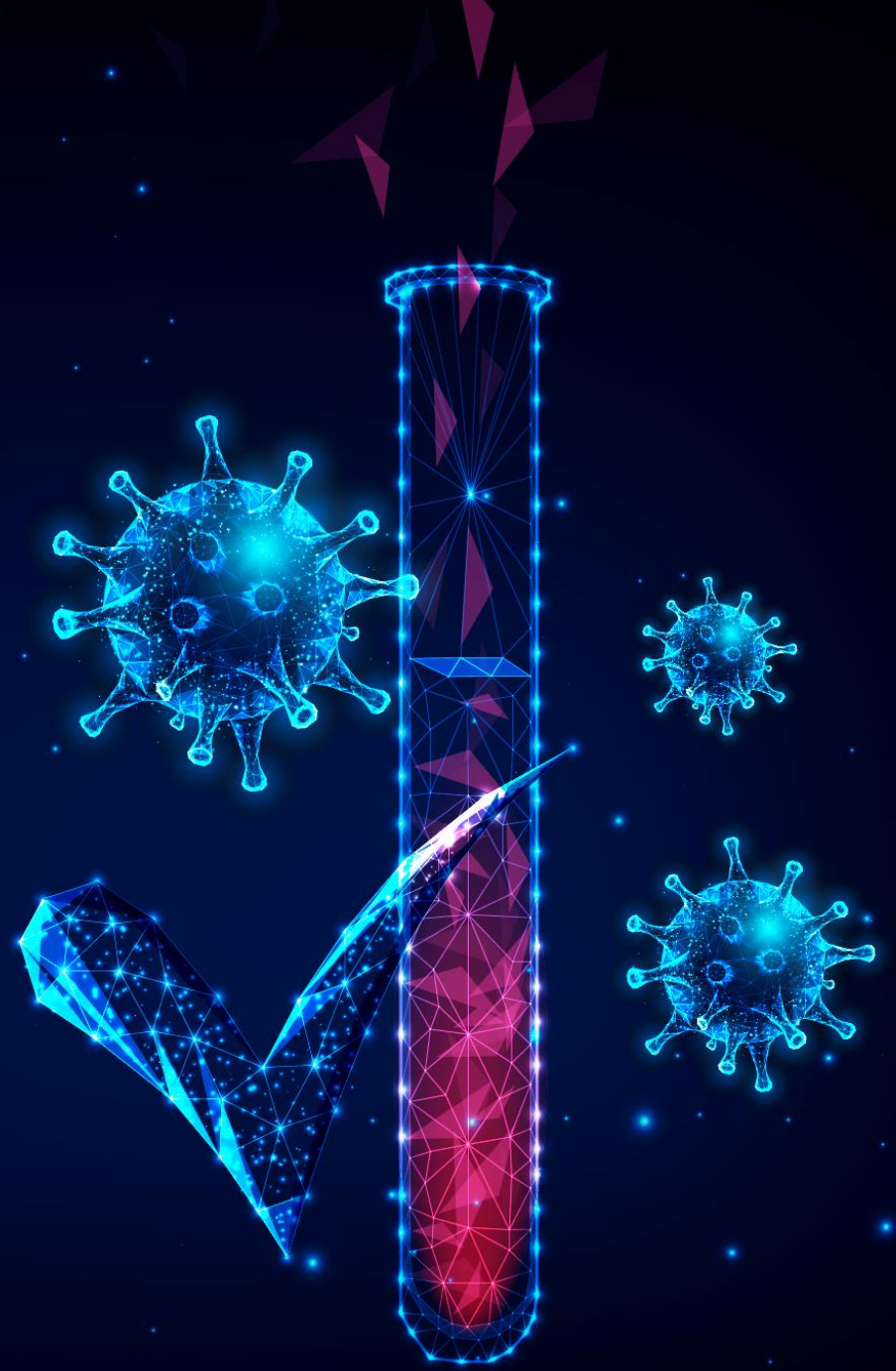
COVID-19 TESTING

April 2020

M3 GLOBAL RESEARCH

UNIVERSITY OF BIRMINGHAM | INSTITUTE OF IMMUNOLOGY AND IMMUNOTHERAPY



Authors:

Dr Alex Richter, Dr Adrian Shields, and Professor Drayson, University of Birmingham
Anton Richter, Neil Phillips, and Hannah Brown, M3 Global Research

Developed in partnership with:

Foreword

This collaboration between M3 and the University of Birmingham provides an unprecedented global insight into the opinions of health care professionals regarding the emerging diagnostic landscape for COVID-19.

This project explores preference for different diagnostic test options and how these might be deployed in local clinical practice. The pipeline of antigen and antibody tests is evolving rapidly and the perspective of health care professionals is essential to guiding this development.

Dr. Alex Richter, University of Birmingham, April 2020

Overview

This research study investigated how 20,996 health care professionals (HCP), in 29 countries, might use SARS-CoV-2 antigen and antibody tests in COVID-19 cases. We explore questions around choice of test, type of test, when they should be used, and mode of delivery, as well as preferences about sensitivity and specificity, to inform the development of new tests.

Methodology

A 10-minute online quantitative survey was conducted with a random sample of HCPs. Recruitment was via email to members of M3 Global Research's proprietary panel, and partner panels Ekas, Eksen, Fine, m360 Research, M3 India, M3 Inc., Medi:Gate, Medlive, Soda, and Top Of Mind. The sponsor was not named at any point in the research, and there was no incentive for taking part. Fieldwork for this study was conducted between 16-23 April 2020, on the Confirmit platform. Data were analysed based on all respondents, at country level, and comparing responses from primary care, and secondary care physicians.

20,996 healthcare professionals working across a broad range of specialties in North and South America, Europe, Africa, Asia, and Australasia participated in the study. The sample included 2,628 doctors working in primary care, 11,412 secondary care physicians, 1,452 clinical healthcare workers, 1,519 nurses, 1,172 pharmacists, and 2,813 'other' HCPs.

AMERICAS	
Argentina	260
Brazil	934
Canada	434
Colombia	261
Mexico	423
United States	5,113

ASIA / AUSTRALASIA	
Australia	990
China	705
India	798
Japan	2,049
New Zealand	37
South Korea	1,194
Turkey	348

AFRICA	
South Africa	272

EUROPE	
Austria	89
Belgium	160
Denmark	80
Finland	48
France	1,141
Germany	704
Italy	1,905
Netherlands	152
Norway	41
Poland	73
Russia	283
Spain	1,313
Sweden	97
Switzerland	108
United Kingdom	984

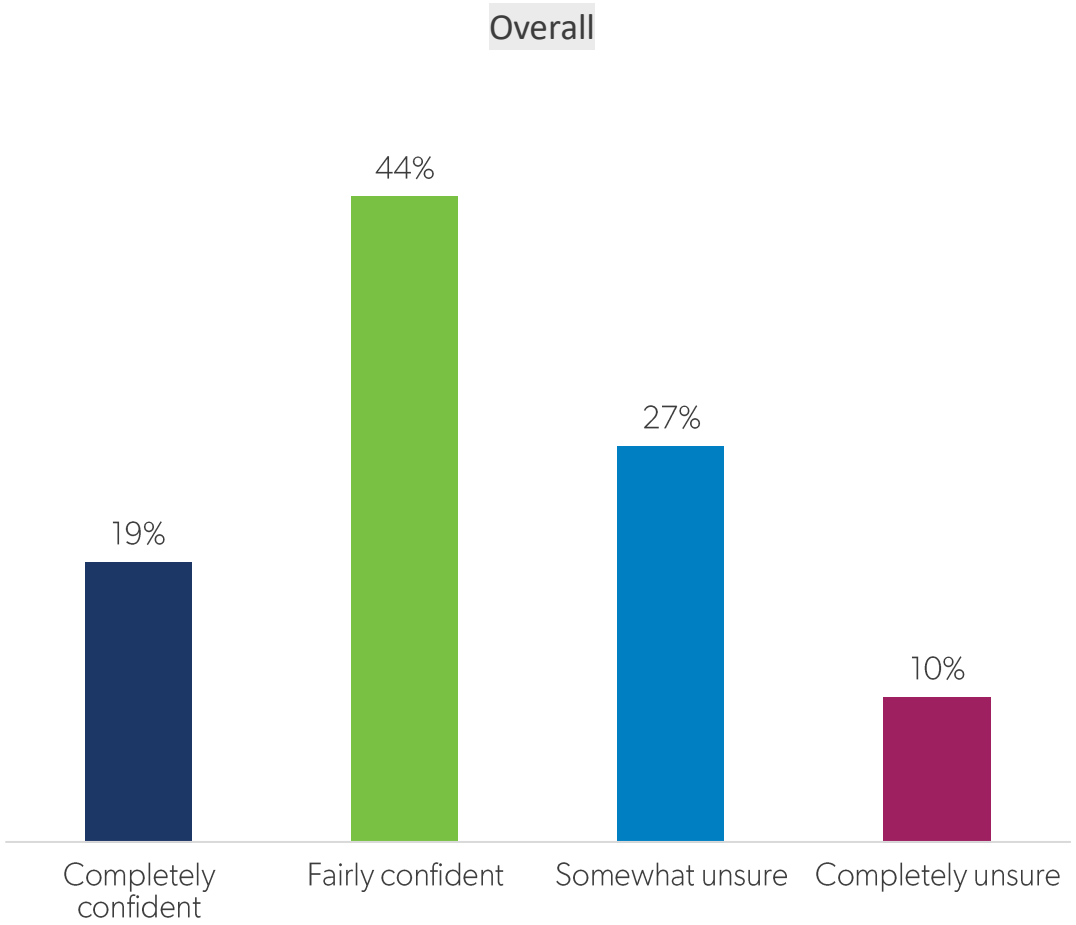
Choice of Test

Overall, 63% of HCP respondents are confident that they know which test should be used during which stage of the illness. This increases to 67% in primary care physicians.

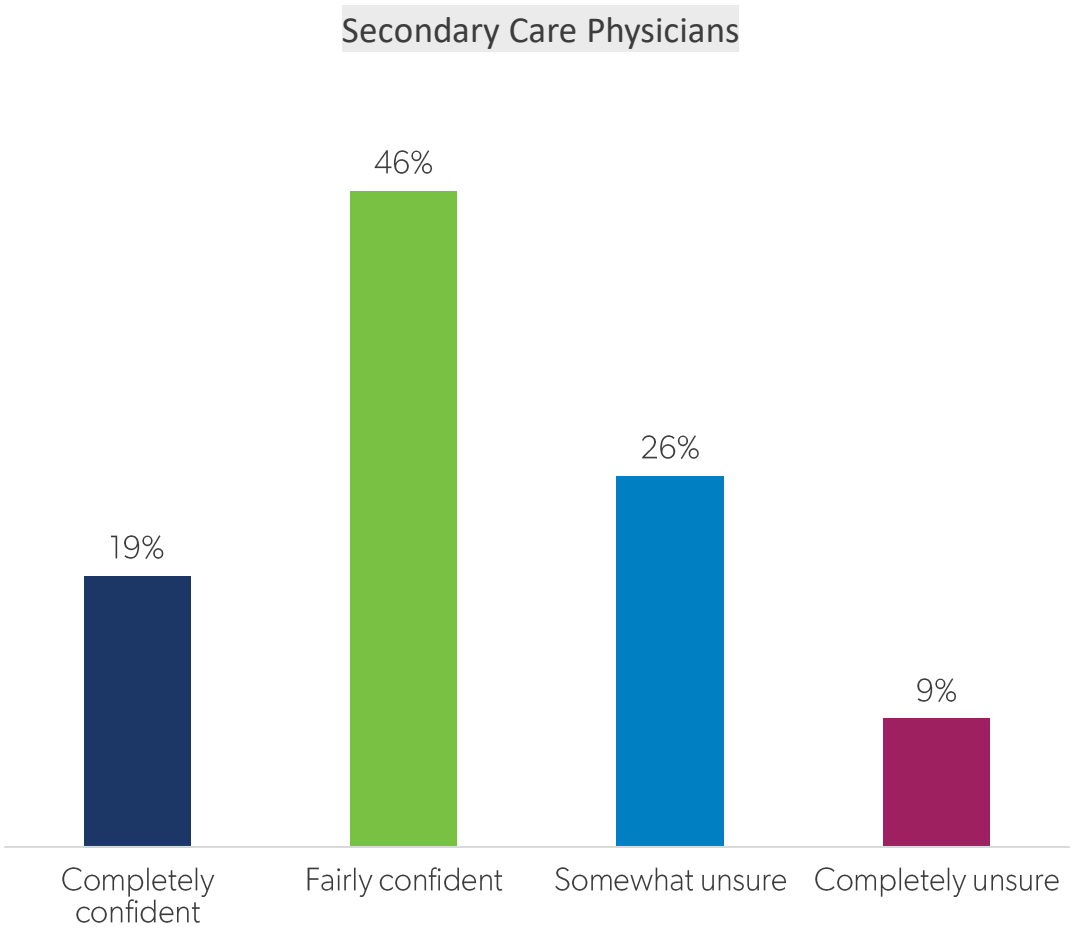
At a country level confidence is highest in Argentina (81%), China (81%), India (87%), and South Africa (93%).

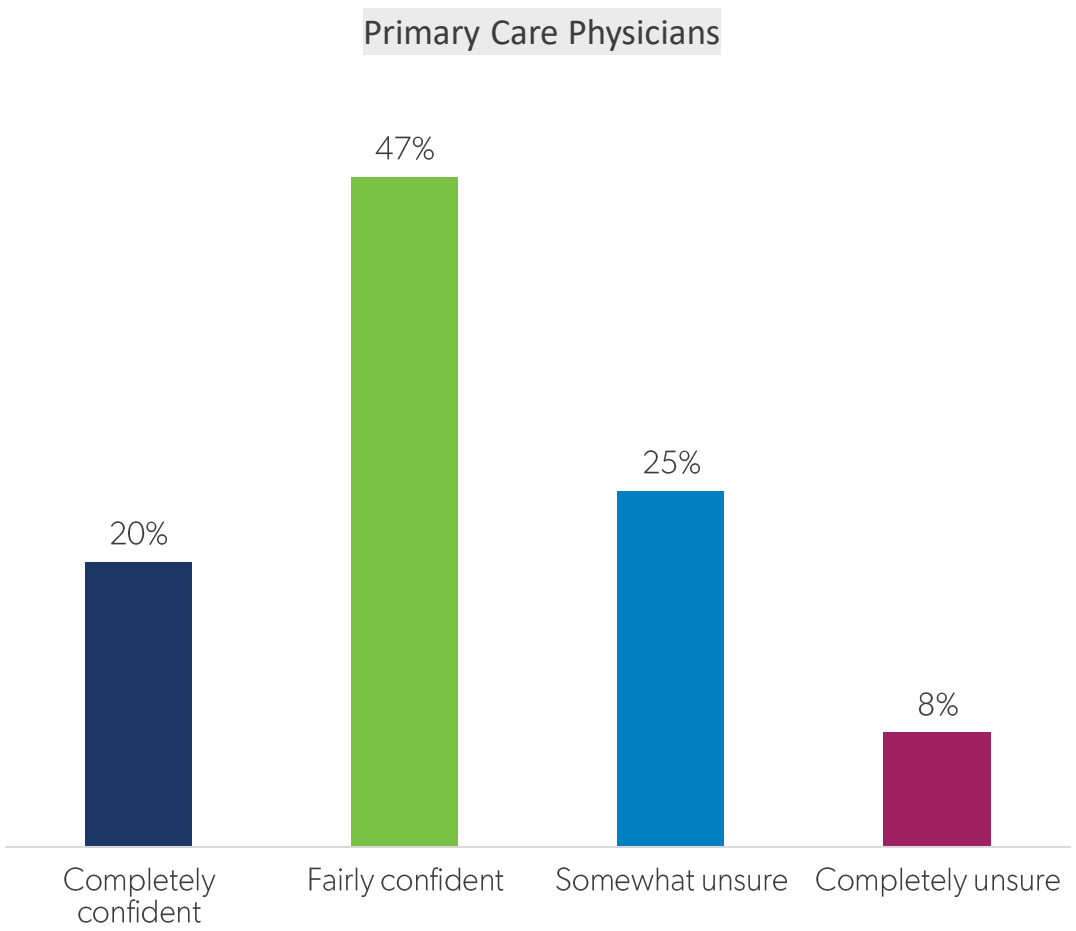
Japan stands out in terms of low confidence in decision making on testing, with 78% of respondents unsure which test should be used, and when.

How confident do you personally feel in knowing which test should be undertaken during which stage of the illness?

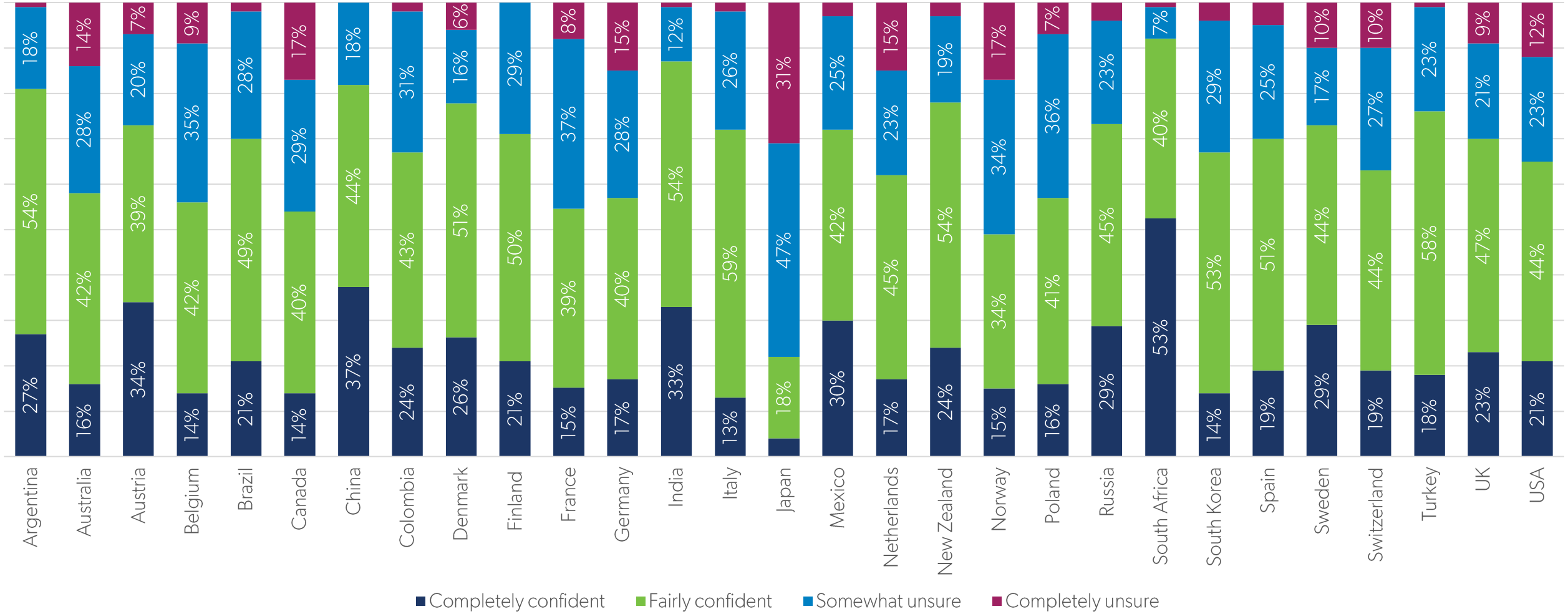


How confident do you personally feel in knowing which test should be undertaken during which stage of the illness?





How confident do you personally feel in knowing which test should be undertaken during which stage of the illness?



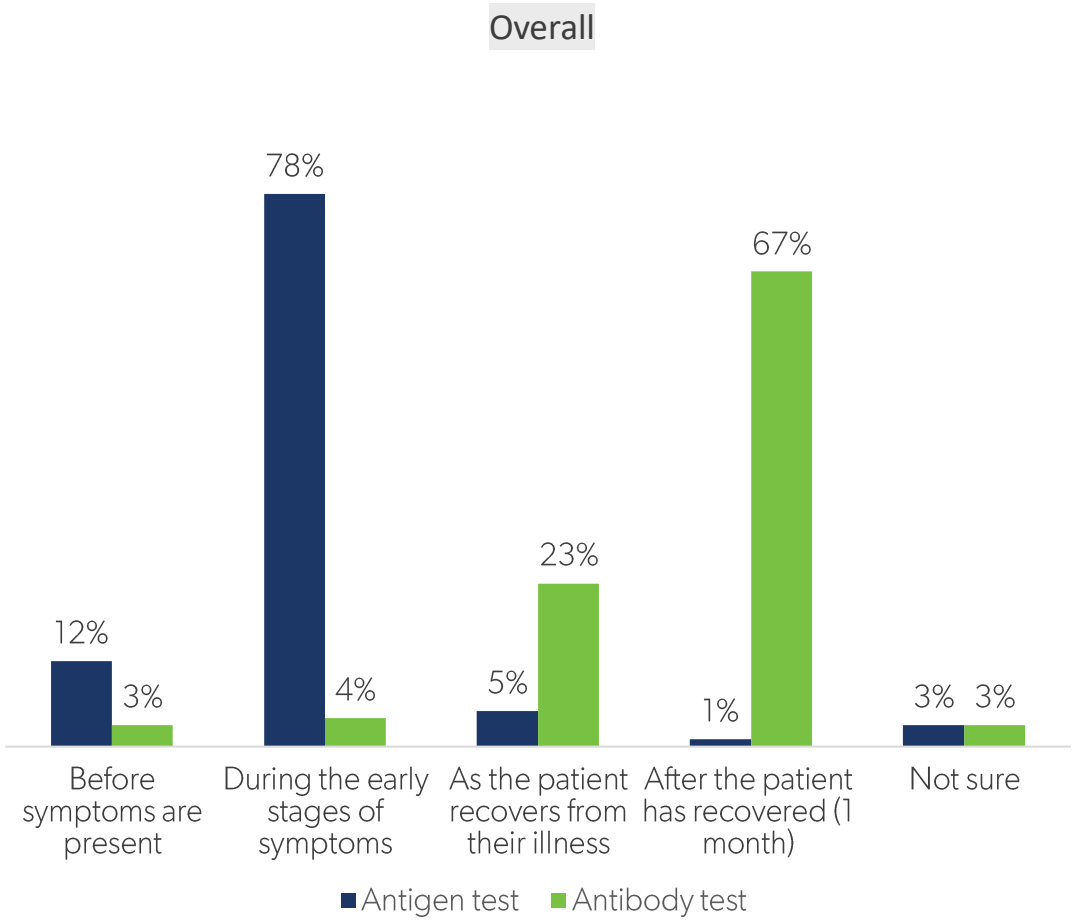
Stage of Illness

Respondents are generally more confident about the relative accuracy of antigen tests and the stage of illness they should be used in. With antibody testing there is less clarity on whether a test should be used during the recovery phase (23%), or one-month post-recovery (67%).

At a country level, Indian and South African respondents are most likely to use an antigen test earlier, with 32% of South African HCPs, and 28% of Indian HCPs, agreeing that the test would be most accurate before symptoms are present.

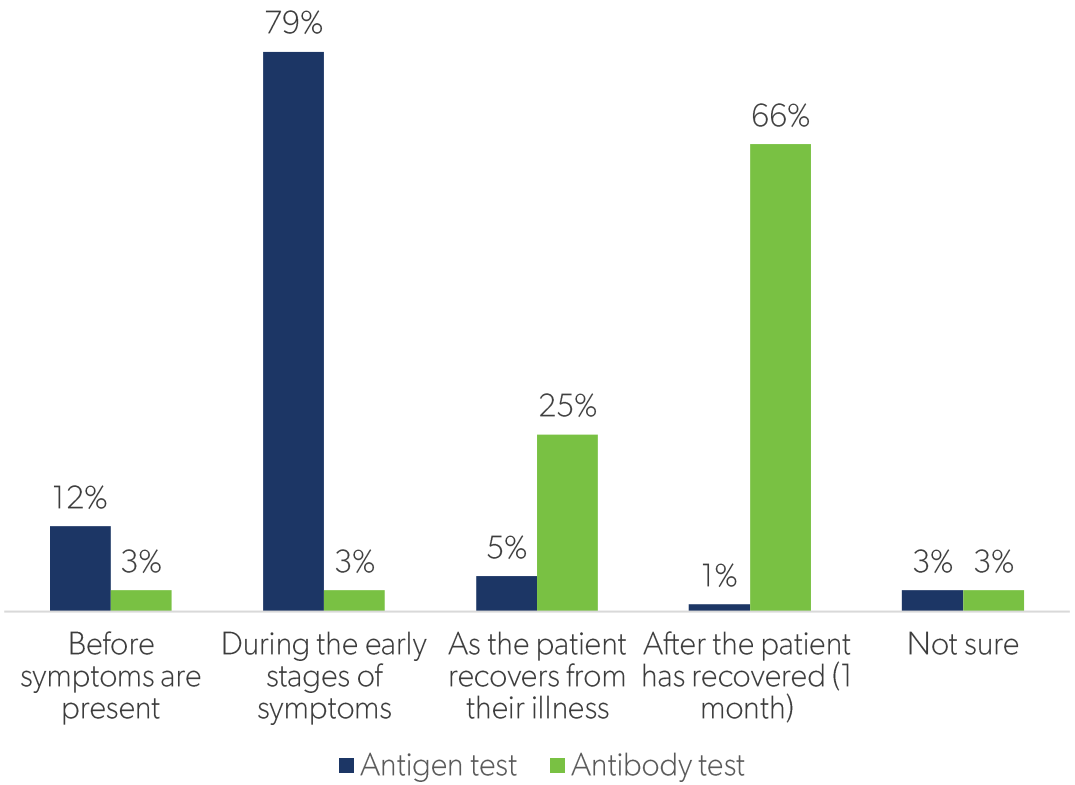
Responses for the antibody test are less polarised, but again Indian and South African HCPs would use tests earlier.

At which stage of the illness is each test most likely to be accurate?

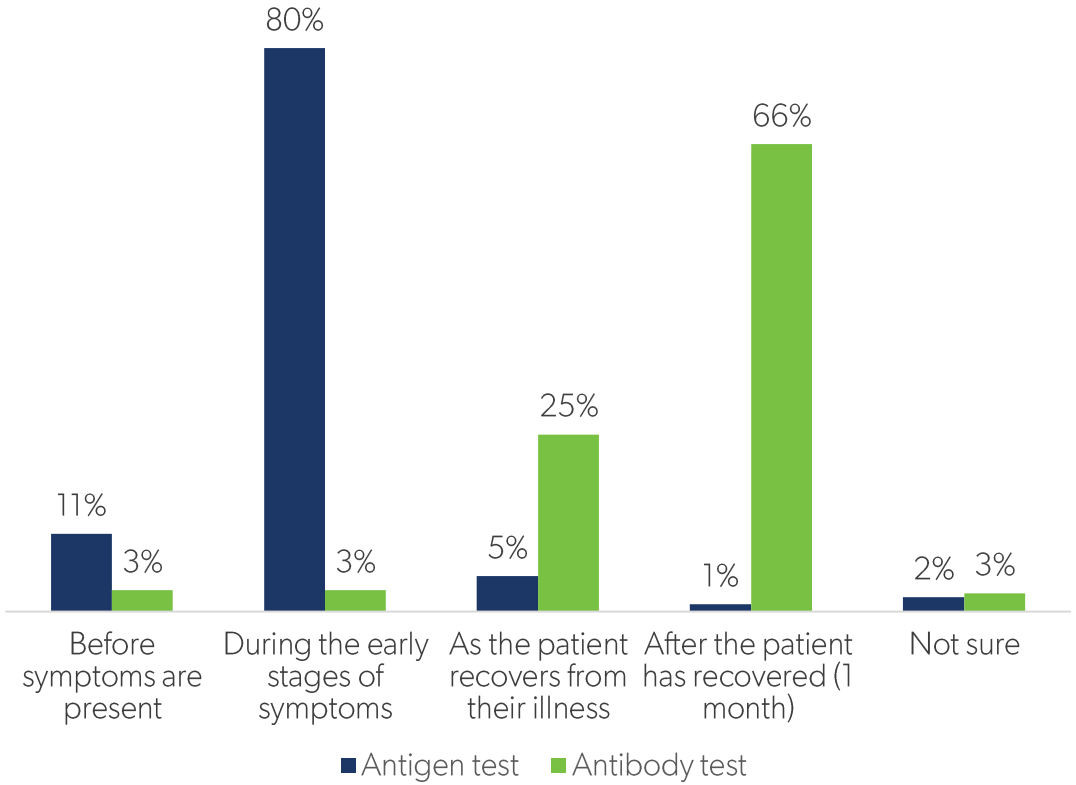


At which stage of the illness is each test most likely to be accurate?

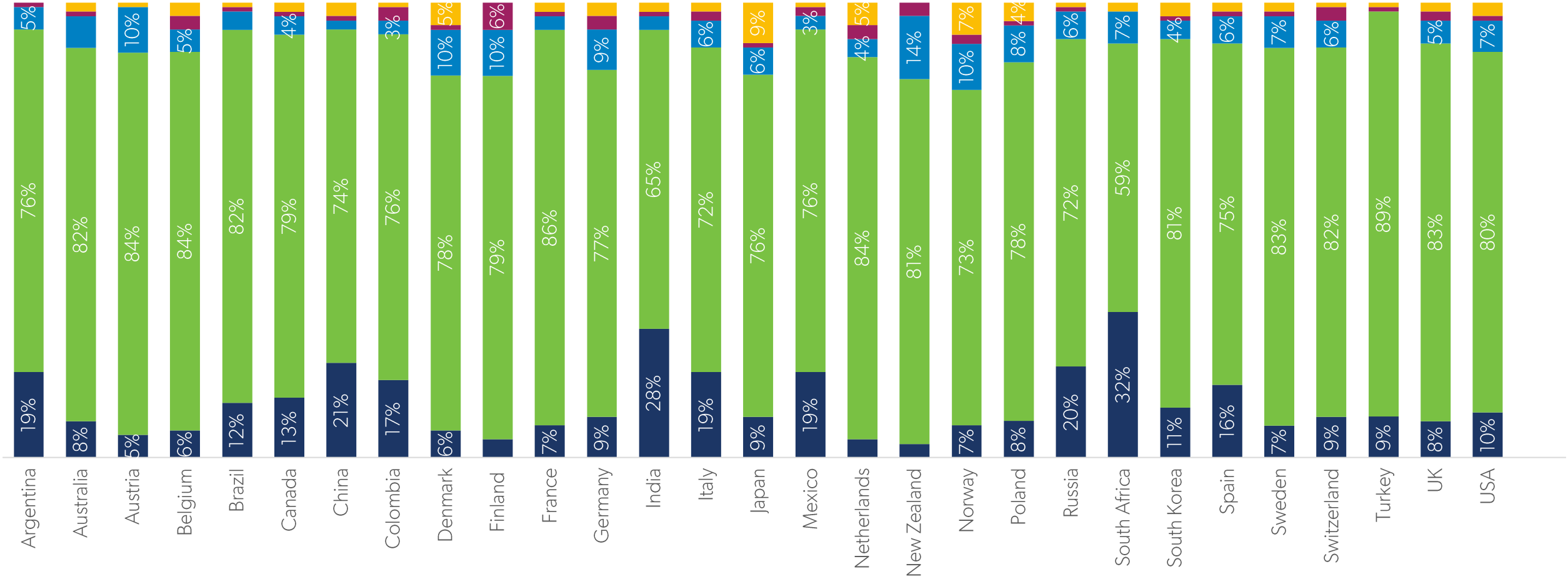
Secondary Care Physicians



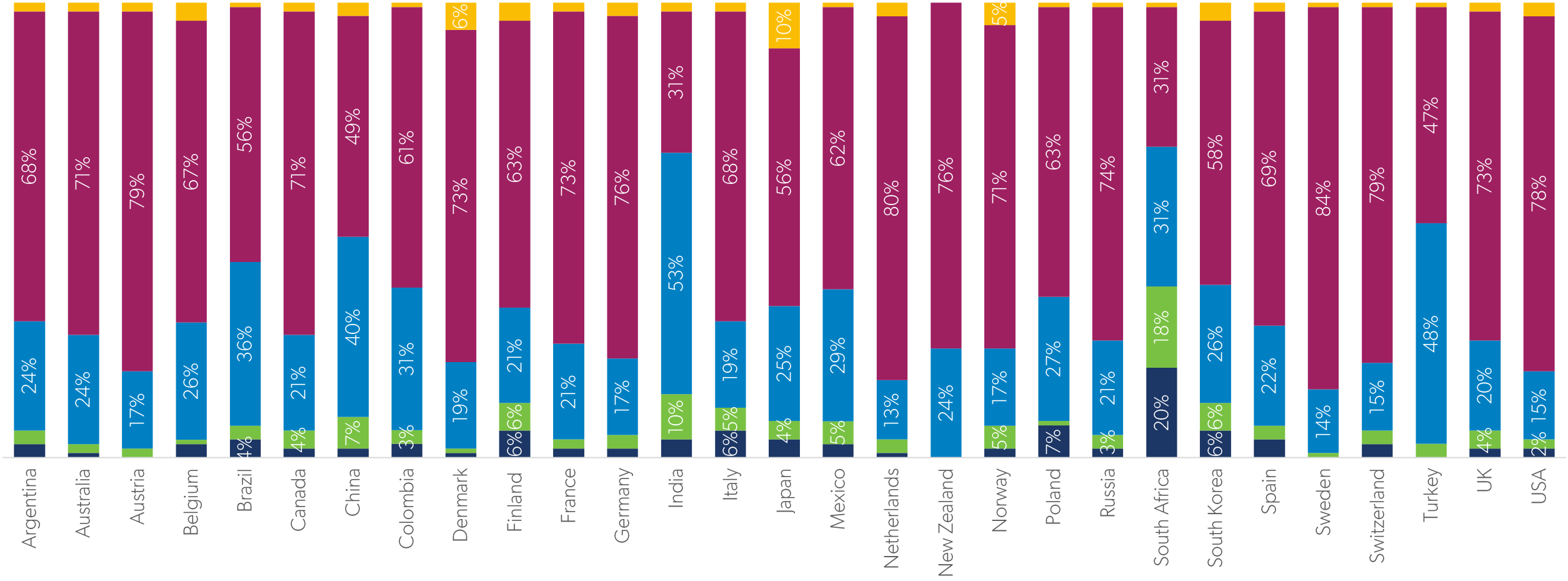
Primary Care Physicians



At which stage of the illness is each test most likely to be accurate? Antigen test



At which stage of the illness is each test most likely to be accurate? Antibody test

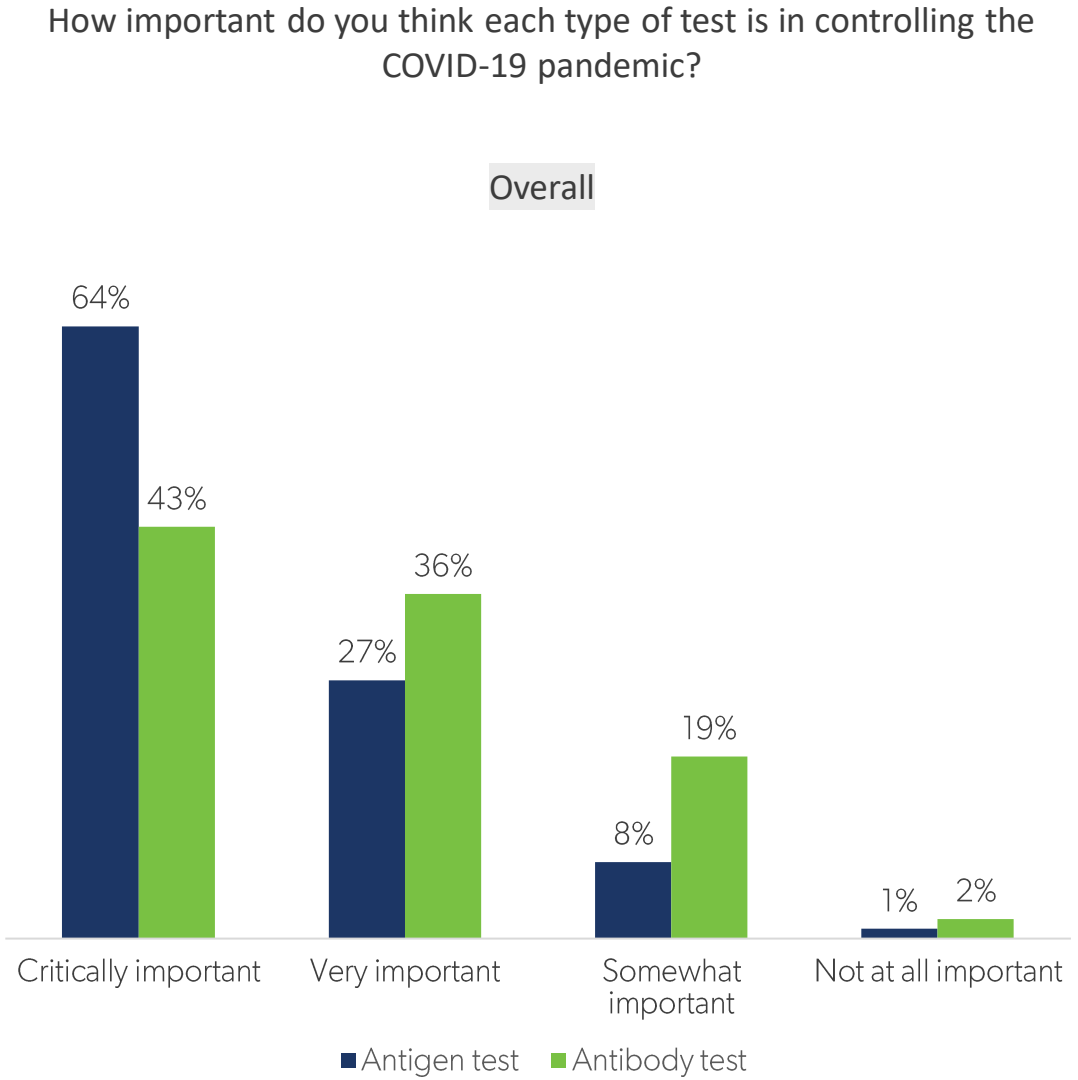


Importance of Tests

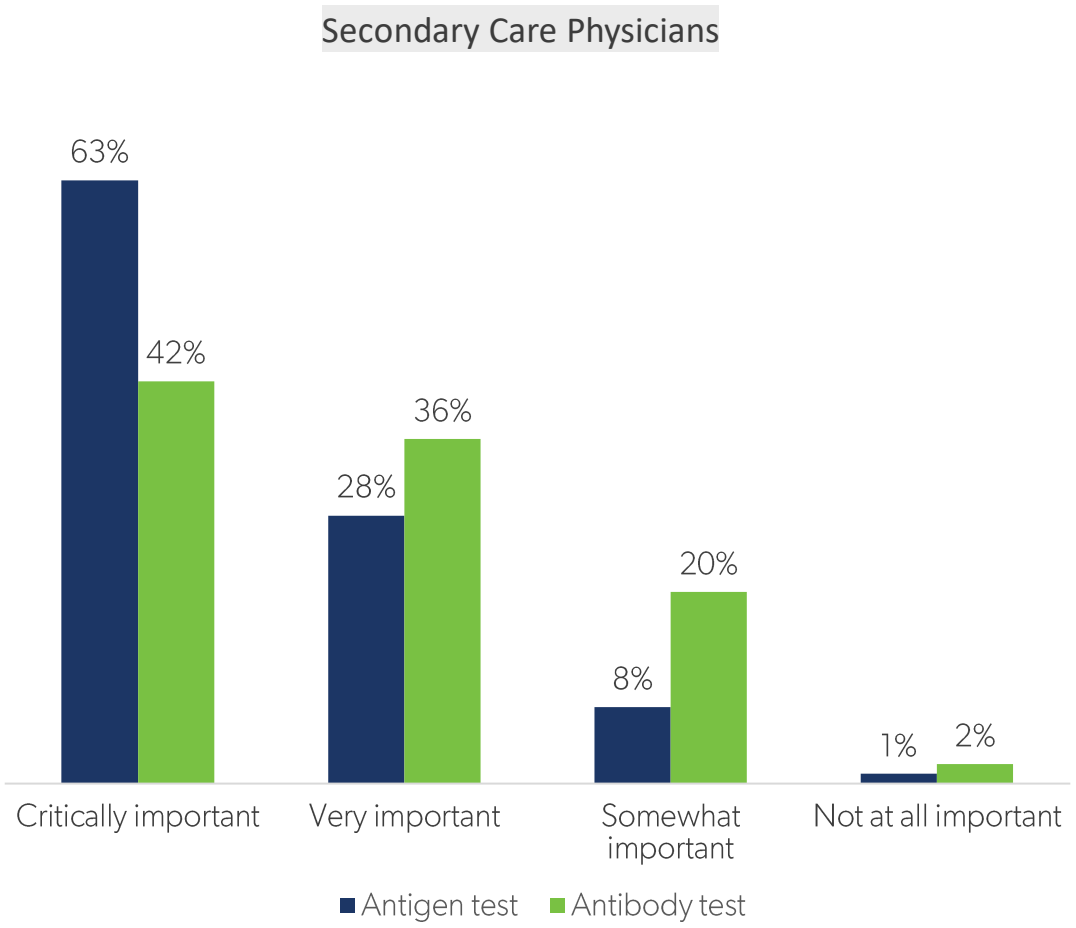
When asked how important the antibody and antigen tests are in controlling the pandemic, support for the antigen test is much more pronounced. 91% believe an antigen test is critically or very important, compared to 79% for an antibody test.

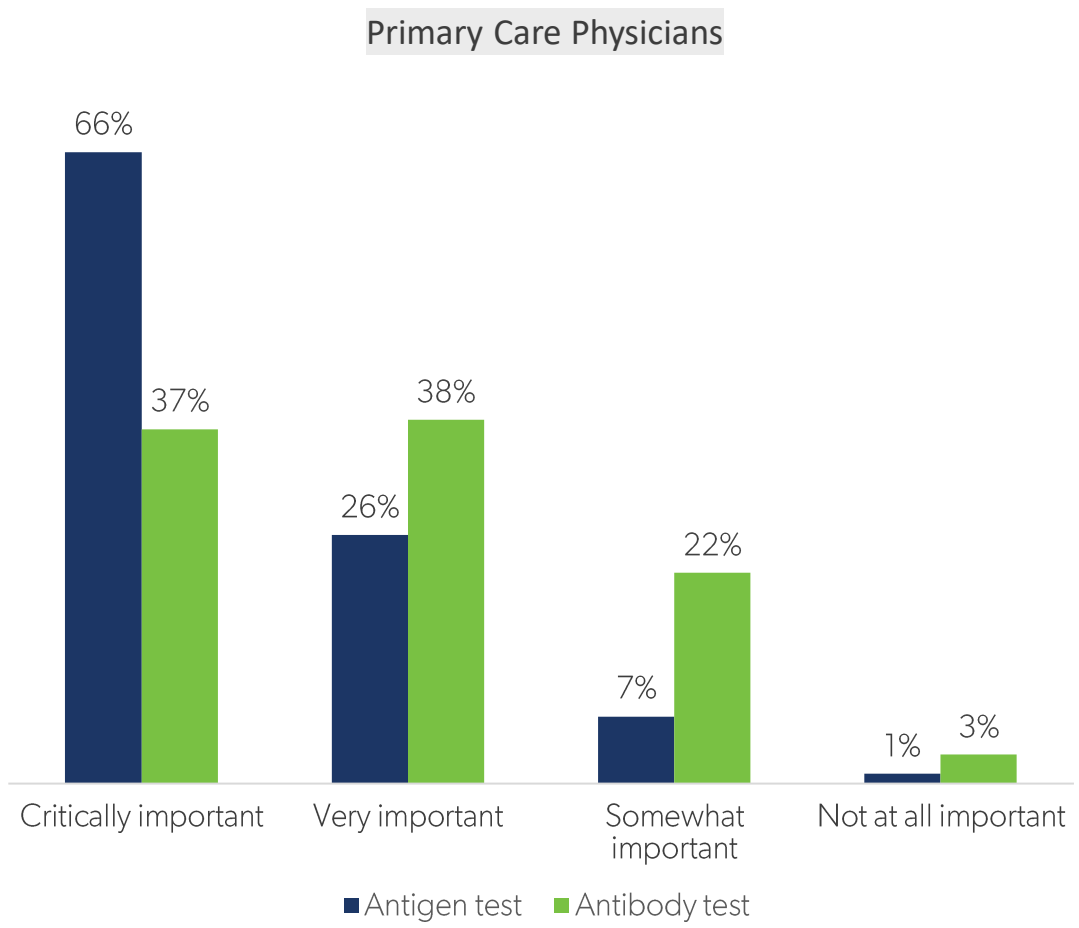
There is very little divergence when comparing secondary and primary care respondents, although GPs (75% choosing 'critically important' or 'very important') are less supportive of an antibody test than secondary care physicians (78%).

At a country level the antigen test is seen as most important to HCPs in Australia, China, New Zealand, and Poland. By contrast, the antibody test is seen as critically important by 60% French respondents, and 59% US respondents.

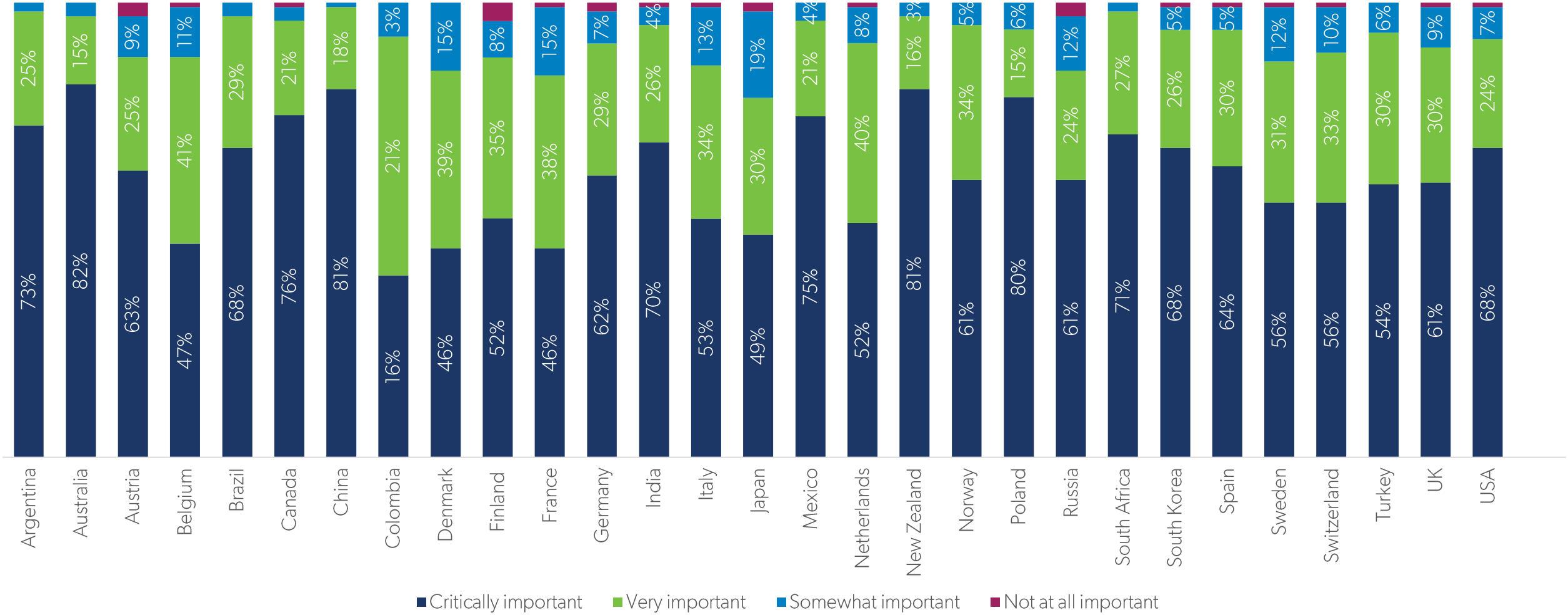


How important do you think each type of test is in controlling the COVID-19 pandemic?

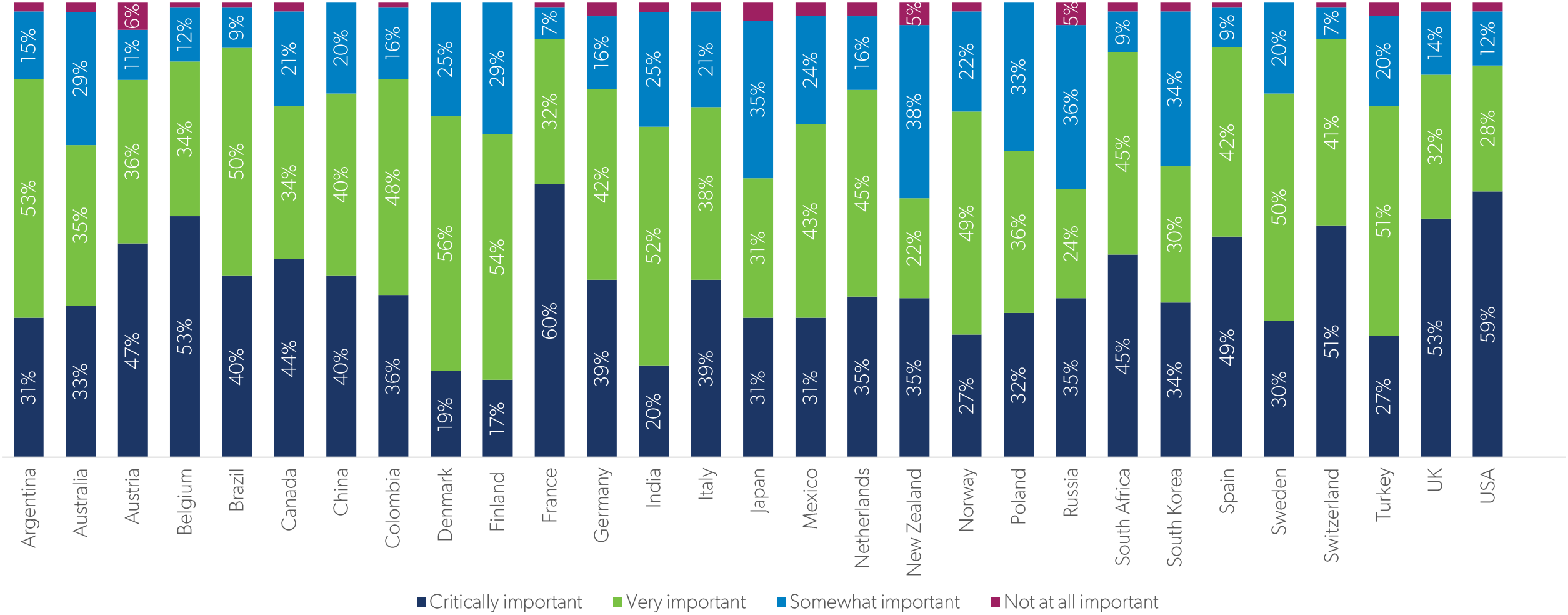




How important do you think each type of test is in controlling the COVID-19 pandemic? Antigen test



How important do you think each type of test is in controlling the COVID-19 pandemic? Antibody test



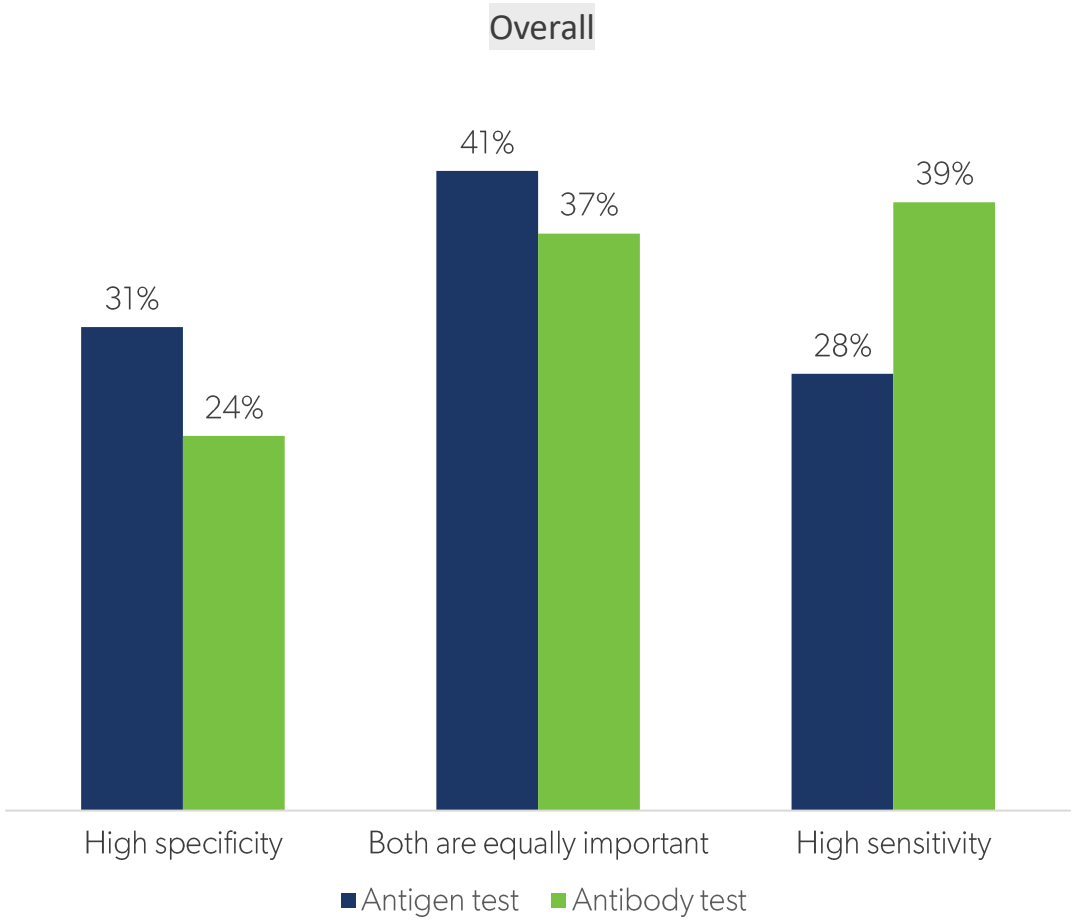
Specificity or Sensitivity?

Overall, most HCPs would prefer antigen tests with both high sensitivity and high specificity, with very little variation between the primary and secondary care respondents.

For the antibody tests there is a clear preference for sensitivity over specificity, requiring tests to specifically include those who have already had COVID-19.

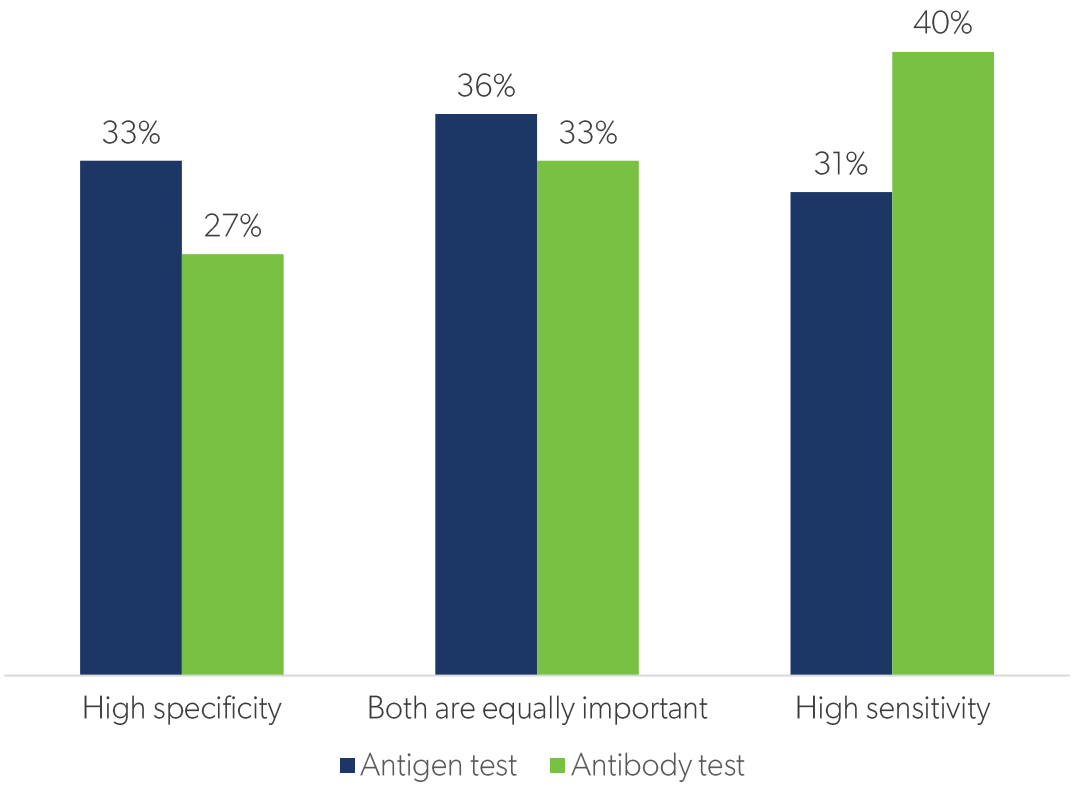
For antigen tests there is a slight preference for specificity over sensitivity (i.e. a test optimised to correctly exclude people from having had COVID-19).

All tests are subject to false positives and false negatives. For each type of test please indicate your preference.

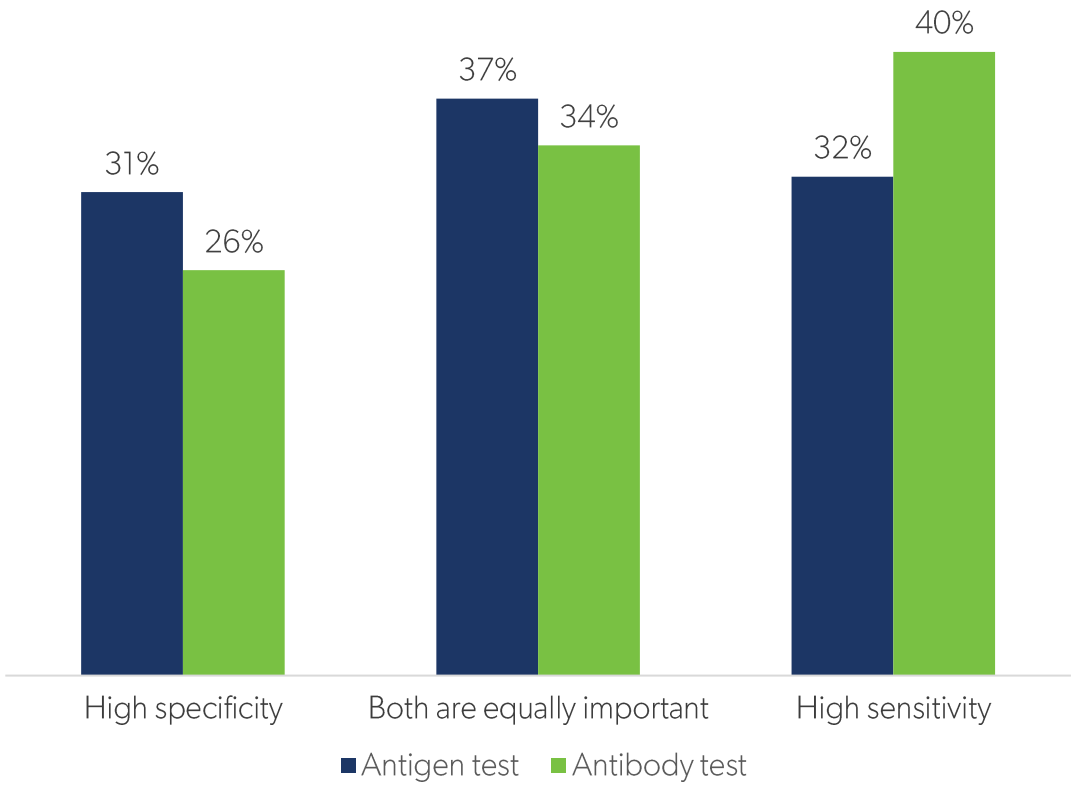


All tests are subject to false positives and false negatives. For each type of test please indicate your preference.

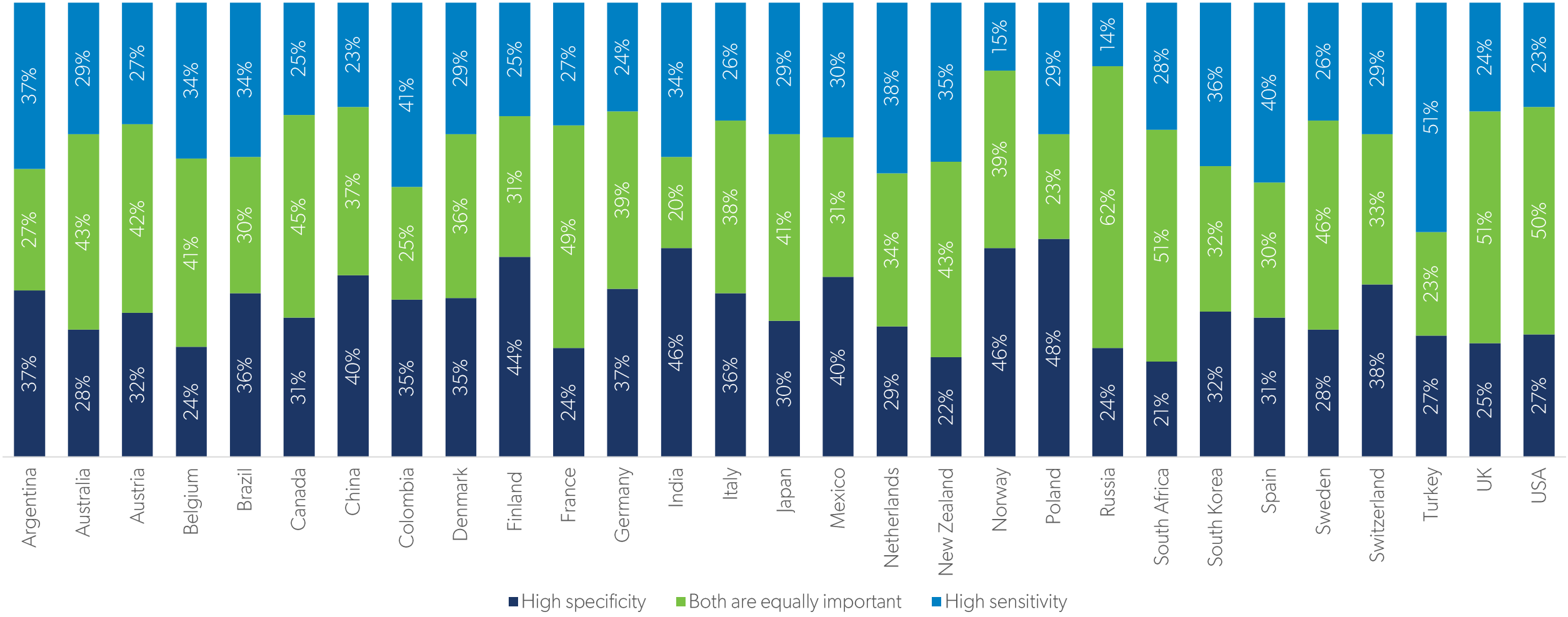
Secondary Care Physicians



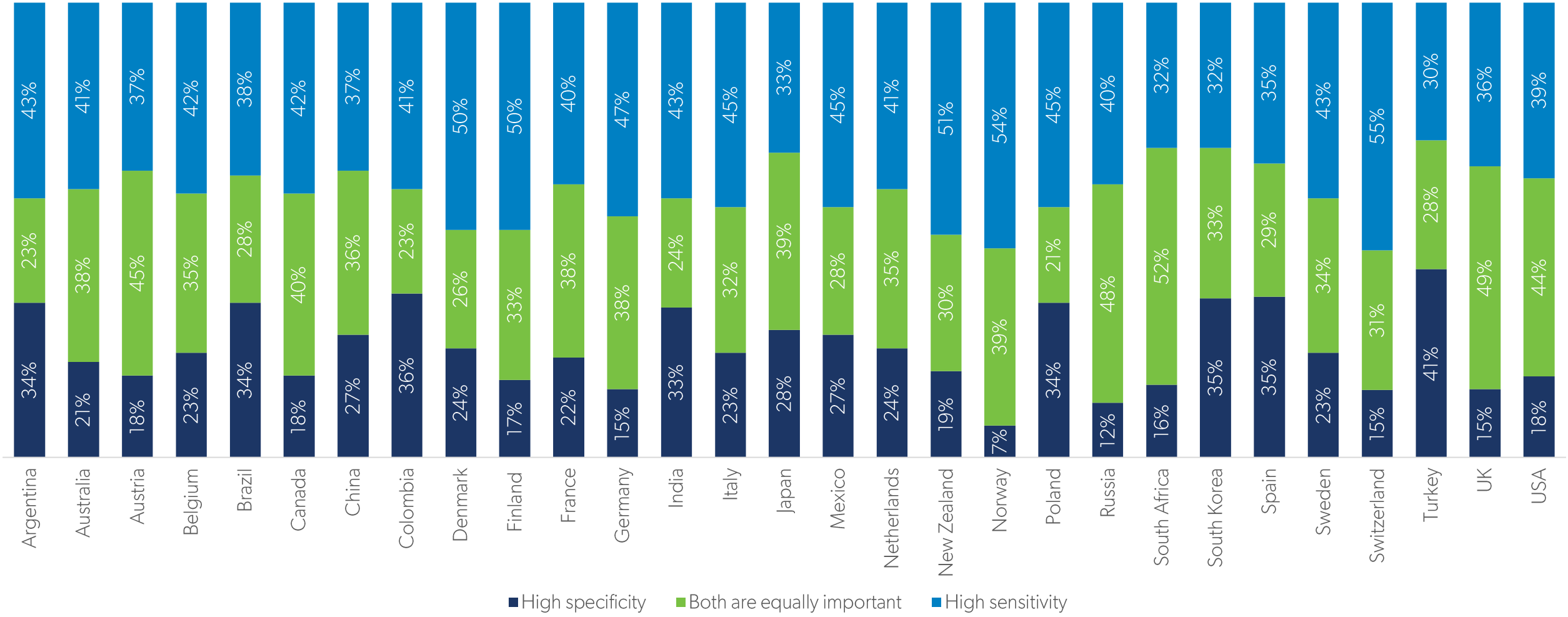
Primary Care Physicians



All tests are subject to false positives and false negatives. For each type of test please indicate your preference. Antigen test



All tests are subject to false positives and false negatives. For each type of test please indicate your preference. Antibody test



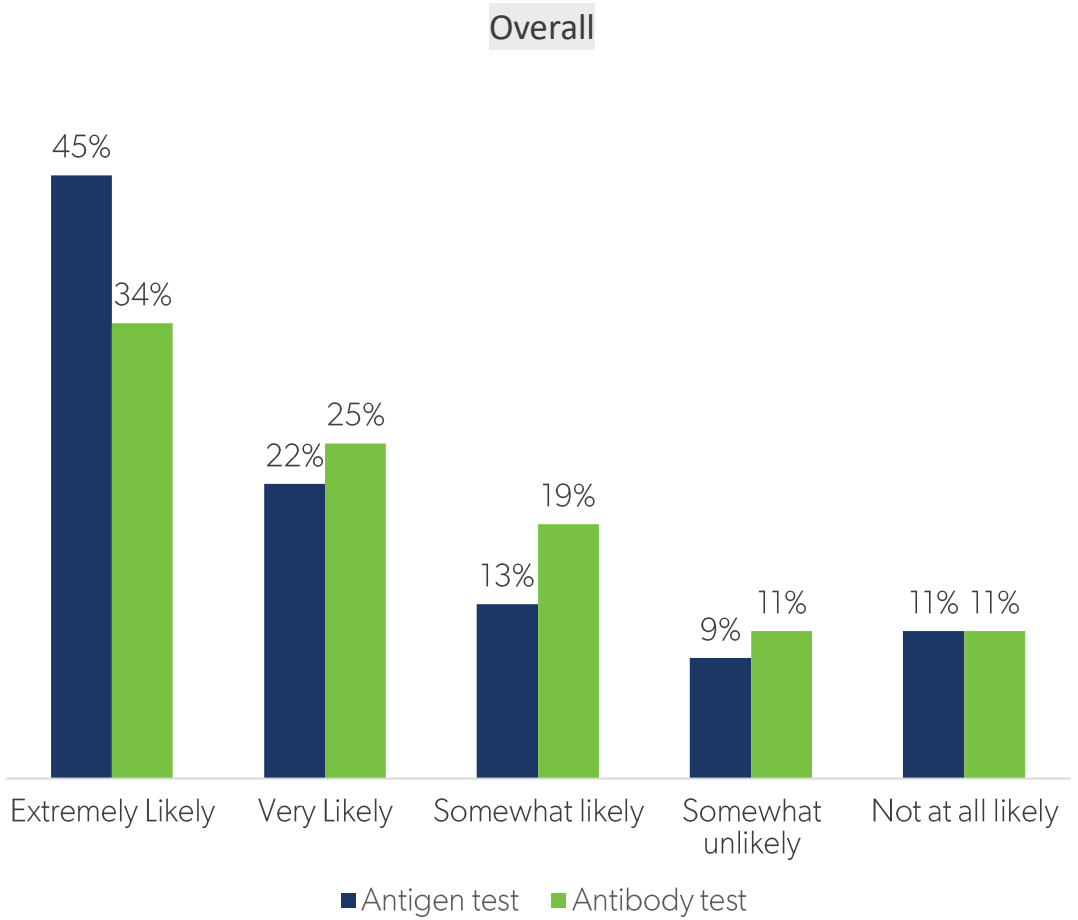
Likelihood of Test Usage

Respondents expect to be more likely to use the antigen test than the antibody test, with very little difference between primary care and secondary care physicians, with the former slightly more likely to use antibody testing.

Overall though, taking all 'positive' statements (i.e. top three), 80% of respondents think they are likely to use antigen tests, and 78% are likely to use antibody tests in their clinical practice.

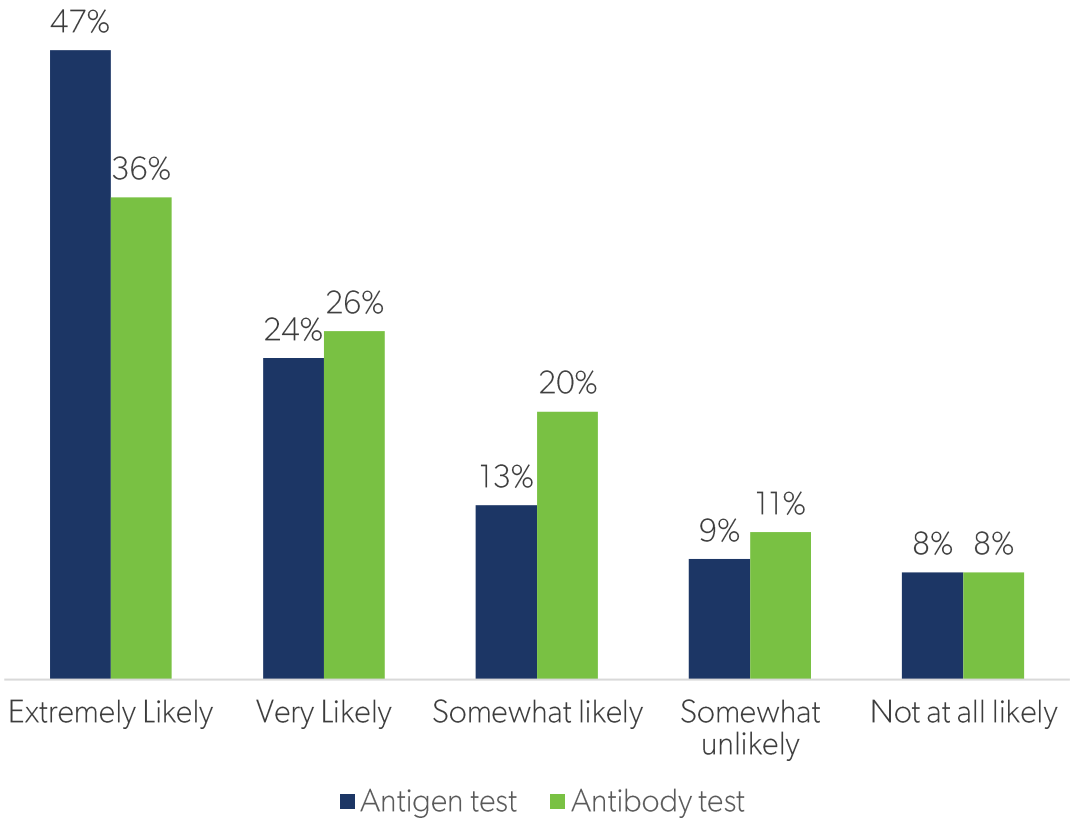
At a country level, likelihood of using the antibody test is at its lowest in Australia where 32% don't expect to use the tests, Argentina (30%), Germany (29%), Austria (30%), and South Korea (30%).

How likely are you to use each test in your clinical practice?

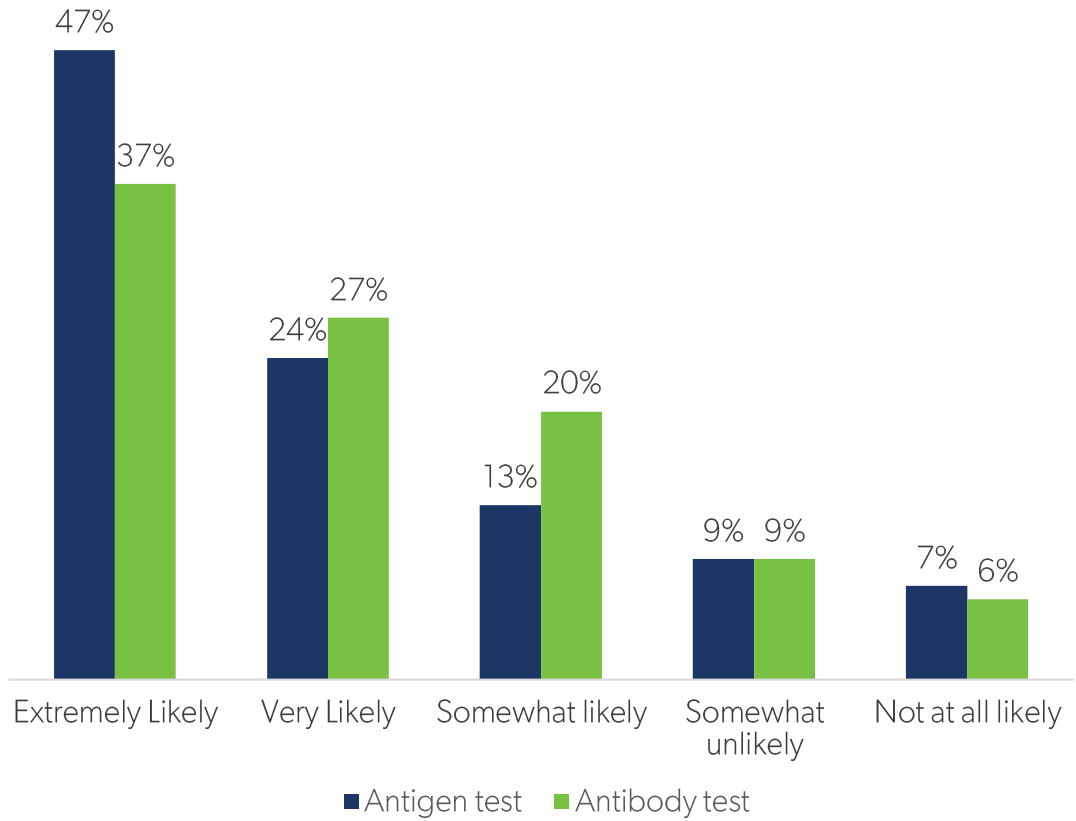


How likely are you to use each test in your clinical practice?

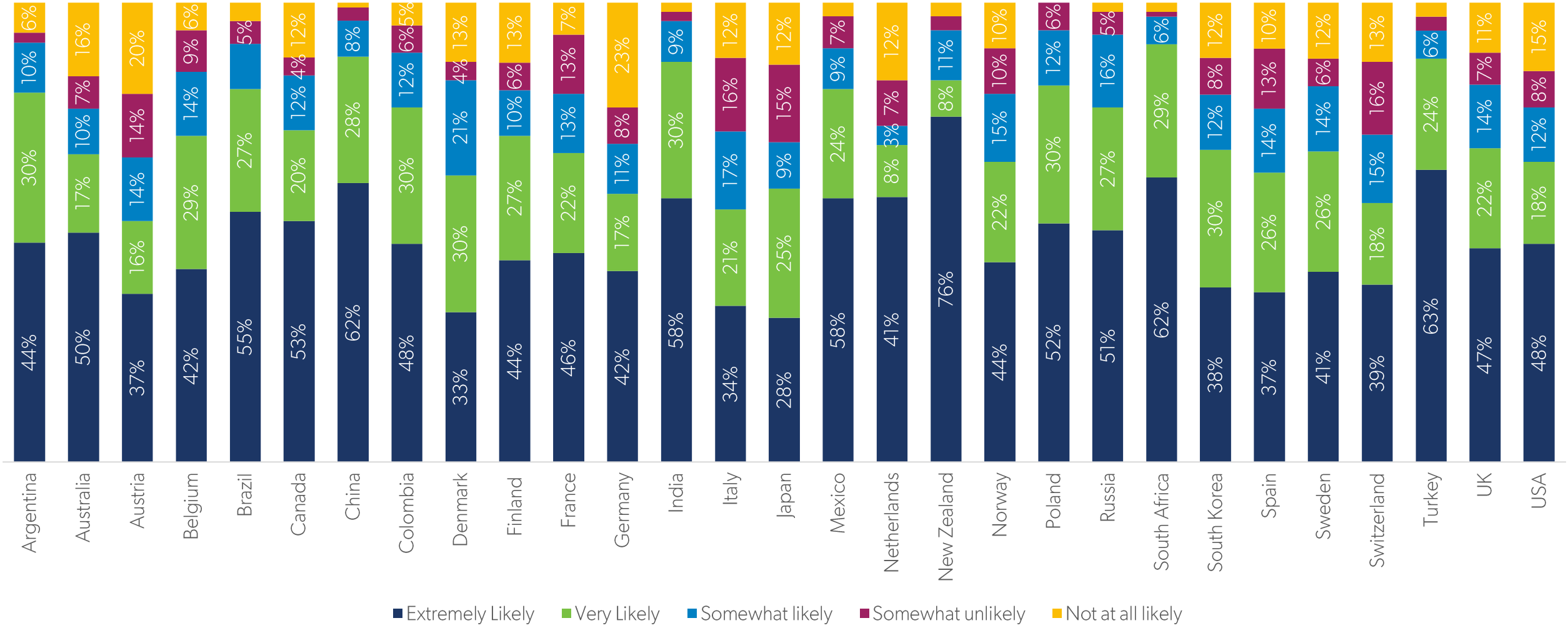
Secondary Care Physicians



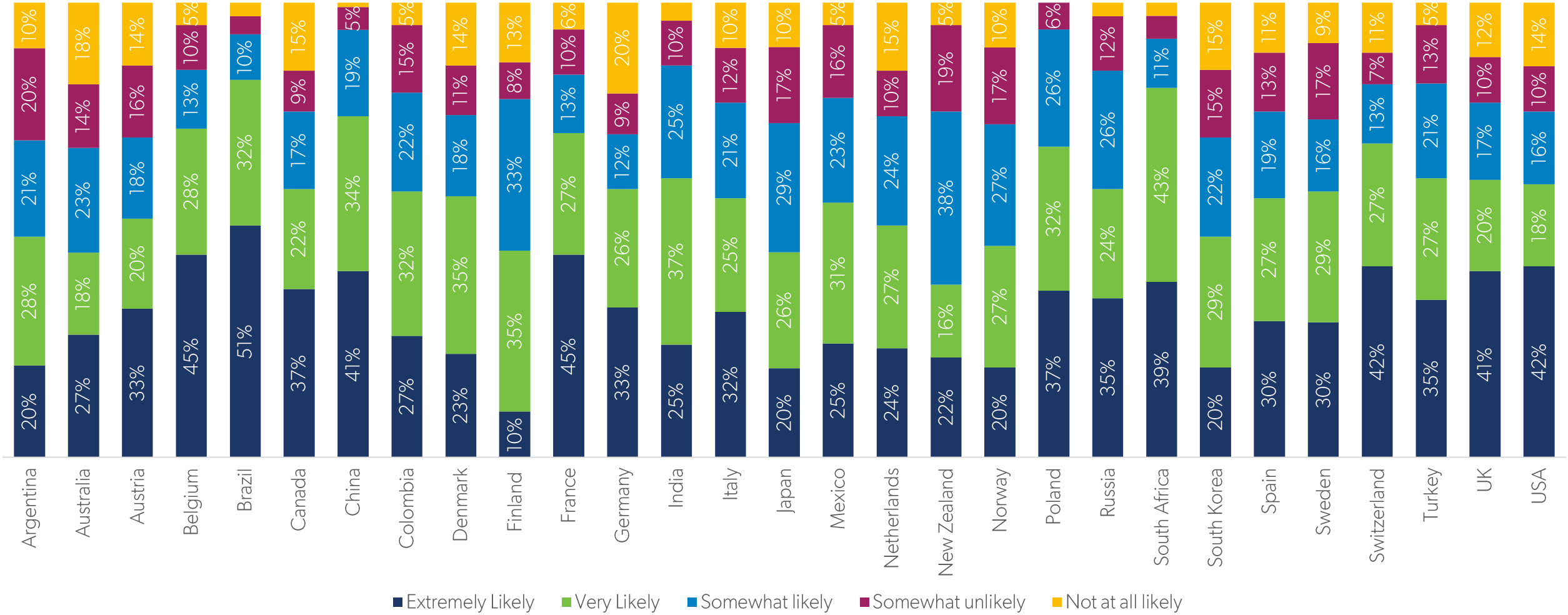
Primary Care Physicians



How likely are you to use the antigen test in your clinical practice? Antigen test



How likely are you to use the antibody test in your clinical practice? Antibody test



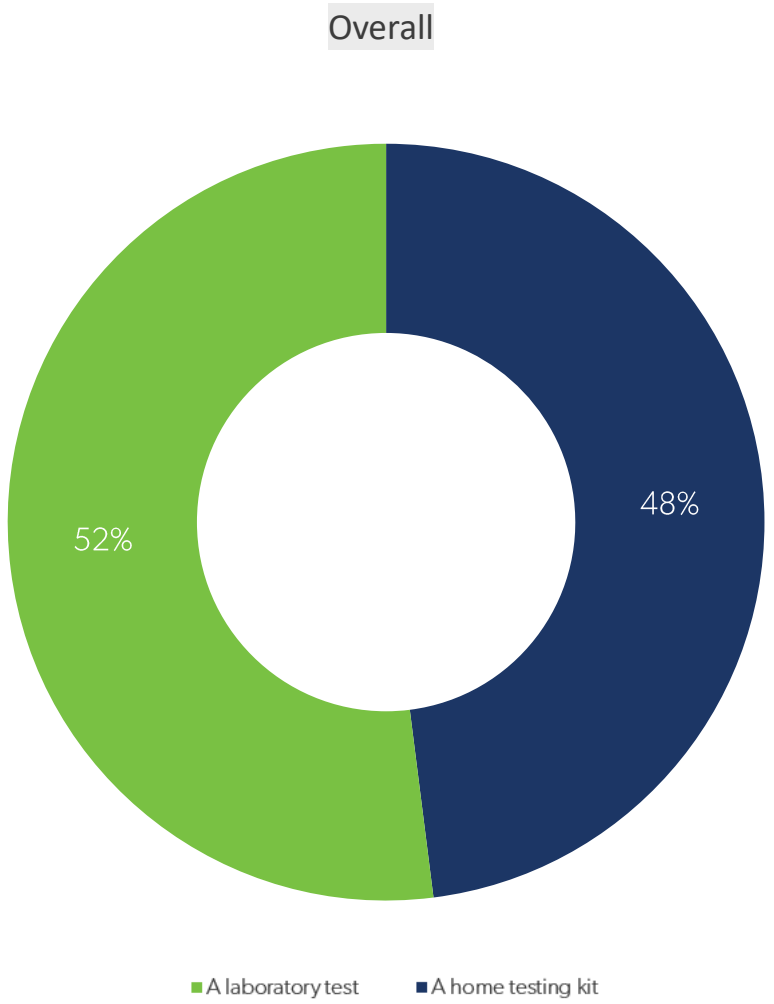
Home or Lab Testing?

Across all respondents there is a slight preference for laboratory testing (52%) rather than home testing (48%), increasing slightly to 53% in primary care respondents.

This question sees the most divergence at a country level, reflecting different cultures, healthcare systems and expectations. In Finland, for example, 90% respondents would want laboratory testing. By contrast in the UK and Poland, 63% prefer home testing.

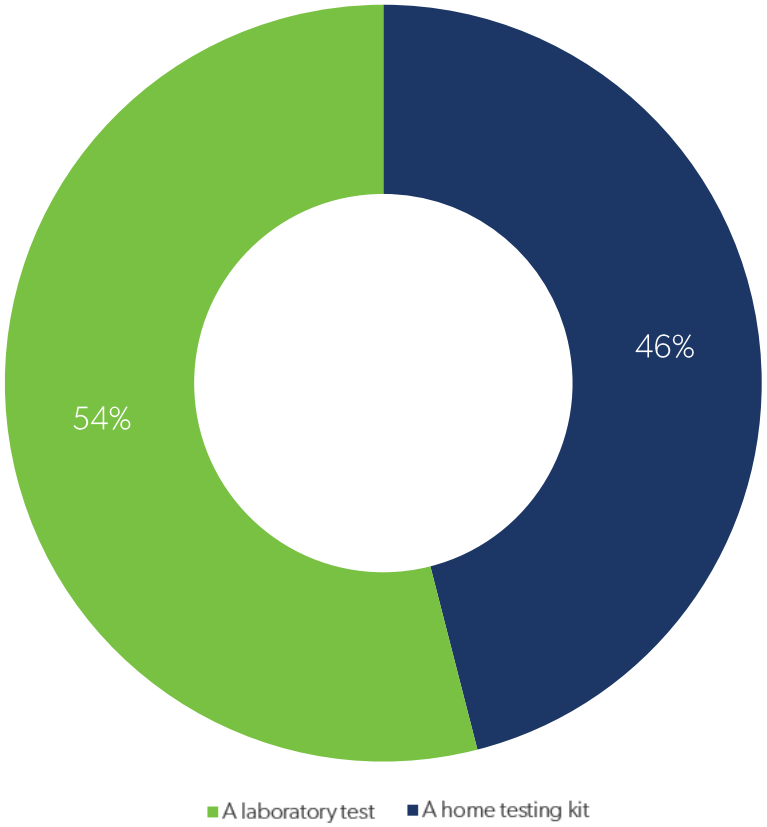
Other strong support for laboratory testing emerges from China (63%), Belgium (66%), South Korea (67%), Sweden (73%), and Turkey (69%).

For COVID-19 tests in general, would you prefer a home testing option or a laboratory test?

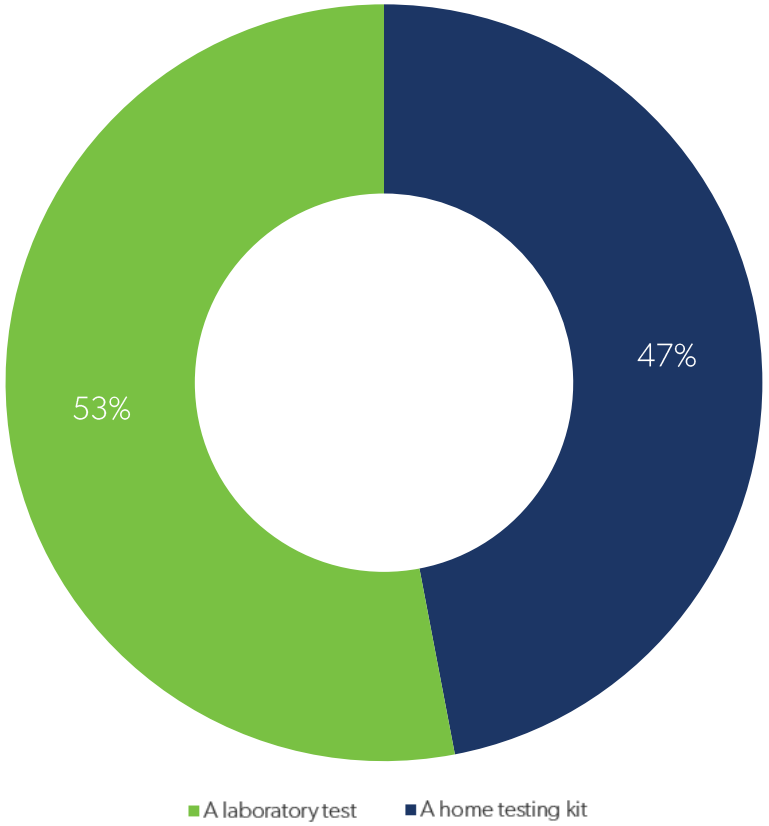


For COVID-19 tests in general, would you prefer a home testing option or a laboratory test?

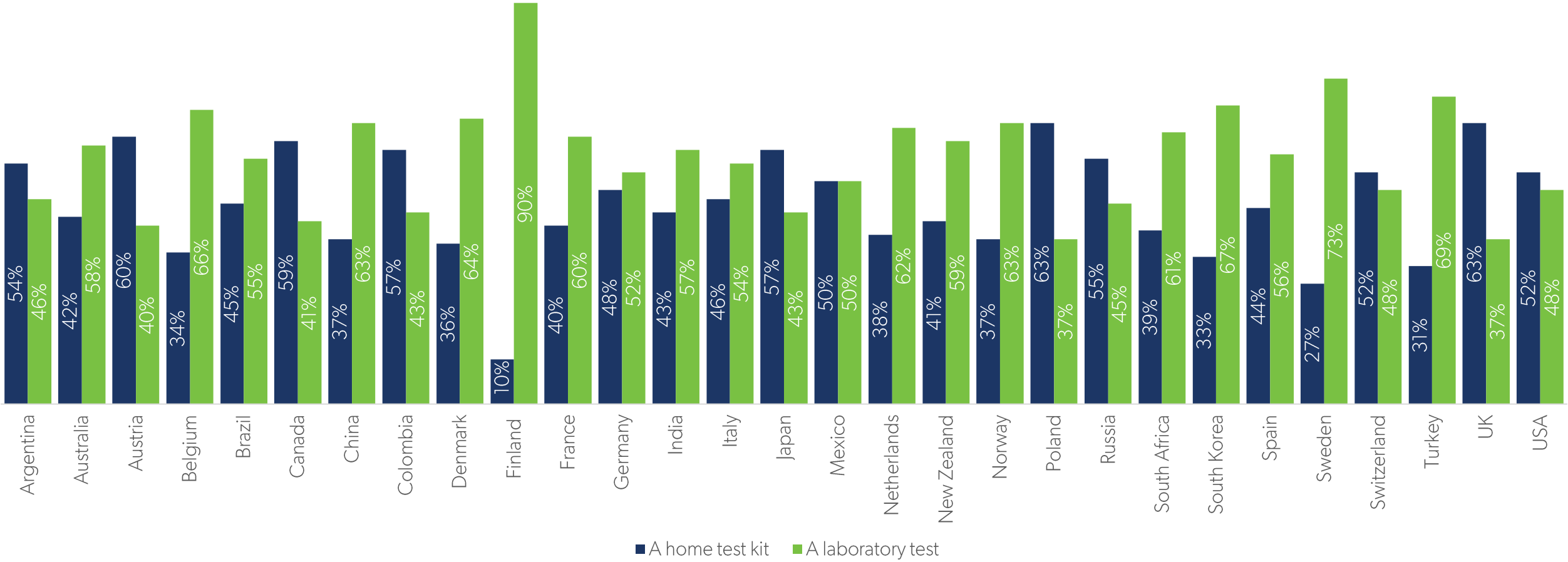
Secondary Care Physicians



Primary Care Physicians



For COVID-19 tests in general, would you prefer a home testing option or a laboratory test?



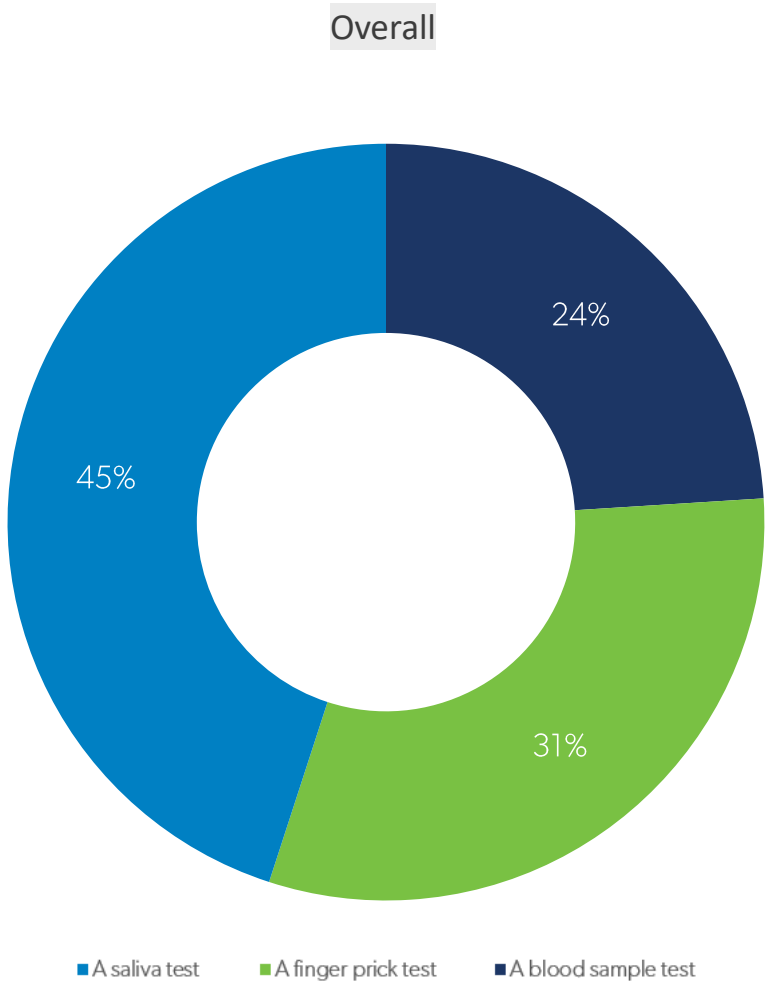
Type of Test

Overall there is a preference for saliva tests to detect COVID-19, with small variations between primary and secondary care. Primary care respondents are slightly less supportive of a saliva test (42% vs 45% in primary care physicians).

Again, there are significant regional variations. A finger prick test is the preferred option in France (54%),and Switzerland (56%). Some countries demonstrate particularly high support for a saliva test, including Argentina (66%), Canada (56%), Mexico (53%), and the USA (56%).

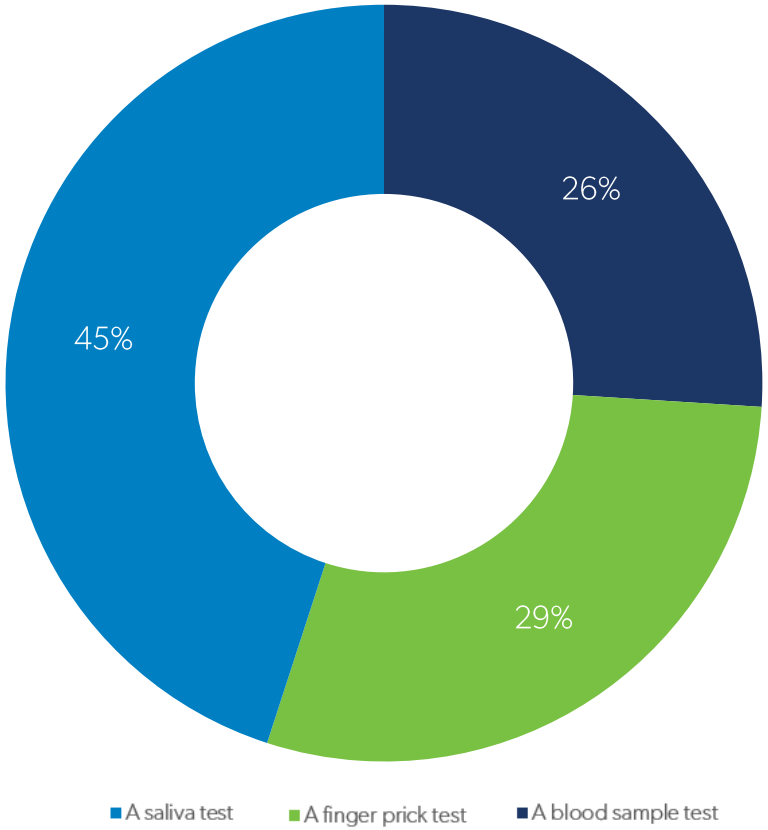
In the UK support for a saliva test and a finger prick test is fairly evenly split, with 45% favouring a finger prick test over a saliva test (43%).

For COVID-19 tests in general, what type of test would you prefer?

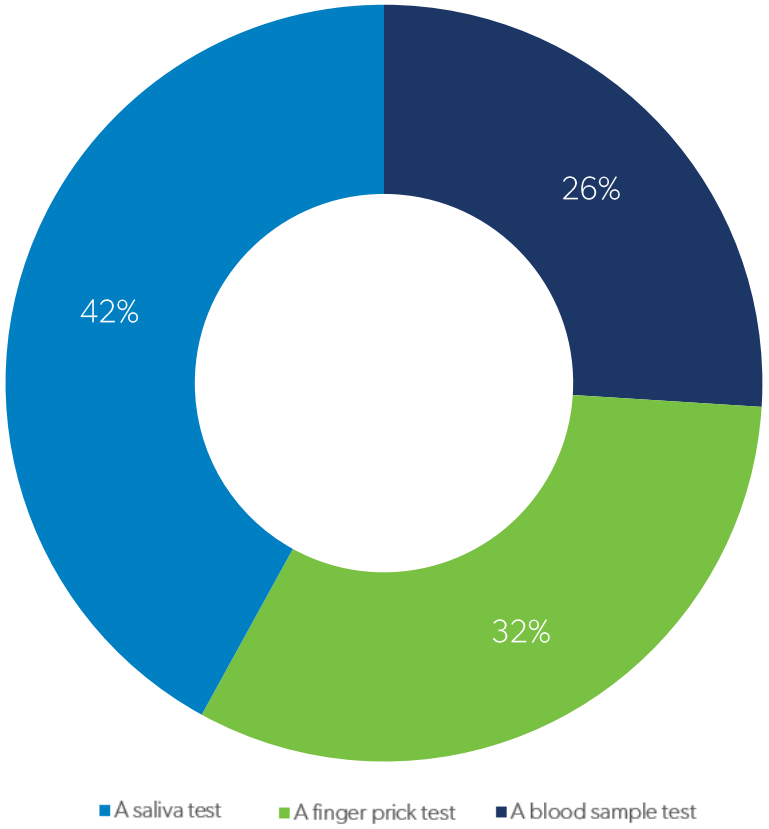


For COVID-19 tests in general, what type of test would you prefer?

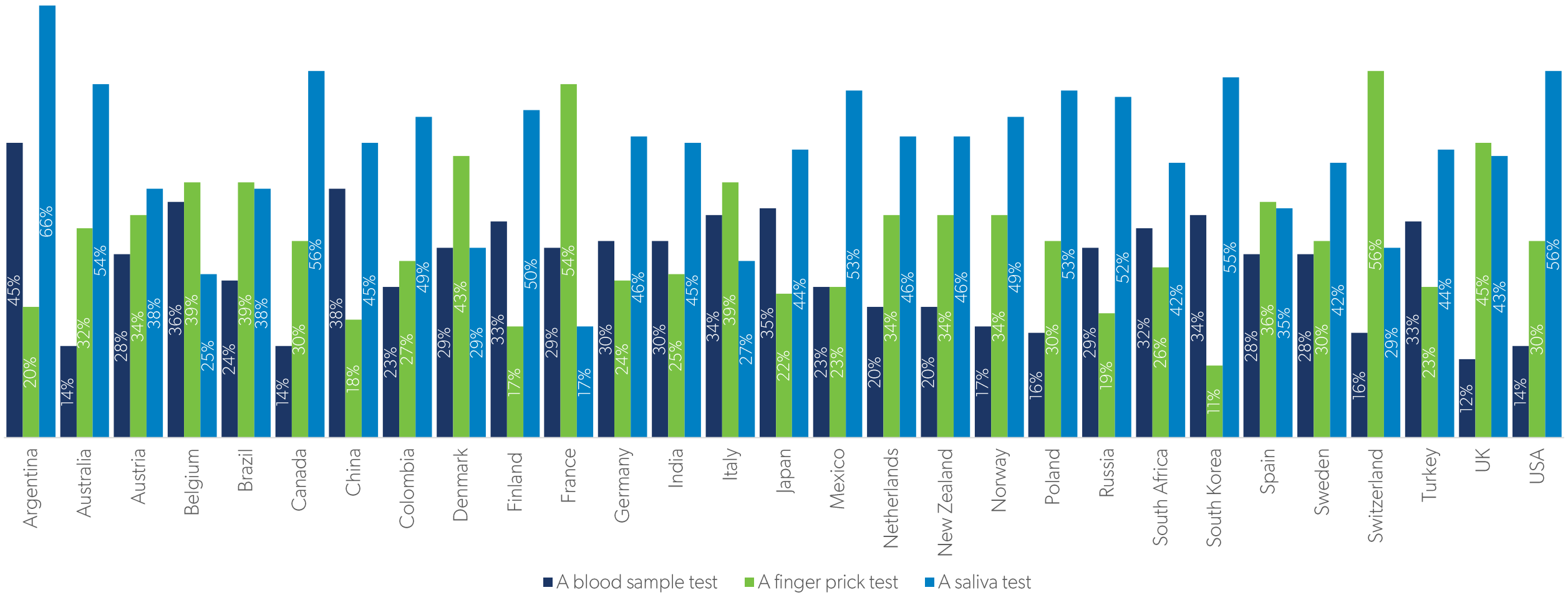
Secondary Care Physicians



Primary Care Physicians



For COVID-19 tests in general, what type of test would you prefer?



Impact of Testing

HCPs have a unique view point as they are not only clinicians, but they and their families are all at risk of COVID-19 and many have already been affected.

There is concern around what is known about the prevalence and duration of effective immunity post natural infection, and the impact that testing can have in light of this.

Some respondents challenged whether there should be any impact on an individual as immunity can not be assumed, particularly for the antigen test. There was concern about asymptomatic shedding and ongoing transmission of the illness which still requires PPE and social distancing.

Benefits of a positive antibody test were clearer, although the absence of assumed immunity means PPE, social distancing and hand washing remain major considerations.

What would a positive test would mean to/for an individual once they have recovered? Rank from 1 (most important) to 7 (least important).

The rating scale measures strength of response and priority of options, and scores each option based on all responses giving them a relative rank

Antigen test

1. **Confidence in returning to work (2.3)**
2. Confidence interacting with family and friends outside work (2.4)
3. Other (3.1)
4. Confidence in using public transport (3.5)
5. Less concern with social distancing (3.6)
6. Less concern with PPE (4.2)
7. Less concern with hand washing (5.4)

Antibody test

1. **Confidence in returning to work (2.2)**
2. Confidence in interacting with family friends outside work (2.4)
3. Confidence in using public transport (3.3)
4. Less concern with social distancing (3.5)
5. Less concern with PPE (4.3)
6. Other (5.1)
7. Less concern with hand washing (5.4)

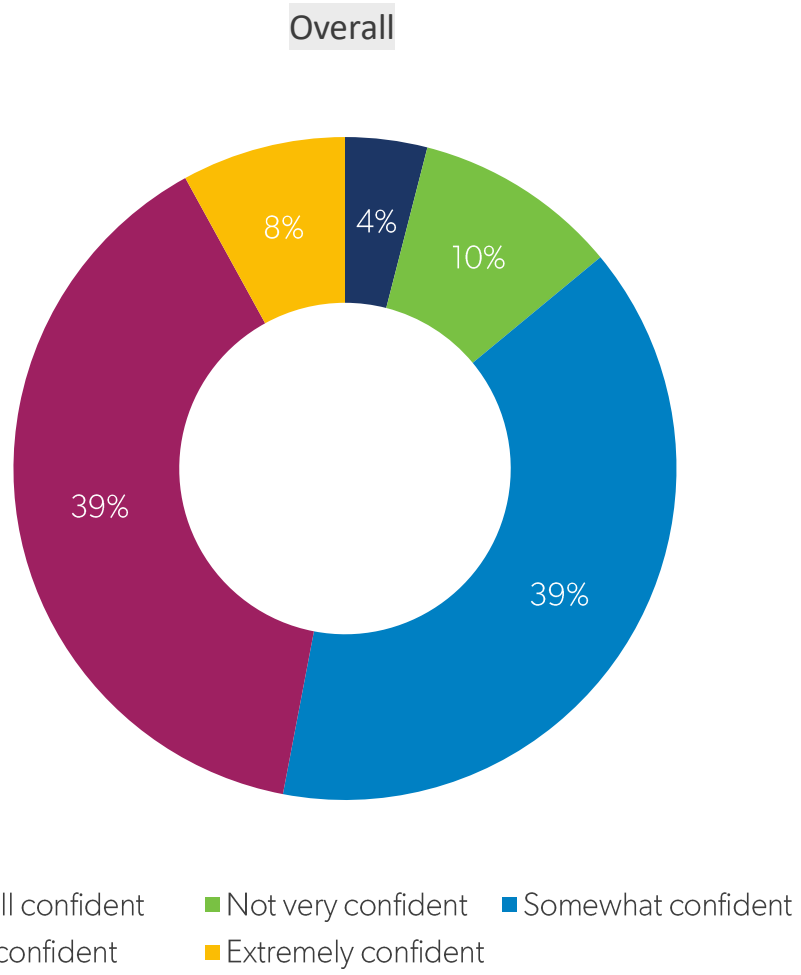
Accuracy of Tests

Only 14% of HCPs overall responded negatively about the accuracy of the tests currently available to them, with very little deviation between the primary and secondary care groups.

Countries most concerned about the accuracy of their tests, with higher percentages of HCPs answering 'not at all' or 'not very' confident, were Japan (28%), Russia (20%), Sweden (21%), and the UK (25%).

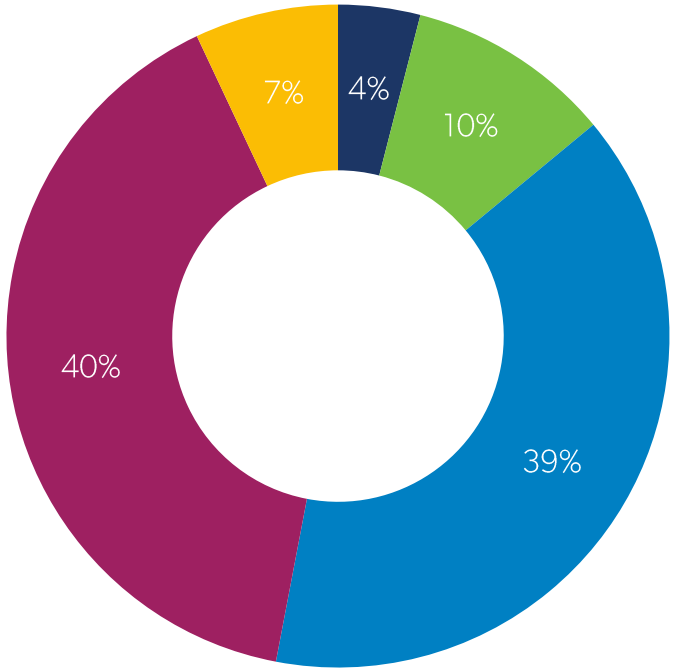
At the other end of the scale, HCPs in China, India, Mexico, and South Africa are most confident in the accuracy of tests available to them at the moment.

How confident are you in the accuracy of the tests that are available to you?

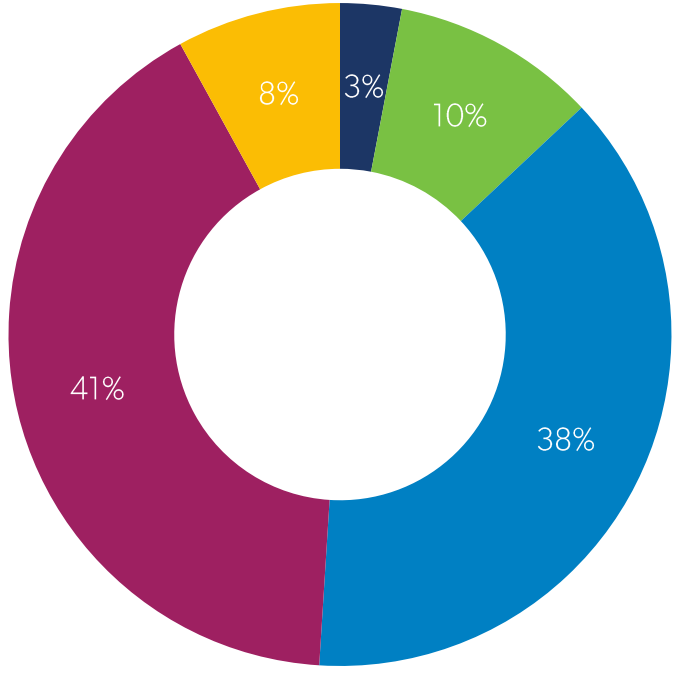


How confident are you in the accuracy of the tests that are available to you?

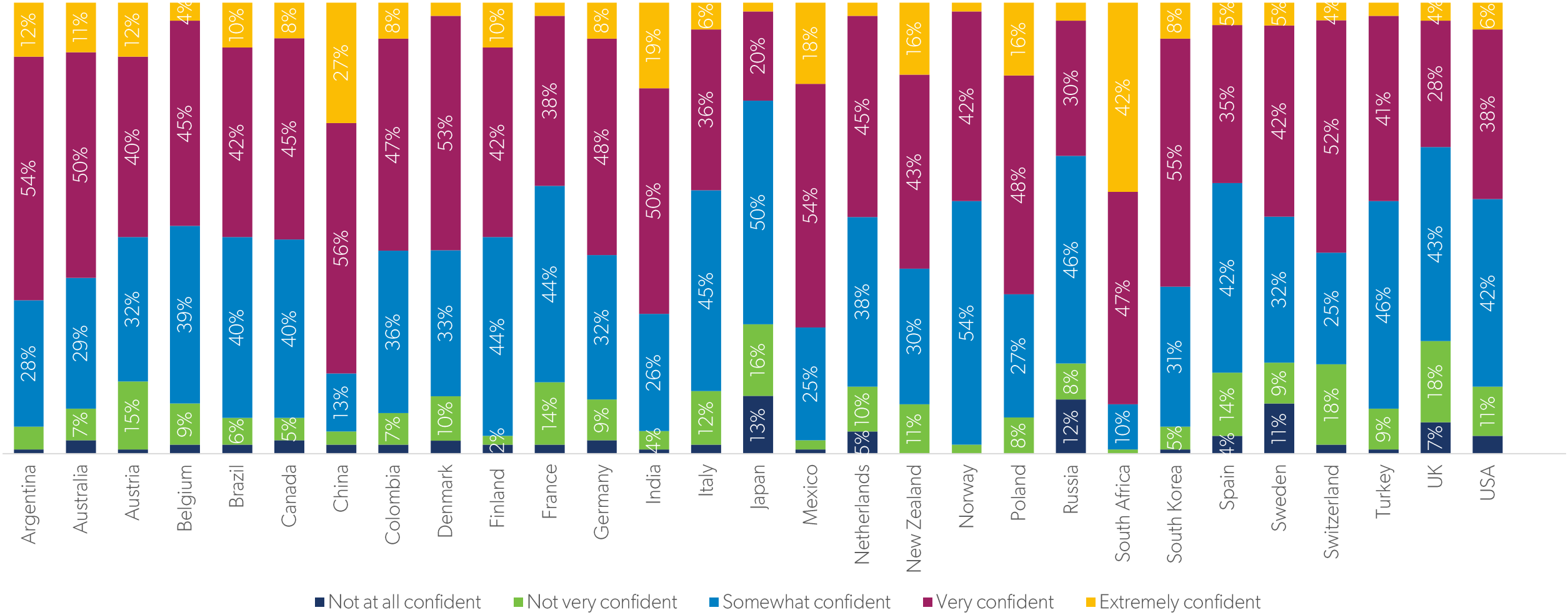
Secondary Care Physicians



Primary Care Physicians



How confident are you in the accuracy of the tests that are available to you?



Conclusions

COVID-19 has presented an urgent need for novel diagnostic assays to establish the presence of, and exposure to, the virus. Understanding perceptions and confidence in testing enables a new phase of test development that is tailored to the needs of individuals and governments to address this pandemic.

It is evident that the global picture is not convergent; this is particularly apparent when we look at preferences in terms of the type of tests, and how they're delivered, but also what is currently available and perceived accuracy.

For confidence in the accuracy of tests they must be used at the correct point in the disease cycle, and this will require physician education to counter balance the current lack of confidence.

The priority for HCPs is an effective antigen test to meet the needs of physicians and patients in markets that don't currently have adequate provision in place. The identified need for a sensitive antibody test is also clear, and respondents expect to be using them in their clinical practice in the future. There is however an urgent need to relate antibody levels to loss of infectivity to others, and efficacy and duration of immunity against subsequent infection.

Responses indicate that testing would provide confidence for HCPs in returning to work and their interactions with family and friends, however hygiene and social distancing behaviours are less influenced. The impact of testing informs broader benefits to the economy and safer relaxation of lockdown restrictions.

M3 GLOBAL RESEARCH

UNIVERSITY OF BIRMINGHAM

INSTITUTE OF IMMUNOLOGY AND IMMUNOTHERAPY