>Characteristics</th>
<th>Motivation</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bekkelund &amp; Salvesen,16 2001</td>
<td>927</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Sutherland &amp; Verhoef,17 1994</td>
<td>341</td>
<td>×</td>
<td></td>
<td>×</td>
</tr>
<tr>
<td>Boudali et al.21 2012</td>
<td>250</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Mellink et al.20 2003</td>
<td>212</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Mustafa et al.22 2002</td>
<td>201</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Tam et al.17 2005</td>
<td>191</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Wijers et al.20 2010</td>
<td>183</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Tattersall et al.20 2009</td>
<td>77</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Sutherland &amp; Verhoef,15 1989</td>
<td>19</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Philip et al.23 2010</td>
<td>17</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
</tbody>
</table>

### Summary of articles by category

- **Cancer, 4 studies**
  - Breast, digestive tract, melanoma, sarcoma, unknown primary, other (Mellink et al.20 2003)
  - Cancer in various locations (Tattersall et al.20 2009; Philip et al.23 2010)
  - Gynecology (Tam et al.17 2005)

- **General medical concerns, 6 studies**
  - Gastroenterology (Sutherland & Verhoef,15 1994; Sutherland & Verhoef,29 1989)
  - Neurology (Bekkelund & Salvesen,16 2001; Wijers et al.20 2010)
  - Rheumatology, gastroenterology, neurology (Boudali et al.21 2012)
  - Various diseases (Mustafa et al.14 2002)
Table 1. These studies assessed cancer and general medical conditions across the domains of general internal medicine, neurology, gastroenterology, and rheumatology.

**Patient Characteristics.** A large proportion of patients seeking a second opinion were women (66%-82%) with an average age of 54 years, typically in the setting of breast cancer. In contrast, patients with general medical conditions typically had persistent symptoms and extended disease durations (rheumatologic, 6 years; neurologic, 5 years; gastroenterologic, 16.7 years) and had undergone treatment for months (rheumatologic, 4 months; neurologic, 10.6 months; gastroenterologic, 3.7 months).

**Motivating Factors.** The articles reported factors motivating patients to seek a second opinion, including confirmation of a diagnosis or treatment, dissatisfaction with an initial consultation (generally over communication issues), unfulfilled needs, a desire for additional information, or treatment complications or adverse effects. Nomadic patients were typically recently diagnosed women with breast cancer, recently diagnosed men with prostate cancer for treatment advice, and patients with chronic unresolved symptoms or treatment issues seen in general medicine clinics.

### Table 2. Patient-Initiated Second Opinions: Clinical Agreement

<table>
<thead>
<tr>
<th>Reference, year, location</th>
<th>Setting, methods</th>
<th>Results, impact</th>
<th>Study quality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mellink et al,34 2006, Netherlands</td>
<td>Patients with cancer seen in a medical oncology clinic dedicated to providing second opinions</td>
<td>Of 317 patients evaluated, a major change in the diagnosis, treatment, or prognosis was identified in 16% and no change in 68%. Pathology material was reviewed in 321 cases, with a major change identified in 11 (3%); imaging was reviewed in 247 cases, with a major change in 4 cases (2%)</td>
<td>Low</td>
</tr>
<tr>
<td>Tattersall et al,38 2009, Australia</td>
<td>Patients with cancer seen in a medical oncology clinic</td>
<td>Of 77 patients evaluated, the treatment plan was changed in 32 (42%); 29 patients changed managing physicians (38%)</td>
<td>Low</td>
</tr>
<tr>
<td>Ramsey et al,37 2011, United States</td>
<td>Men with local-stage prostate cancer seen for treatment advice in an academic urology clinic</td>
<td>Of 143 men, 28 (20%) were encouraged to have surgery compared with previously recommended options</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Elective surgery</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grafe et al,33 1978, United States</td>
<td>Patients obtaining a second opinion on suggested elective surgery</td>
<td>Of 4555 patients evaluated, the elective surgery was thought to be unnecessary in a third (34%)</td>
<td>Low</td>
</tr>
<tr>
<td><strong>General medical concerns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sutherland &amp; Verhoef,39 1989, Canada</td>
<td>Patients with abdominal complaints evaluated in an academic gastroenterology clinic. Physicians assigned a score on a 5-point scale to differentiate functional from organic etiologies</td>
<td>Of 19 patients evaluated, there was complete agreement with the referral assessment in 12 (63%), and in the remaining 7 (37%), the score differed by just 1 point</td>
<td>Low</td>
</tr>
<tr>
<td>Mustafa et al,35 2002, Netherlands</td>
<td>Patients with chronic unresolved symptoms or treatment issues seen in a general medicine clinic</td>
<td>Of 201 patients evaluated for undiagnosed conditions, a new diagnosis was established in 10%. Of 31 patients evaluated for treatment issues, a treatment change was advised in 22 (71%)</td>
<td>Very low</td>
</tr>
<tr>
<td>Wijers et al,36 2010, Amsterdam</td>
<td>Patients visiting a neurology academic center</td>
<td>Of 183 patients, 113 (62%) received a new diagnosis and/or treatment advice</td>
<td>Low</td>
</tr>
</tbody>
</table>
were most likely to seek a second opinion because of dissatisfaction with prior consultations, wrong beliefs about their disease, the practice of alternative medicine, disease pathology, and personality profile.45 Patients with cancer often wanted additional information about their disease (33%36, 89%35), its treatment (70%38-97%35), or their prognosis (93%35). A large proportion of patients (17%,45 61%,38 68%43) needed reassurance that their diagnosis or treatment was appropriate, and 68% hoped for a change in their diagnosis.43 Nearly half (46%) of patients with cancer sought a second opinion because of treatment complications.44 One-third (30%38, 38%35) had unfulfilled needs and/or negative experiences; 27% experienced communication problems with their first physician45 or wanted a definitive review because of the perceived extreme nature of the first diagnosis (32%).45 Over half of the patients (55%) in the report by Philip et al45 indicated that they considered a sense of loyalty to their first physician when contemplating a second opinion; 47% did not want to upset the physician by seeking a second opinion. In patients with cancer, predictors of seeking a second opinion included tertiary-level education, radiation therapy, and late-stage disease.44

Among patients with general medical concerns, common motivations to seek a second opinion included confirmation of an established diagnosis or designation of a diagnosis in patients with still unexplained symptoms. Sutherland and Verhoef39 reported that 30% of their study population desired confirmation of the diagnosis provided by the first specialist. Five years later, the same study was repeated and revealed an increase of this value to 56%.41 Wijers et al40 reported that 28% of 183 patients who sought a second opinion desired an explanation of a diagnosis or treatment. In the specific domain of neurology, the proportion seeking confirmation of a diagnosis was considerably less at 6%.36 Mustafa et al35 reported that 15% of patients with general internal medicine concerns desired treatment management advice. Several studies reported that patients who sought a second opinion were dissatisfied with their initial physician and/or consultation (33%,41 54%,40 56%,38 60%43), and this was also a prevalent concern among the nomadic population with rheumatologic symptoms.42 In a study of patients with neurologic problems, second opinions were most commonly requested because of headache.43 Patients with migraines were more likely to initiate a second opinion than those with tension-type headaches (31% vs 17%, respectively), 36% had “unclassified” headaches, and 40% had chronic headaches (>3 days a week). Over half (52%) cited their dissatisfaction with the initial evaluation as the motivating factor in seeking a second opinion.

Satisfaction. Five studies reported patient satisfaction with the first and/or second opinion. Dissatisfaction with the first opinion was common, resulting in the patient seeking a second opinion. In patients with cancer, satisfaction was strongly correlated with reassurance about the diagnosis and/or treatment plan, the demeanor of the physician, and the patient’s involvement in the decision-making process.45 In an Australian study, patients with cancer noted that the second oncologist gave them greater confidence (53%), addressed all their concerns (51%), and spent more time with them than the first physician (47%).38 In a study assessing satisfaction of nomadic patients, 30% of those with rheumatologic, 14% of those with gastroenterologic, and 14% of those with neurologic problems were very satisfied.42 In another study,39 the satisfaction of patients with neurologic symptoms was not associated with a new diagnosis or treatment advice but rather with the amount of information and emotional support provided by the second neurologist.

**DISCUSSION**

We conducted a systematic review to examine the outcomes of patient-initiated second opinions and the characteristics, motivating factors, and satisfaction of patients who seek them. Although second opinions appear to be sought frequently, comprising up to 20% of workload in some practice settings,7 our review identified a surprising paucity of studies that have examined the impact of this common practice. Our review illustrates how little is known about a practice that is widespread and generally assumed to be beneficial. We could identify only 7 studies that compared the agreement between the first and second opinion, all of which were highly biased observational evaluations with low or very low study quality. Other
notable problems included the use of highly variable definitions of the level of change in outcome measures, small patient populations, and the absence of data on control patients. Nevertheless, patient-initiated second opinions offered new or different diagnosis or treatment advice, and generally patients were satisfied with them.

Our findings regarding which types of patients seek second opinions and their reasons for doing so are consistent with earlier studies. Having a diagnosis of cancer (breast cancer being the most common in the studies reviewed) and unresolved symptoms are common motivating factors. Other patients are dissatisfied with their initial physician, seek more information about their condition, or have other unfulfilled needs. Factors such as wrong beliefs about their disease and personality profile were also important for the unique population of nomadic patients. Many patients are looking for information to make sound decisions without leaving any stone unturned, reflecting a sense of patient empowerment. Persistent or unbearable symptoms or treatment complications were also common reasons to seek a second opinion. We found that patients have a sense of loyalty to their initial physician and do not want to negatively impact their long-term relationship with a physician by seeking a second opinion. Our findings suggest that patients’ satisfaction is more often driven by emotional factors (ie, feeling that the physician cares for them as a person) than by concern about their own clinical outcomes.

We found that second opinions most typically confirm the original diagnosis or treatment regimen, but 90% of patients with poorly defined conditions remain undiagnosed despite the second opinion. Nonetheless, we found that a considerable proportion of second opinions, ranging anywhere from 10% to 62% across the studies, yield a major change in the diagnosis, treatment, or prognosis. A substantially larger fraction of patients receive different advice on treatment than on their diagnosis. Overall, most patients perceive second opinions to be valuable.

Although we restricted our analysis to voluntary patient-initiated second opinions, comparable findings have been reported in mandatory second opinion programs. The most direct comparisons are the results of obtaining mandatory second opinions regarding the need for elective surgery, in which disagreement is typically in the range of 20% to 40% for both mandatory and patient-initiated opinions. Higher discrepancy rates have been reported for the fields of neuroradiology, trauma, and mammography.

Second opinions are a potentially attractive approach to reducing diagnostic errors in medicine, thought to occur in 10% to 15% of cases. Provided that the second opinion is of equal or better quality than the first, a second opinion should reduce diagnostic errors. However, the second opinion could also be detrimental to the diagnostic process if the second opinion is of lesser quality or if the patient only follows the second opinion advice. Studies of independent second checks for specific tasks have also found that these checks are far less effective than the theoretical improvement estimates, and indeed, a recent review concluded that the current evidence was insufficient to support or refute the value of double checks for medication administration. This leaves open the question of whether patient-initiated second opinions in general medical practice truly improve the quality of care and reduce the rate of diagnostic error, as has been more firmly established in both pathology and radiology.

Our findings were surprising because we expected to find stronger evidence to justify the practice of obtaining a second opinion. The available studies are few in number and generally of low quality. The benefit we identified may be overestimated because the validity of the second opinion was not confirmed by subsequent follow-up or any definitive final evaluation. Specifically, none of the studies we identified had examined the validity of the second opinion through follow-up evaluation or evaluated the possibility that the second opinion could have unintended consequences. This limitation needs to be addressed in future studies, as has been done in second opinion programs in radiology and pathology. Patients want to know if their first diagnosis is correct, but in most cases, the second opinion just provides an opinion, not a certainty. Besides the first diagnosis being incorrect, a second opinion could provide a different answer due to interobserver variation in expertise.
experience, personality, or biases or because new information was available. The literature also does not clarify which patients would benefit the most from a second opinion or which conditions or clinical situations should trigger a second review. Another limitation to our study was our inability to identify second opinion trends because of the diversity of patient populations and diseases studied and the heterogeneity of the methods used across the studies.

CONCLUSION

Our analysis suggests that patient-initiated second opinions can offer new or different diagnosis and treatment advice. Most patients perceive the second opinion to have value, either because it is reassuring to them that the original diagnosis or treatment plan is correct or it identifies an alternative. However, the accuracy of the second opinion through follow-up review is generally unknown, and the methodology of studying and reporting the second opinion outcomes is highly variable. Given the sparse data, the practice and value of obtaining a second opinion merits more comprehensive and rigorous evaluation.

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Drs Payne and Graber had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. We also acknowledge the following contributions: study concept and design—Drs Payne, Singh, Meyer, Levy, and Graber; data acquisition—Drs Payne and Graber; analysis and interpretation of data—Drs Payne, Meyer, and Graber; drafting of the manuscript—Drs Payne and Graber; critical revision of the manuscript for important intellectual content—Drs Payne, Singh, Meyer, Levy, Harrison, and Graber; statistical analysis—Drs Payne, Meyer, and Graber; administrative, technical, and material support—Drs Payne, Graber, and Singh; study supervision—Drs Payne and Graber.

SUPPLEMENTAL ONLINE MATERIAL

Supplemental material can be found online at http://www.mayoclinicproceedings.org.

REFERENCES


Abbreviations and Acronyms: PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses

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