

Time to Diagnosis of Neuroendocrine Tumors: Results From the First Global NET Patient Survey—A Collaboration Between the International Neuroendocrine Cancer Alliance (INCA) and Novartis Pharmaceuticals

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BACKGROUND

- Neuroendocrine tumors (NETs) are rare, heterogeneous neoplasms¹ whose incidence has increased 5-fold over the past 30 years, due in part to greater awareness and accurate diagnosis²
- Diagnosis of NETs often occurs late in the course of the disease¹
 - Symptoms of NETs are nonspecific and may resemble other conditions such as irritable bowel syndrome (IBS) or asthma.¹ Some patients remain asymptomatic until metastasis has occurred^{3,4}
 - NET-related symptoms may persist a median of 9 years before NETs are diagnosed, at which point many patients have advanced disease¹
 - Up to 60% to 80% of gastroenteropancreatic NETs are metastatic at the time of diagnosis⁵
- Delayed diagnosis can substantially impact patient survival
 - NET stage at diagnosis is an important prognostic factor, with substantially better outcomes for localized disease compared with distant metastases²
- NETs awareness and diagnostic techniques have improved over the last few years; however, diagnosis remains challenging, and only a few small studies have examined the NET patient experience^{6,7}
- INCA is a network of 17 independent charitable organizations and patient groups from 14 countries around the world. Novartis Pharmaceuticals Corporation collaborated with INCA on the first global survey to gather data about the NET patient experience from multiple countries, with the goals of
 - Capturing individual patient experiences of a NET diagnosis to increase understanding of the NET journey and the needs of patients with NETs
 - Highlighting differences and similarities between countries and regions to help improve NET awareness and care
- We present global patient-reported data on time to diagnosis in NETs

AIM

- To raise awareness of the NET patient perspective, including challenges faced while seeking a diagnosis

METHODS

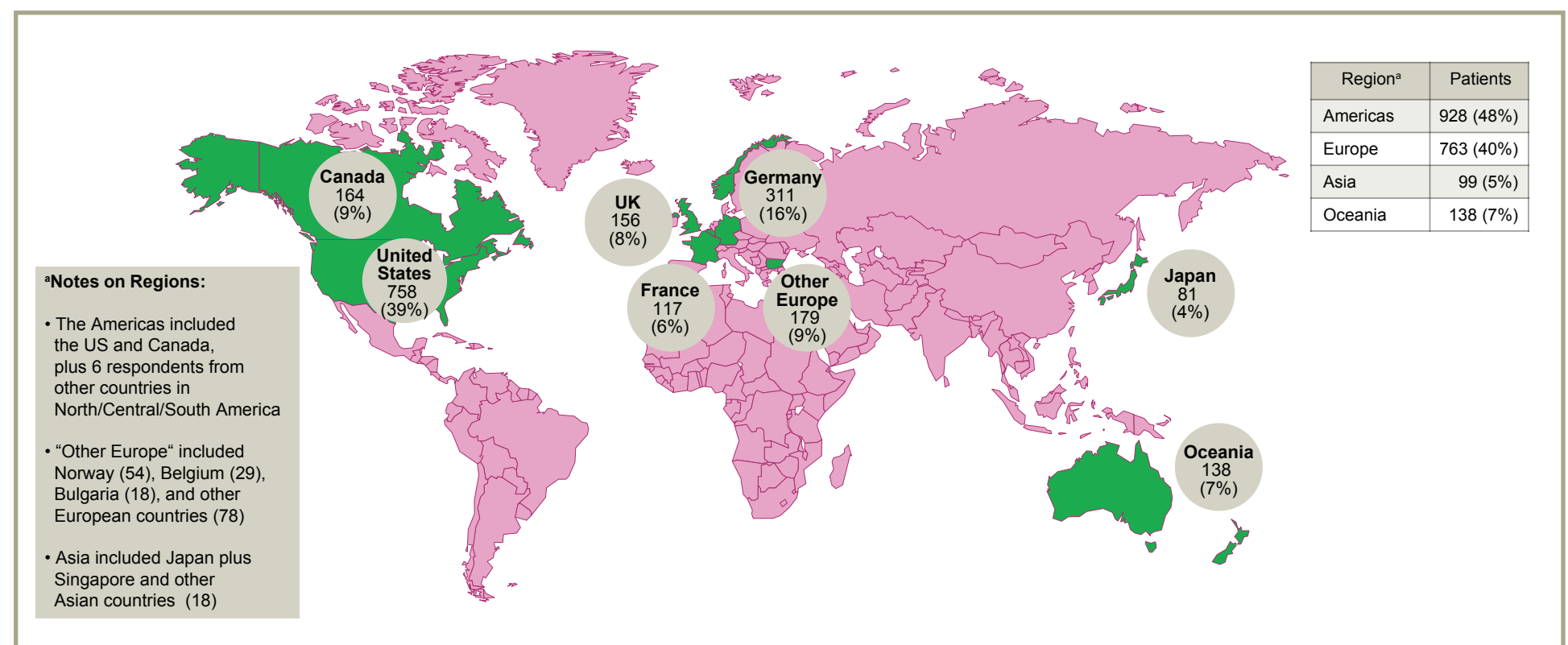
- From February through May 2014, patients with NETs participated in a 25-minute anonymous survey that captured the NET patient experience, including their diagnostic journey
 - With the exception of certain demographic information, survey questions were close-ended; participants were provided options from which to choose
- Patients were recruited via use of flyers, Web site postings, e-mails, and social media channels of the INCA member organizations/patient advocacy groups
 - Extensive use of online social media sources through local/regional advocacy groups allowed recruitment of a large number of patients with this rare type of cancer
- This survey was conducted primarily online and was available in 8 languages: Bulgarian, Dutch, English, French, German, Japanese, Norwegian, and simplified Chinese
 - Paper surveys were developed in several languages and distributed by patient groups and health care providers (HCPs) to reach patients without internet access
- Data were analyzed at global, regional, and country levels; here we present results from global data
 - Statistical differences between comparisons were significant at the 95% confidence level ($P < 0.05$) for all statements within the text; statistically significant differences within figures are indicated by blue text
- This survey was conducted as an equal collaboration between INCA and Novartis, and was funded by Novartis. Hall & Partners, a research organization, fielded and analyzed the results

RESULTS

Demographics

- A total of 1928 patients with NETs were recruited from >12 countries in the Americas, Asia, Europe, and Oceania (Figure 1)
 - The majority of respondents were from Europe (n = 763) and North America (n = 922)

Figure 1. Countries participating in the global NET patient survey.



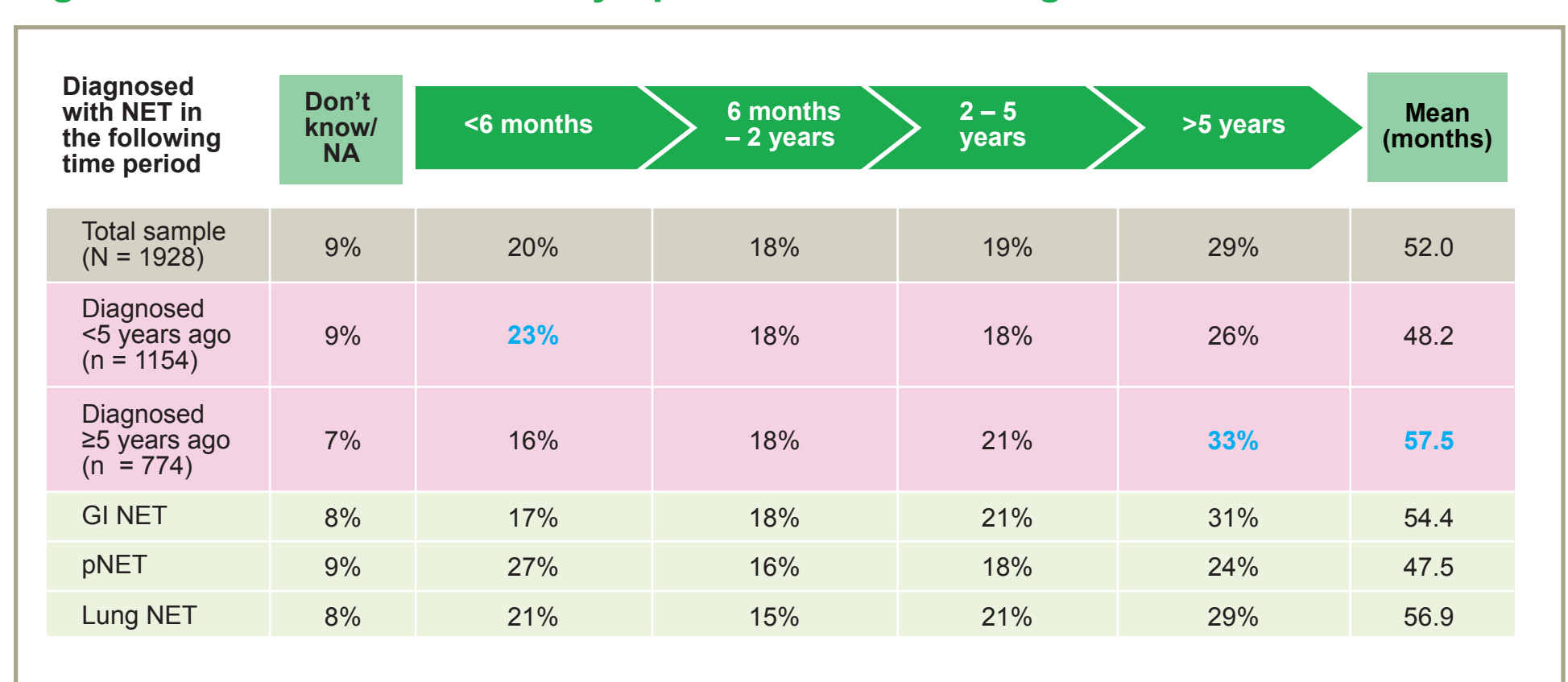
Base population: All respondents (N = 1928). Question: In which country do you live? Question: In which region do you live?

- The average age of patients was 56.8 years; 64% were female
- Gastrointestinal NETs were the most common subtype reported (54%), followed by pancreatic (22%), lung (12%), thymus (1%), other (8%), and unknown site (5%)
- Most patients had grade (G) 1 (37%) or G2 (21%), functional disease (44%) (defined as tumors that produce symptoms caused by the secretion of hormones [eg, flushing, diarrhea, wheezing, cramping])

The diagnostic journey

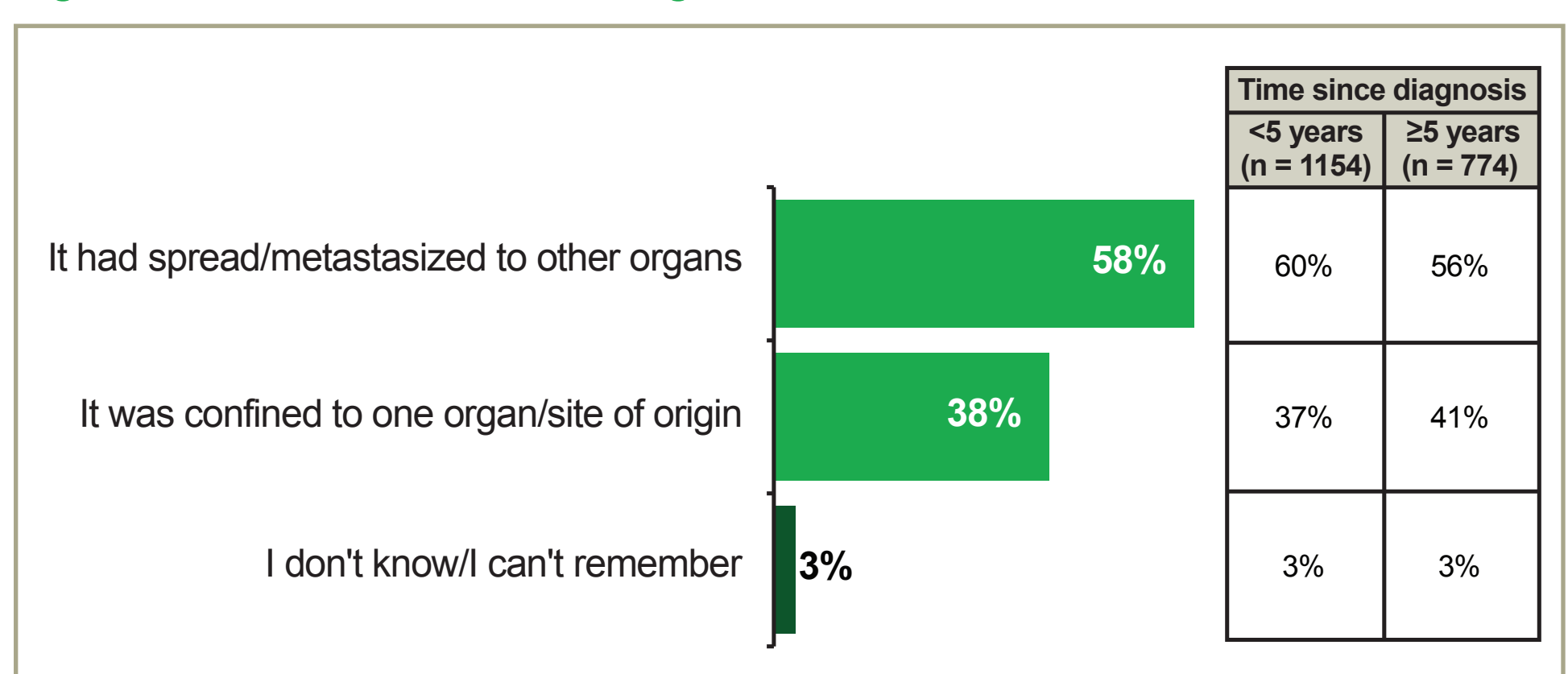
- 60% of patients reported being diagnosed <5 years ago
- The median time from patient-reported symptom onset to a NET diagnosis was 24 months
- Time to a diagnosis of NETs following the first symptom has improved by approximately 10 months in patients diagnosed more recently (<5 years ago vs ≥5 years ago) (Figure 2)
 - However, 29% of patients still required ≥5 years for a NET diagnosis (Figure 2)
 - 58% of patients had metastases at diagnosis (Figure 3)
 - No improvement was noted in patients diagnosed more recently
 - A slight (nonsignificant) increase was seen in the percentage of patients with metastatic spread who were diagnosed <5 years vs ≥5 years ago

Figure 2. Time between first symptom and a NET diagnosis.



GI, gastrointestinal; NA, not applicable; pNET, pancreatic NET. Base population: All respondents (N = 1928). Question: What was the approximate length of time between your first symptom and your NET diagnosis? Blue text indicates significant differences between patients diagnosed <5 years ago vs ≥5 years ago, P < 0.05.

Figure 3. Tumor metastasis at diagnosis.



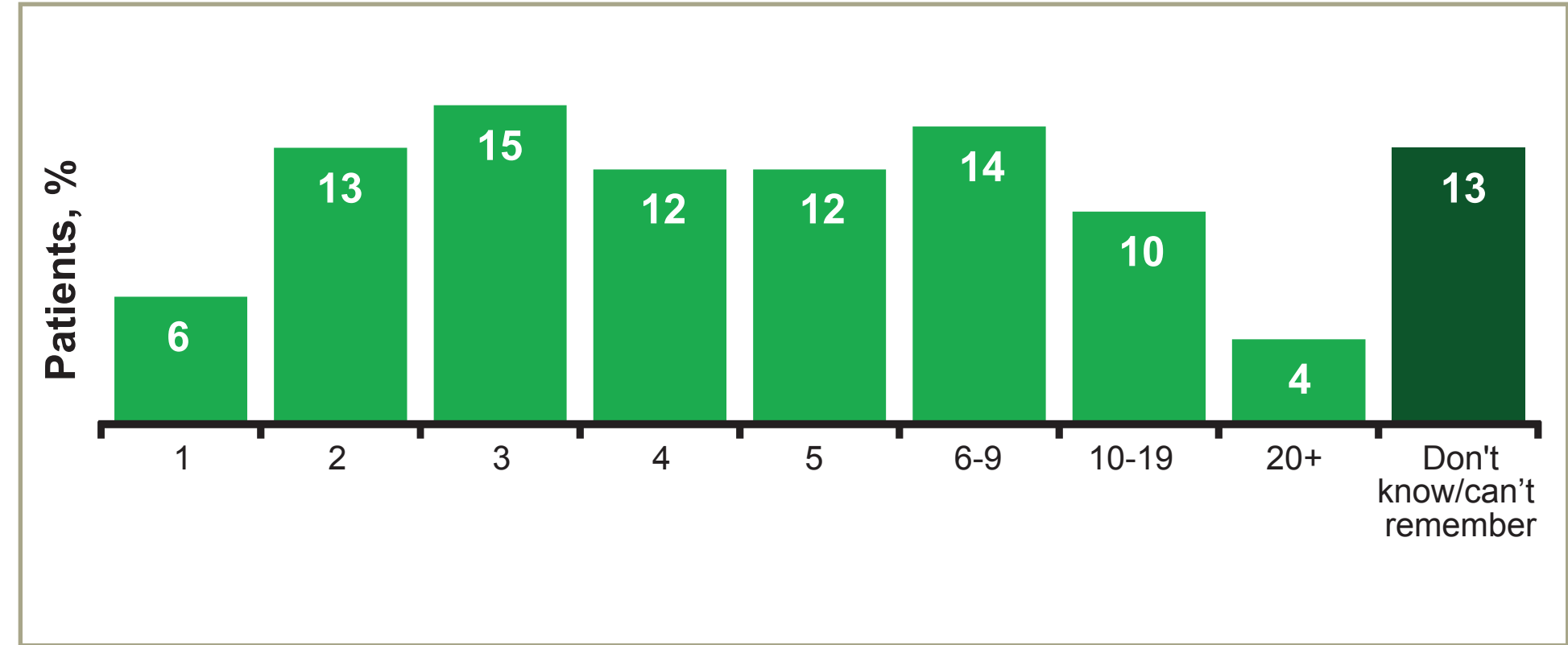
Base population: All respondents (N = 1928). Question: Which of the following best describes your NET at the time of diagnosis?

Health care resource use

- Patients saw a mean of 6.2 HCPs, with a mean of 11.8 HCP visits prior to a NET diagnosis
 - The range of HCPs consulted and HCP visits made are shown in Figures 4A and 4B

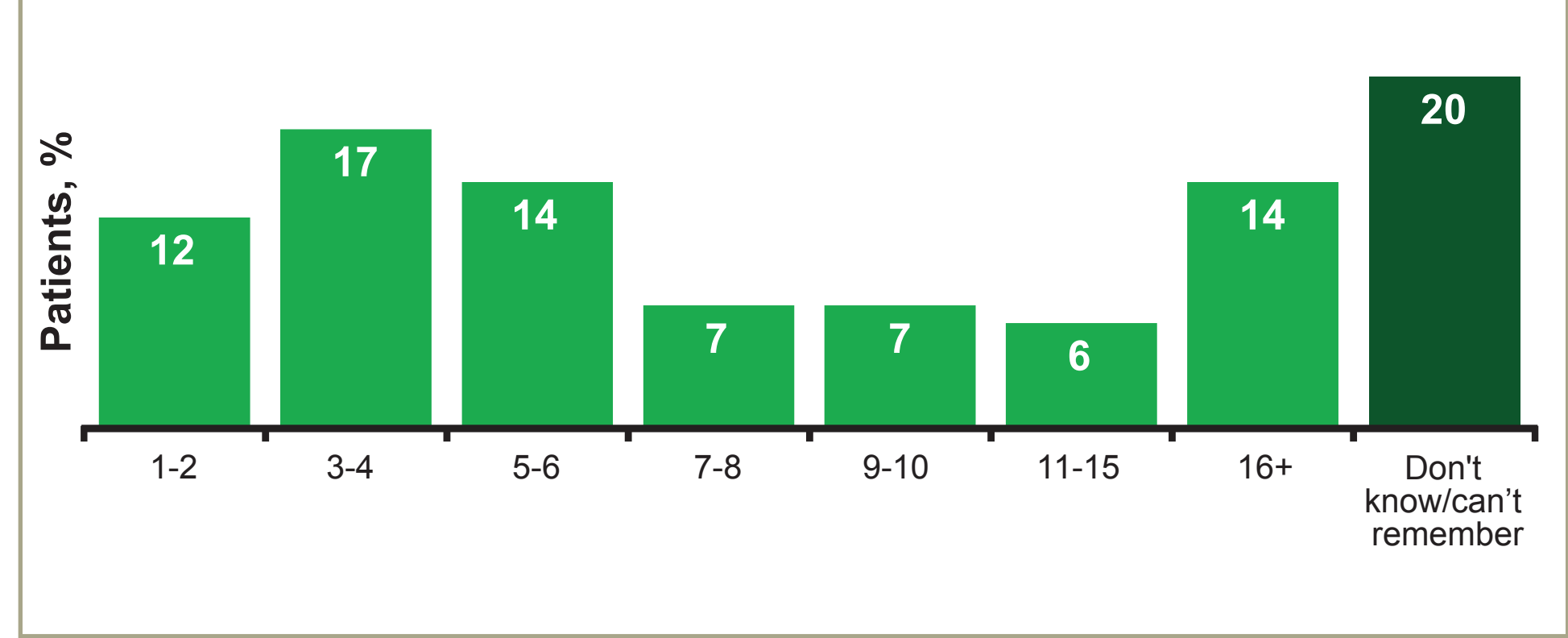
Figure 4. Number of HCPs and HCP visits involved in receiving a NET diagnosis.

A. Number of HCPs



Base population: All respondents (N = 1928). Question: Approximately how many HCPs (including all doctors, specialists, and nurses) were involved in your diagnosis of a NET? Please consider all those you saw from the time you first experienced symptoms to the time you received the diagnosis of a NET.

B. Number of HCP visits

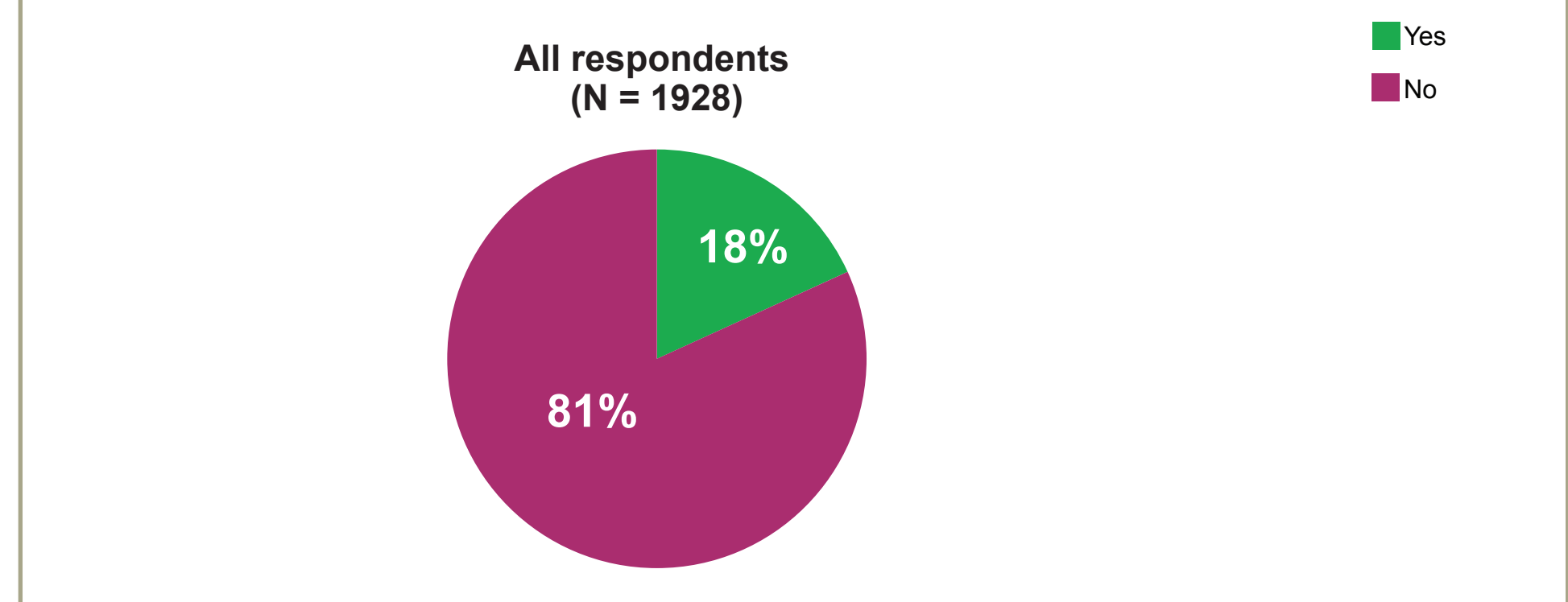


Base population: All respondents (N = 1928). Question: Approximately how many HCPs (including all doctors, specialists, and nurses) did you have to make? Please consider all those you saw from the time you first experienced symptoms to the time you received the diagnosis of a NET.

- 63% of respondents had visited a NET specialty center at least once, but only 18% had been diagnosed there (Figure 5A)
 - Diagnosis at a NET specialty center was more likely to occur in patients diagnosed <5 years ago (20%) compared with those diagnosed ≥5 years ago (16%) (Figure 5B)

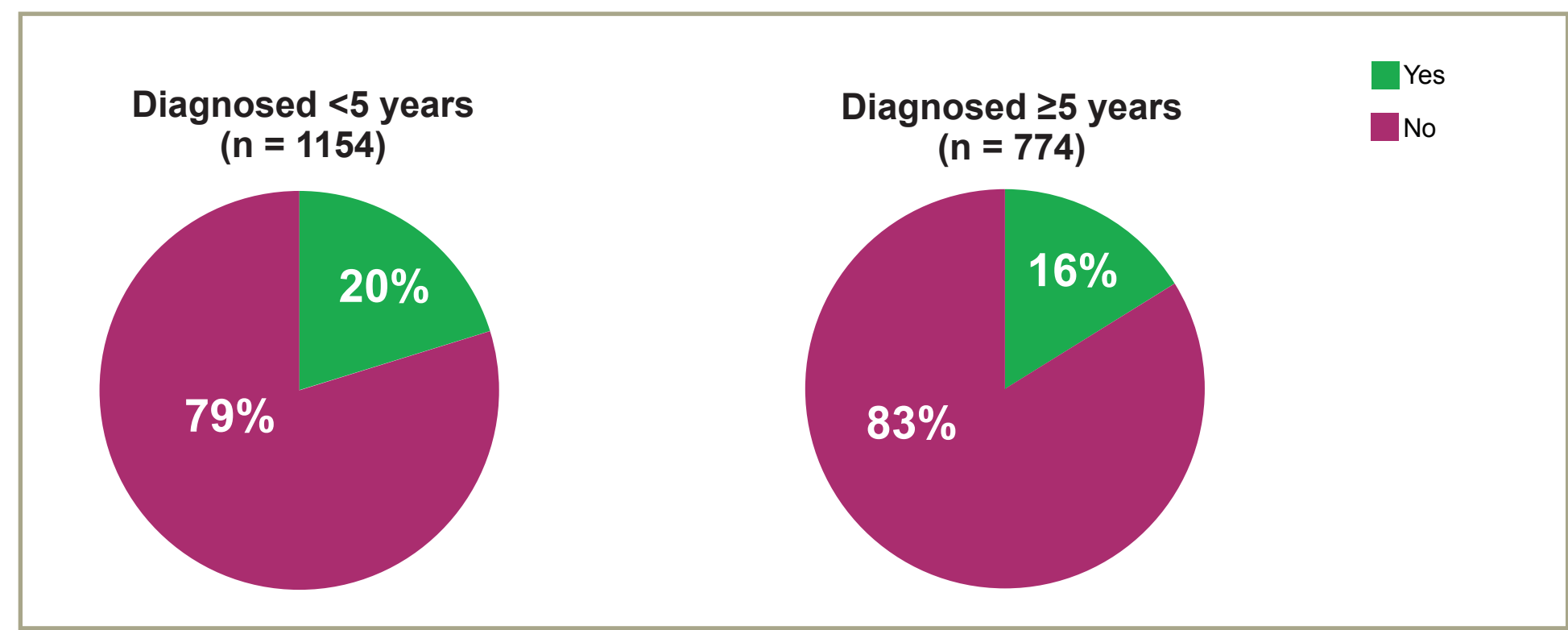
Figure 5. Patients diagnosed at a NET specialist center.

A. Total sample



Base population: All respondents (N = 1928). Question: Did you receive your NET diagnosis at a medical center that specializes in NET?

B. Diagnosed <5 vs ≥5 years ago

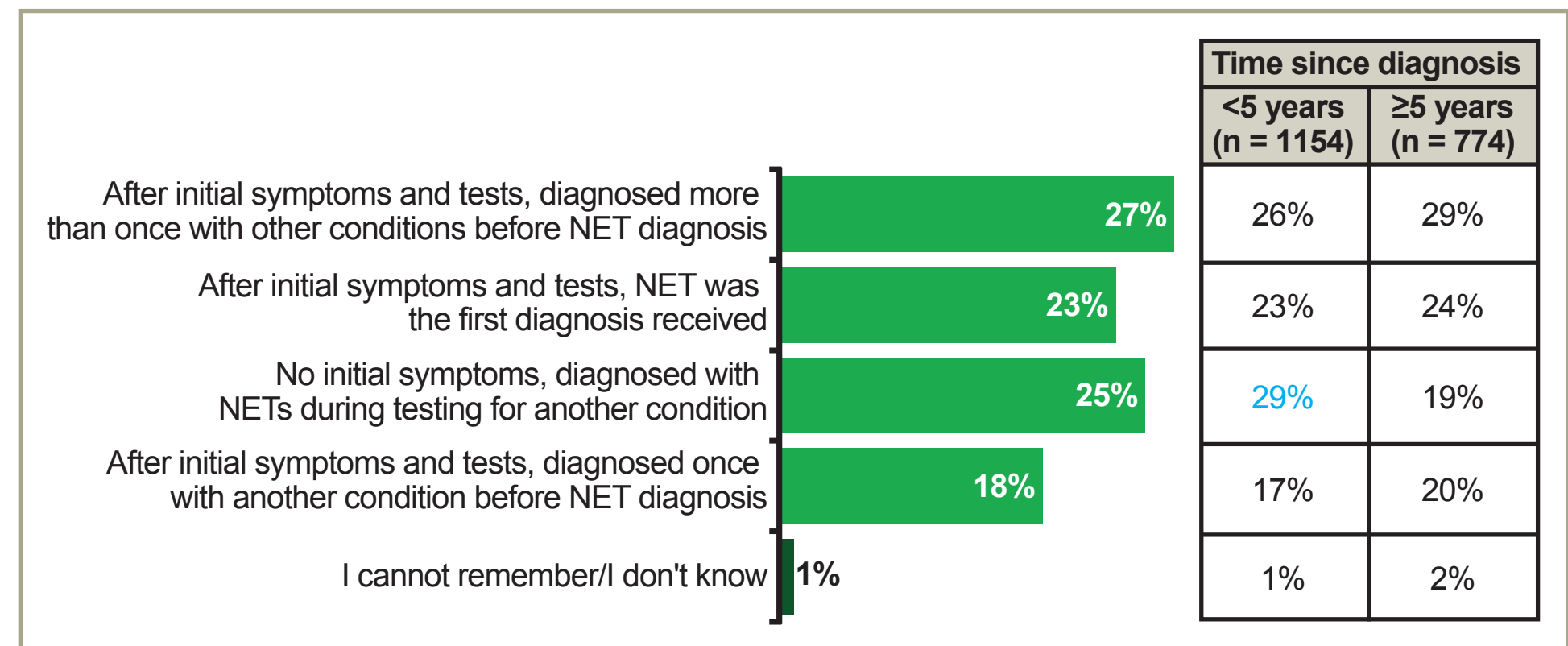


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Diagnostic challenges

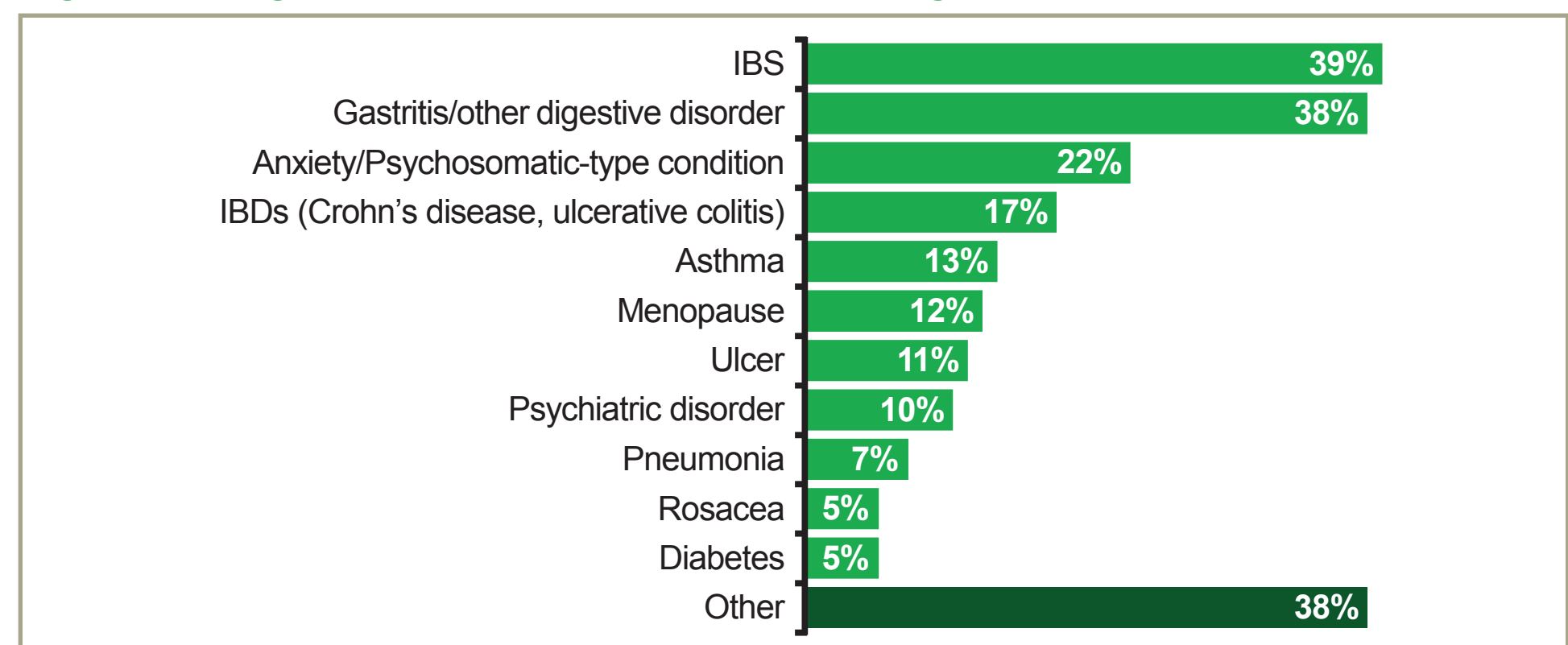
- For almost half of the patients (45%), NET was not the initial diagnosis (Figure 6)
 - A quarter of the patients reported being diagnosed with NETs during testing for another condition (Figure 6)
 - This occurred more often among more recently diagnosed patients (<5 years ago, 29% compared with those diagnosed ≥5 years ago (19%))
 - The most common early diagnoses were digestive disorders such as IBS, gastritis or other digestive disorders, and inflammatory bowel diseases (IBDs), including Crohn's disease and ulcerative colitis (Figure 7)
 - 33% were diagnosed with anxiety, a psychosomatic condition, or a psychiatric disorder

Figure 6. Experience of getting a NET diagnosis.



Base population: All respondents (N = 1928). Question: Which of the following best describes your experience of getting a NET diagnosis? Blue text indicates significant differences between patients diagnosed <5 years ago vs ≥5 years ago, P < 0.05.

Figure 7. Diagnoses received before a NET diagnosis.^a



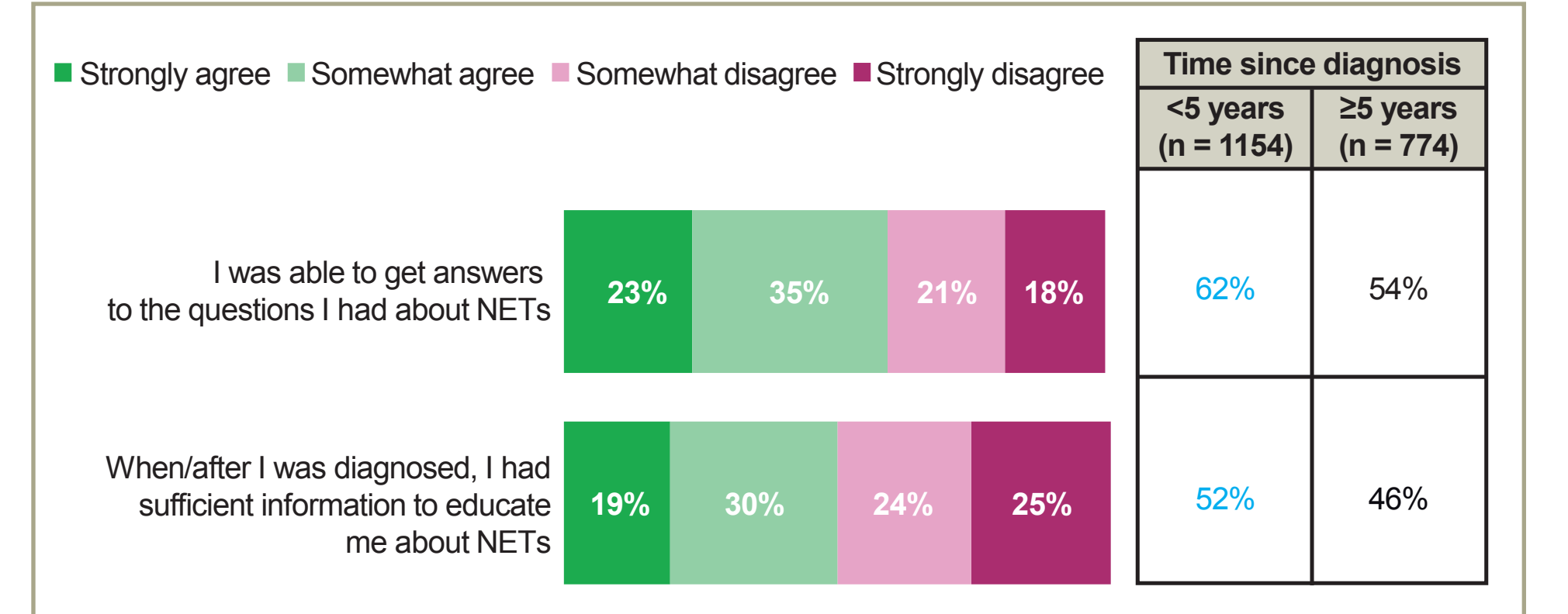
Base population: All who were diagnosed with other conditions (n = 873). Question: Which of the following conditions were you initially diagnosed with prior to receiving a NET diagnosis? ^aIncludes conditions mentioned by >5% of patients.

Patient perspective

- Most patients (76%) did not suspect their symptoms were related to cancer
 - Patients diagnosed <5 years ago were more likely to recognize their symptoms as cancer related (20%) versus those diagnosed ≥5 years ago (13%)
- At the time of diagnosis, many patients got the impression from their physician that NETs were an unusual/uncommon type of cancer (66%) in slow motion (58%) that was malignant (40%)
 - Upon diagnosis with NETs, patients typically felt shocked (59%), scared (58%), uncertain (53%), and bewildered (40%)
 - Patients who had only positive feelings at diagnosis were more likely to have been given the impression from their physician that NETs were "controllable"
 - Patients who had only negative feelings at diagnosis were more likely to have been given the impression by their physician that NETs were "an unusual type of cancer," "cancer-like," and "poorly understood"
 - At the time of diagnosis, only 23% of patients felt strongly that they were able to get answers to their questions about NETs and 19% strongly agreed that they received sufficient information (Figure 8)
 - Significantly higher for those diagnosed <5 vs ≥5 years ago

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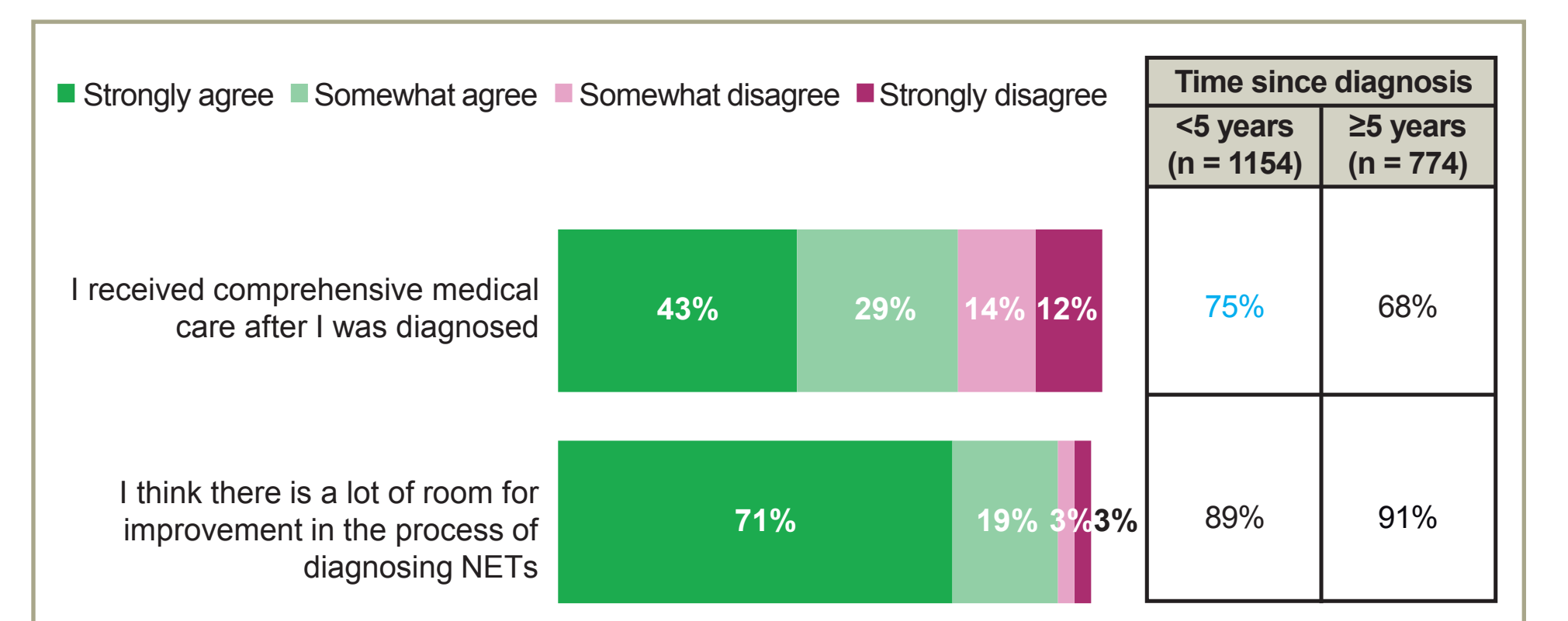
Figure 8. Getting questions answered and sufficient information after NET diagnosis.



Base population: All respondents (N = 1928). Question: To what extent do you agree or disagree with the following statements? Top 2 box scores shown in table (somewhat agree/strongly agree). Blue text indicates significant differences between patients diagnosed <5 years ago vs ≥5 years ago, P < 0.05.

- Although the majority of patients (72%) felt they received comprehensive medical care, 90% still felt there was a lot of room for improvement in NET diagnosis (Figure 9)
 - Patients diagnosed <5 years ago were more likely than those diagnosed ≥5 years ago to feel that they received comprehensive medical care after diagnosis
 - No difference was noted between groups with regard to the need for improvements

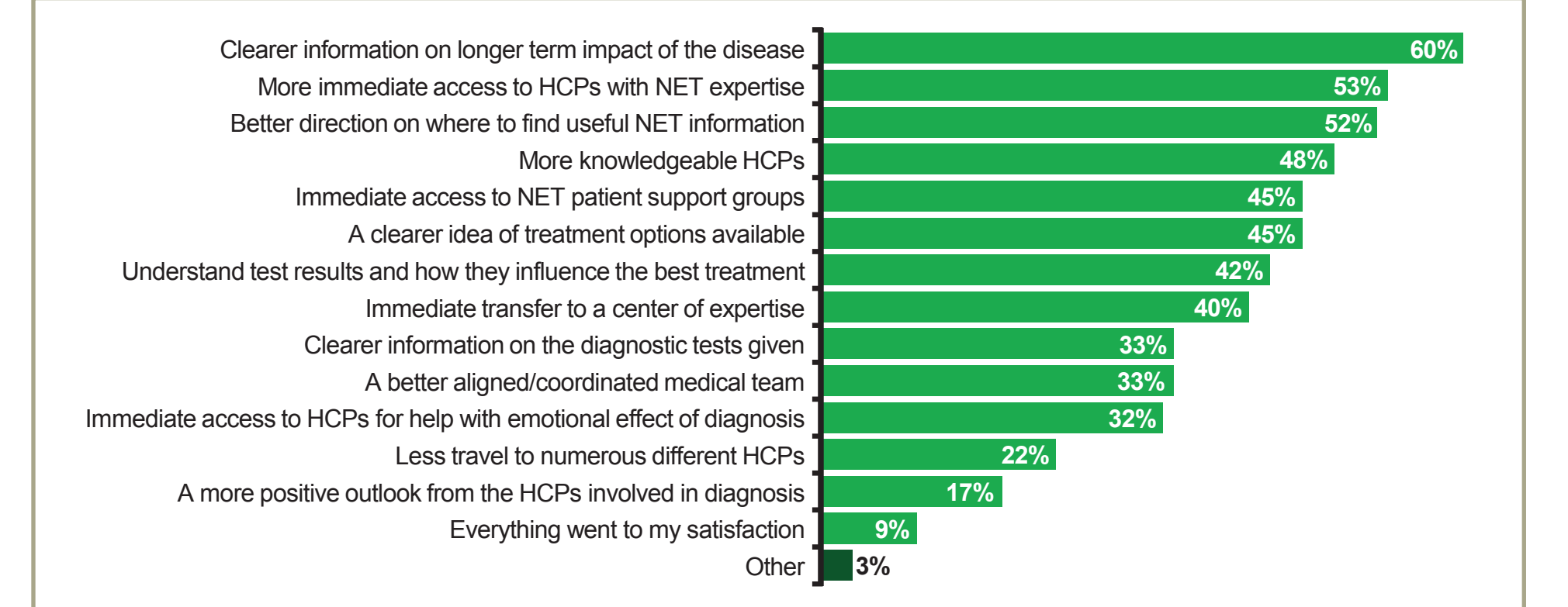
Figure 9. Beliefs about comprehensive medical care after NET diagnosis and room for improvement in the process of diagnosing NETs.



Base population: All respondents (N = 1928). Question: To what extent do you agree or disagree with the following statements? Top 2 box scores shown in table (somewhat agree/strongly agree). Blue text indicates significant differences between patients diagnosed <5 years ago vs ≥5 years ago, P < 0.05.

- Patients felt many aspects of NET diagnosis could be improved, including receiving clearer information on long-term impact (60%), more immediate access to HCPs with NET expertise (53%), and more knowledgeable HCPs (48%) (Figure 10)

Figure 10. Desired improvements regarding NET diagnosis.



Base population: All respondents (N = 1928). Question: Which of the following, if any, would have helped you have a better experience with your NET diagnosis?

LIMITATIONS

- This global NET patient survey had several important limitations that may have impacted results:
 - A patient-reported design was employed without independent verification, leading to potential recall bias
 - This survey did not utilize standardized, validated quality-of-life assessments
 - Recruitment was conducted primarily through patient advocacy groups (37%) and online sources (51%), which may have resulted in a potentially biased sample not fully representative of the heterogeneous NET patient population
 - Respondents were more likely to be highly engaged and motivated care seekers, including female patients and/or those with a poorer prognosis

CONCLUSIONS

- This first large, global survey of patients with NETs demonstrated a substantial delay in NET diagnosis, consistent with findings in the literature,¹ and shed light on the extensive use of health care resources associated with establishing a NET diagnosis
- Improvements in time to diagnosis over the last 5 years suggest that awareness about NETs is increasing among physicians; however, many patients continue to be diagnosed with other conditions, some more than once, before receiving a NET diagnosis
 - A considerable need exists to diagnose NETs earlier in the disease course, thus improving survival
- HCP communications regarding NETs at the time of diagnosis have an important influence on how patients feel about their disease
- Patients identified several areas for improvement in the NET diagnostic process
 - They generally desired clearer, more detailed information on their disease and better access to NET resources and knowledgeable HCPs

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