# Delays in Diagnostic Tests Used to Identify Transthyretin Amyloid Cardiomyopathy (ATTR-CM) in the EU4 + UK

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## BACKGROUND

Transthyretin amyloid cardiomyopathy (ATTR-CM) is an underdiagnosed, progressive disease characterised by amyloid protein deposits building in the left ventricle. The deposition of transthyretin (TTR) amyloid causes the heart walls to become stiff and weaken. The symptoms of ATTR-CM are like those associated with heart failure, and specialised tests are needed to identify ATTR-CM.

## OBJECTIVE

This poster examines the tests used to identify ATTR-CM in France, Germany, Italy, Spain and United Kingdom and the time between these tests.

## METHOD: DATA SOURCE

Data were collected from the Ipsos ATTR-CM Therapy Monitor, a cross-sectional, online survey conducted between November 2020 - December 2020 across the UK, FR, DE, IT & ES. A sample of 210 treating cardiologists (FR: 46, DE: 40, IT: 43, ES: 42, UK: 39) provided data on 320 (FR: 71, DE: 63, IT: 64, ES: 63, UK: 59) de-identified patients diagnosed with ATTR-CM. Participating cardiologists had been practicing in their specialty between 3 – 40 years and managed a minimum number of heart failure (HF) patients per month. Ipsos analysed information provided on the diagnostic tests ordered for the 320 patients to understand how ATTR-CM is diagnosed across the five markets, and also tracked the order in which the tests were conducted, across four batteries, to understand the flow of the diagnostic procedures.

## LIMITATIONS

The study was limited to the data collected. There may be other relevant physician/site variables which could contribute to the results seen.
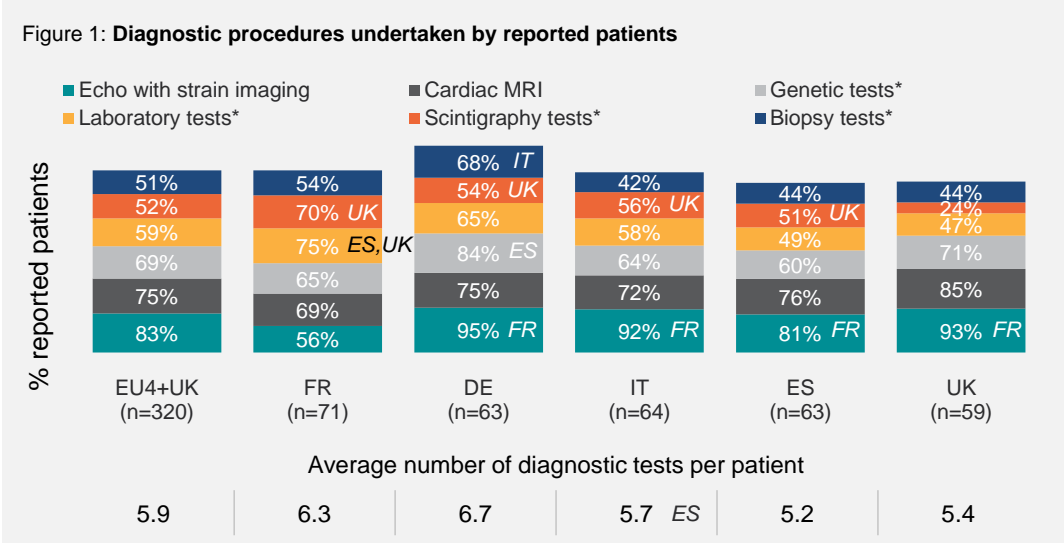
## REFERENCES

Ipsos ATTR-CM Therapy Monitor (Nov – Dec 2020, 210 cardiologists across UK, FR, DE, IT, ES reporting on 320 patients diagnosed with ATTR-CM

## DISCLOSURES

Authors were employees of Ipsos at the time of submission. There are no conflicts of interest to declare for any of the listed authors.

## RESULTS

Overall, the 320 reported patients in our study went through 6 diagnostic tests on average before receiving a confirmed ATTR-CM diagnosis - echocardiogram (echo) with strain imaging (83%), cardiac Magnetic Resonance Imaging [MRI] (75%), genetic tests (69%), laboratory tests (59%), scintigraphy tests (52%), and biopsy tests (51%) were the top tests ordered. Reported patients in Germany, France and Italy received the most tests on average, while patients in Spain and the UK received the least (FR: 6, DE: 7, IT: 6, ES: 5 and UK: 5). A greater proportion of patients in Germany received a genetic test (84%) or biopsy test (68%) to confirm diagnosis.



Figure 1: **Diagnostic procedures undertaken by reported patients**

Source: Ipsos ATTR-CM Therapy Monitor (Nov – Dec 2020, 210 cardiologists across UK, FR, DE, IT, ES reporting on 320 patients diagnosed with ATTR-CM (total). Participating cardiologists were primary treaters and saw a minimum number of HF patients per month.). Base: All patients diagnosed with ATTR-CM. ^ denotes base size <30. Statistical significance is marked at 95% level for base size ≥ 30. If present, FR, DE, IT, ES, UK refers to country-level stat testing representing a value measuring significantly higher than the indicated region. *Scintigraphy tests: TcPYP** and Other Nuclear Scintigraphy; Laboratory tests: UPEP, SPEP and FLC; Genetic tests: TTR gene sequencing, other genetic test; Biopsy tests: EMB and Other biopsy; TcPYP scan in FR: 99m TcDPD, HMDP or mIBG scans; TcPYP scan in DE: DPD scans.

Out of a base of 283 reported patients with a known order of diagnostic tests, the top tests ordered in the 1st battery of tests were echo with strain imaging (82%), laboratory tests (34%), and cardiac MRIs (20%) and the top tests ordered in the 2nd battery were cardiac MRIs (49%), scintigraphy tests (30%), and laboratory tests (24%). In the 3rd battery of tests, the top tests ordered were biopsy tests (24%), genetic tests (19%) and scintigraphy tests (15%) and in the 4th+ batteries, the top tests ordered were genetic tests (19%), biopsy tests (14%), and scintigraphy tests (6%). Overall, 12% of the reported patients had an unknown order of tests. Across the EU4+UK, echos were most ordered in the 1st battery of tests (82%) and laboratory tests split between the 1st (34%) and 2nd batteries (24%). Cardiac MRIs (49%) and scintigraphy tests (30%) were typically ordered in the 2nd battery while biopsy tests were ordered in the 2nd (17%) and later batteries but peaked in the 3rd battery (24%). Genetic tests were ordered in the 3rd (19%) and 4th+ batteries (19%).

Out of a base of 178 reported patients with a known order of diagnostic tests, patients reported in Germany experienced the shortest delays between batteries of tests (average 3.2 weeks between 1st and 2nd batteries; average 3.9 weeks between 2nd and 3rd batteries). In comparison, reported patients in Spain experienced the longest testing delays (average 7.3 weeks between 1st and 2nd batteries; average 5.8 weeks between 2nd and 3rd batteries).

Source: Ipsos ATTR-CM Therapy Monitor (Nov – Dec 2020, 210 cardiologists across UK, FR, DE, IT, ES reporting on 320 patients diagnosed with ATTR-CM (total). Participating cardiologists were primary treaters and saw a minimum number of HF patients per month.). Base: All patients diagnosed with ATTR-CM with known order of diagnostic tests

Figure 3: **Average no. weeks between batteries of tests**

| | Weeks bet. 1st and 2nd | | Weeks bet. 2nd and 3rd | |
|---|---|---|---|---|
| | No. patients | Avg. | No. patients | Avg. |
| EU4+UK | 178 | 4.8 | 143 | 4.3 |
| FR | 51 | 5.1 | 39 | 3.1 |
| DE | 41 | 3.2 | 36 | 3.9 |
| IT | 36 | 4.2 | 33 | 5.5 |
| ES | 24^ | 7.3 | 20^ | 5.8 |
| UK | 26^ | 5.2 | 15^ | 4.1 |

Overall, 63% of the total 320 reported patients received their ATTR-CM diagnosis from their current physician, primarily driven by patients from France (85%). Of the 203 reported patients currently managed by their diagnosing physician, most of them were referred to their current physician, with only 27% coming directly to the practice of their diagnosing physician - in Italy, the proportion of these patients coming directly to their diagnosing physician's practice was significantly higher than other regions, at 56% (FR: 22%, DE: 21%, ES: 32% and UK: 11%). Furthermore, diagnosis of ATTR-CM is seemingly aligned with hospital type, with 74% of the total 320 reported patients being diagnosed in a university/teaching hospital. The highest proportion of patients diagnosed in a university/teaching hospital were from Spain (86%) and the UK (86%) (FR: 62%, DE: 68%, IT: 72%). France saw the highest proportion of patients who were diagnosed in a general hospital (35%) while Germany saw the highest proportion diagnosed in a physician's office (13%).

Across the markets, 59% of the 210 sampled physicians cited a decline in ability to diagnose patients with ATTR-CM due to COVID-19, with the degree of impact differing by region. The degree of impact was greatest in Spain (88%), Italy (79%) and the UK (64%) (FR: 43%, DE: 20%), in which most diagnoses took place in a university/teaching hospital. Of the 124 sampled physicians who cited a decline, 79% attributed it to patients' inability to travel (FR: 90%, DE: 100%, IT: 68%, ES: 76% and UK: 84%). With all 210 sampled physicians indicating that 16% of their patients were untreated due to late diagnosis with advanced disease (FR: 15%, DE: 10%, IT: 16%, ES: 20% and UK: 21%), identifying symptoms of ATTR-CM and running the necessary tests to diagnose ATTR-CM early are essential.

## CONCLUSIONS

**Overall, the patients reported in this study received upwards of 6 diagnostic tests before confirmation of ATTR-CM, with 4.5 weeks (on average) between each battery of tests. In addition to regional nuances regarding test choice, we see evidence of regional differences in how quickly patients receive diagnostic tests, as well as where patients receive their confirmed ATTR-CM diagnosis. We also see evidence that these regional nuances might be impacted by the COVID-19 pandemic, leading us to believe further research is needed to identify ways of increasing the speed of testing and subsequent diagnosis during the pandemic, and then reevaluating after the pandemic.**