NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Diagnostics consultation document

FibroScan for assessing liver fibrosis and cirrhosis in primary or community care

The National Institute for Health and Care Excellence (NICE) is producing guidance on using FibroScan in primary or community care in the NHS in England. The diagnostics advisory committee has considered the evidence and the views of clinical and patient experts.

This document has been prepared for public consultation. It summarises the evidence and views that have been considered, and sets out the recommendations made by the committee. NICE invites comments from registered stakeholders, healthcare professionals and the public. This document should be read along with the evidence (the company clinical and economic submissions, EAG reports, overview).

The advisory committee is interested in receiving comments on the following:

- Has all of the relevant evidence been taken into account?
- Are the summaries of clinical and cost effectiveness reasonable interpretations of the evidence?
- Are the recommendations sound, and a suitable basis for guidance to the NHS?

Equality issues

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with particular protected characteristics and others. Please let us know if you think that the recommendations may need changing to meet these aims. In particular, please tell us if the recommendations:

- could have a different effect on people protected by the equality legislation than on the wider population, for example by making it more difficult in practice for a specific group to access the technology
- could have any adverse effect on people with a particular disability or disabilities.

Please provide any relevant information or data you have about such effects and how they could be avoided or reduced.

Issue date: November 2022

Note that this document is not NICE's final guidance on FibroScan in primary or community care. The recommendations in section 1 may change after consultation.

After consultation, the committee will meet again to consider the evidence, this document and comments from the consultation. After considering the comments, the committee will prepare its final recommendations, which will be the basis for NICE's guidance on the use of the technology in the NHS in England.

For further details, see the medical technologies evaluation programme manual.

Key date:

Closing date for comments: 1 December 2022

1 Recommendations

1.1 FibroScan is recommended for use in primary or community care to assess liver fibrosis or cirrhosis if:

- it is used in accordance with national guidelines (see sections 2.3 to 2.5)
- a clear care pathway with advice for healthcare professionals on what to do based on a FibroScan result is established locally in collaboration between primary or community care and secondary or specialist care providers
- there is training for healthcare professionals on how to do the test
- the company provides supporting materials to make sure people using the test continue to use it correctly, and
- each FibroScan device is expected to be used for at least 500 scans per year.

Why the committee made these recommendations

Using FibroScan in primary and community care for assessing liver disease has the potential to detect liver disease earlier. Moving tests closer to people may improve access and so attendance at appointments. This may also reduce health inequalities for people from disadvantaged or high-risk communities.

This assessment did not assess wider use of FibroScan than what is currently recommended in national guidelines (see sections 2.3 to 2.5). It only considered changing the location of testing and therefore FibroScan is only recommended for use in primary or community care in line with national guidelines. For the test performance to be maintained in primary or community care, testing should be done as part of a clear care pathway. Also, training on doing the test should be provided and the expertise of trained operators should be maintained by frequent use of the device.

There is some uncertainty about the overall long-term costs of using the test in primary or community care. But, it is likely that if each device is used frequently, the

immediate costs of doing a test in the community will be lower than the cost of referring a person for testing in secondary or specialist care. So, using FibroScan for assessing liver fibrosis and cirrhosis in primary or community care is recommended for routine use.

2 The diagnostic test

Clinical need and practice

2.1 Liver fibrosis happens when persistent inflammation of the liver causes excessive scar tissue to build up in the organ and nearby blood vessels. The presence of scar tissue can impair overall liver function and limit blood flow which may lead to the death of liver cells. Advanced liver fibrosis can develop into cirrhosis, liver failure, portal hypertension and possibly needing a liver transplant. Liver fibrosis is caused by hepatitis, non-alcoholic fatty liver disease and alcohol-related liver disease.

2.2 Cirrhosis is a late-stage liver disease that happens when inflammation and fibrosis has spread throughout the liver and disrupts the shape and function of the liver. Cirrhosis usually develops silently after exposure to 1 or more risk factors such as alcohol misuse and hepatitis B or C which cause inflammation in the liver, or obesity. But, not everyone with inflammation of the liver will eventually develop cirrhosis. Untreated cirrhosis can cause liver failure, liver cancer or death.

2.3 NICE's guideline on assessing and managing cirrhosis in over 16s recommends using transient elastography to diagnose cirrhosis in people with hepatitis C, high alcohol consumption, diagnosed alcohol-related liver disease, or non-alcoholic fatty liver disease advanced fibrosis.

2.4 NICE's clinical guideline on diagnosing and managing chronic hepatitis B recommends FibroScan as an initial test for liver disease in adults newly referred for assessment and for the annual reassessment of liver disease in adults who are not taking antiviral treatment.

2.5 NICE's guideline on assessing and managing non-alcoholic fatty liver disease states that the enhanced liver fibrosis test should be considered for people with non-alcoholic fatty liver disease to test for advanced liver fibrosis. Clinical experts highlighted that this test is not available everywhere, and FibroScan is often used instead of, or alongside the enhanced liver fibrosis test. This is consistent with guidelines published by the British Society of Gastroenterology and in the British Medical Journal.

The intervention

FibroScan used in primary or community care

2.6 FibroScan (Echosens) is a non-invasive medical device that assesses liver fibrosis and cirrhosis by measuring the degree of liver stiffness. It can distinguish normal liver or minimal fibrosis from cirrhotic livers.

2.7 FibroScan uses proprietary vibration controlled transient elastography to quantify liver stiffness, which is essentially a measure of the extent of liver scarring.

2.8 There are multiple products in the FibroScan range with different features, but all measure liver stiffness using transient elastography. The full list of devices can be found in table 1 of the scope.

2.9 Different sizes of probes (small, medium or extra-large) are available. The device comes with a medium probe. Small and extra-large probes are optional extras. The extra-large probe is designed to enhance signal penetration through deeper tissues, reducing device failure rates in people with obesity.

2.10 In this assessment, the intervention is FibroScan used in primary or community care (for example, in GP practices or community services). The population tested included only those who would have FibroScan as per current NHS practice. The assessment focused on where the test should be done, rather than who should have the test.

2.11 Submissions provided by the company were based on the cost of the FibroScan 430 Mini+ at £48,000 in both primary or community care, and secondary or specialist care settings.

The comparator

FibroScan used in secondary or specialist care

2.12 The comparator is FibroScan used in the same way as the intervention, but in secondary or specialist care.

3 Committee discussion

Increased access to FibroScan may improve early detection of liver disease

3.1 Liver disease is a significant and growing cause of mortality in the UK and is often asymptomatic in early stages. Clinical experts explained that bringing FibroScan testing closer to people who need it improves attendance at appointments which could help with earlier detection of liver disease. They highlighted that there is a need to enable early detection of liver disease to reduce the number of cases being identified late in the disease course, and that fibrosis is reversible at early stages. Clinical experts commented that people generally have a positive experience with FibroScan and could be motivated by the test results to make behavioural changes that can reverse the course of their liver disease if detected early. But, they clarified that there was no evidence showing long-term behavioural change after FibroScan use.

There may be benefits to local testing

3.2 Patient experts reported that people often travel long distances to access FibroScan, especially in rural areas. Easier access to the test could reduce time and costs associated with this. It could also help people with disabilities that make it difficult to travel. Patient experts commented that needing to travel longer distances could be a particular barrier for people

from lower socioeconomic groups, who may be at higher risk of liver disease and typically die from the condition much earlier. The committee commented that the benefits outlined may not be seen if multiple appointments are needed to first do the scan and then separately deliver lifestyle advice. Clinical experts responded that lifestyle interventions are often delivered by healthcare assistants or nurses, and that any advice needed based on a FibroScan result would be given in the same appointment as the scan was done (see section 3.12). Clinical experts further commented that the increasing prevalence of liver disease means that secondary care services risk being overwhelmed, and that moving some aspects of care like FibroScan testing to community settings could help manage the workload.

Clinical effectiveness

There is no data comparing the performance of FibroScan when used in primary or community care with its use in secondary or specialist care

3.3 There was no evidence comparing the performance of FibroScan for measuring liver fibrosis when it is used in primary or community care with when it is used in secondary or specialist care. At consultation on the draft guidance, the lack of published evidence was confirmed by the company.

Performance of FibroScan may depend on the experience of the user

3.4 Clinical experts explained that how well FibroScan works depends on the experience of the user. They stated that if FibroScan is used often enough to make sure it is being used correctly, performance between different care settings would be comparable.

There is no evidence on how often FibroScan would need to be used to maintain competence

3.5 The committee considered the level of use that would be needed for users to maintain competence with FibroScan. The company commented that it encouraged users to make sure that competency is validated in practice,

but that it does not currently provide guidance on requirements for the level of use. Clinical experts highlighted that there is no independent accreditation scheme for users, and that this is also the case for tests done in secondary or specialist care. They explained that FibroScan users in primary or community care in their areas had close links with local hepatology departments which could provide support when needed. The company explained that pilot schemes in primary care networks typically saw 20 to 30 people a month. The committee noted that it is unclear how many FibroScan tests are currently done in the NHS (see section 3.11). Clinical experts highlighted that there is no clear evidence to define a number or frequency of tests that need to be done to achieve and maintain expertise. The committee considered that sufficient levels of use may not be achieved if the test was available in individual GP practice populations, but use in locations which cover larger populations, such as community diagnostic hubs or across a primary care network, would likely mean the users do enough tests to be sure it is being used correctly. The committee concluded that if used in primary or community care, it would be important to make sure that operators used the FibroScan often enough to be able to accurately use the test, and for centres to consider having an accreditation framework in place.

FibroScan can be done by any healthcare professional if they are suitably trained

3.6 Clinical experts commented that the FibroScan is relatively simple to use, that it indicates if the test has not worked, and that all grades of staff can use the technology if appropriately trained. At consultation, the company proposed several measures they could introduce to make sure that user competency is maintained after the initial training. These included developing a competency checklist and framework for annual assessment, offering on-site assessment, developing online competency assessments, or getting continuing professional development accreditation for FibroScan training. The committee agreed these would be valuable and would build confidence in test results. The committee

concluded that if these measures were put in place, it would give reassurance that FibroScan assessment done in primary or community care would be done effectively.

With appropriate training and quality assurance, and frequent use, FibroScan can be done effectively in primary or community care

3.7 The committee recalled that there was no data directly comparing the performance of FibroScan tests done in, or outside, secondary or specialist care (see section 3.3). But, if the test was done in a primary or community care setting where appropriately trained operators do enough scans to maintain their expertise (see section 3.5), the committee concluded that it was likely that test performance could be maintained outside of secondary or specialist care, if there are ongoing measures to ensure quality such as those proposed by the company (see section 3.6).

There was concern that greater availability of FibroScan in primary or community care could lead to wider use

3.8 The committee recalled that the population in this assessment was restricted to those who would have FibroScan as in current NHS practice (see section 2.10). The test was only assessed for use in people it is already recommended for. It noted that performance of the test would depend on the population being tested, and that the value of testing would depend on the availability and effectiveness of interventions for the population tested, based on test results. Some consultation comments mentioned a potential benefit of FibroScan in primary or community care to be that it allows for wider screening for early liver disease. The committee noted that such use had not been assessed in this guidance and expressed concern that using FibroScan in primary or community could lead to its use in a wider population than assessed, which could in turn affect its performance. It concluded that if recommended, using the test should only be as recommended in national guidelines (see sections 2.3 to 2.5).

FibroScan should be used as part of a clear care pathway

3.9 Clinical experts and committee members emphasised that clear guidance on what to do with the results of FibroScan is vital, particularly if testing is done outside a specialist setting. FibroScan done in primary or community settings could reduce the number of unnecessary referrals to hepatology services. But, if there is uncertainty about what to do based on a result, a referral to specialist services, or contact with these services to ask advice, may still be made. Clinical experts highlighted that this could happen often if multiple conflicting test results (including FibroScan) were available. Liver pathways should be designed in agreement with primary and secondary centres, and incorporate all tests used for detection and characterisation of liver disease, not just FibroScan. The committee concluded that establishing clear care pathways, with advice for healthcare professionals on what to do based on a FibroScan result, would be essential to ensure appropriate clinical management of liver disease in people who have FibroScan tests done outside secondary or specialist settings.

Cost modelling

The long-term effects of testing in primary or community care on costs are uncertain

3.10 In the base-case analysis provided by the company, the economic model used a 1-year time horizon. The committee commented that this omits potential costs or cost savings that would only appear many years after testing, such as the costs of treating previously undetected liver disease. The committee noted that increased attendance at FibroScan appointments in primary or community care increased costs in the model, because more people were referred for follow-up appointments in hepatology. But, any potential cost savings or health benefits of greater detection of liver disease were not considered (see section 3.1). At consultation on the draft guidance, the company submitted a scenario analysis with a 5-year time horizon, which estimated lower long-term costs

of about £30 less per person if testing was done in primary or community care. The external assessment group (EAG) explained that the lower cost was because there were fewer people with missed liver disease if testing was done in primary or community care, because more people attended scans. The committee considered it was unclear what assumptions were made in modelling to base this on. Company representatives were not able to provide further clarity in the committee meeting. The company's model did not allow people's liver disease to progress in the 5-year time period modelled. Clinical experts commented that this may not be appropriate for people with alcohol-related liver disease, whose condition can progress at a faster rate. The committee noted that the effect of lifestyle advice may differ depending on who provides it, for example a GP compared with a liver specialist, but experts said that there was no evidence on this. Clinical experts commented that referrals to hepatology services may go up after adopting FibroScan in primary or community care, but this may mean that more people who would benefit from specialist care are able to access it. Clinical experts also commented there was uncertainty about the long-term effect of using the test in primary or community care, for example on levels of hospitalisation. The committee considered it plausible that testing in primary or community care could lead to longer term cost savings but thought that the company analysis did not allow this to be assessed. In advance of the third committee meeting, the company provided a revised model, and accompanying description, of the long-term implications of missing liver disease. This led to lower costs if FibroScan was done in primary or community care because increased attendance at scans was assumed to increase detection of liver disease and reduce progression to more severe stages. The EAG questioned the long-term costs used in the model because they came from a study of antiviral treatment for people with chronic hepatitis C (Wright et al. 2006). It suggested a study in which costs were related to managing non-alcoholic fatty liver disease (Tanajewski et al. 2017) as an alternative source. Some of the results

from the updated model provided by the company for the third committee meeting, and further analyses run by the EAG using this model, did indicate that testing in primary or community care reduced long-term costs. Clinical experts said that earlier detection of liver disease could plausibly lead to cost savings. But, the committee also considered that costs could be higher in the long term (although potentially with accompanying improvements in health-related quality of life), particularly if a time frame longer than the 5 years modelled was used. The committee concluded that there is considerable uncertainty about the long-term effect of FibroScan testing in primary or community care on costs.

There is uncertainty about the cost per scan in secondary care but the model likely underestimates this cost

3.11 The committee discussed the costs used in the original model submitted by the company, and the revised costs used by the EAG. The EAG removed a cost from the company's model for staff time to do and evaluate FibroScan in secondary or specialist care because this time was already incorporated within an existing cost used in the model. This meant that, using the figure proposed by the company for testing in this setting, the cost of doing the FibroScan was greater per scan when done in primary or community care. Experts agreed that the staff costs of doing the scan would be included in the Health Resource Group (HRG) cost used by the company. The company used HRG bundled costs for ultrasound elastography to estimate the cost of FibroScan in secondary or specialist care, at £43.93 in the base case, and this cost was also used by the EAG. The company highlighted that a scenario analysis done by the EAG in which a higher cost per use in secondary or specialist care (£61.98) was used, based on a weighted average of 2 different costs attributed to the HRG code, and suggested that this might be more appropriate. The EAG commented that the results of this scenario still indicated that using FibroScan outside secondary or specialist care was cost incurring. In their report, the EAG highlighted difficulties in evaluating the costs of doing FibroScan in the different settings that were a

consequence of comparing a bundled HRG cost from secondary care with a cost obtained by micro-costing in a non-hospital setting, where an HRG code does not currently exist. The committee noted that the HRG code for ultrasound elastography was used only 3,561 times for outpatients in 2019 to 2020, which likely underestimated the number of FibroScan tests done in the NHS. Further scans may be done during outpatient appointments and recorded as such, potentially at higher cost. At consultation, the company provided further analyses. Its base-case analysis kept the higher cost of testing in secondary care, including additional costs for staff time to do the test as well as the HRG code. Analyses using alternative costs were not cost neutral or cost saving for testing done in primary or community care. The company did not provide any further support for their choice of cost used in the base case or rationale for the most appropriate choice of cost for the test in secondary care. The committee also questioned whether the full costs of a referral for testing in secondary or specialist care had been incorporated. Missed appointments were included as a separate cost in the model. A clinical expert commented that the cost of missed appointments was likely to already be captured in the cost of doing scans used in the company's model. If so, including an additional cost for missed appointments was not appropriate. Clinical experts noted that if a person misses an appointment in secondary care, they may need to restart the referral pathway to access FibroScan, incurring further cost. The committee concluded that there was still considerable uncertainty about the costs of testing in secondary care, and suggested further analysis to address this. In advance of the third committee meeting, the company provided further analyses. This included a micro-costing-based estimate of £40.61 for doing FibroScan in secondary care. The number of scans (610) used to determine this was from a survey of 4 NHS trusts. The EAG noted some limitations in the company's micro-costing approach but stated this was its preferred method for assessing costs. Clinical experts noticed that the company's micro-costing only included costs of doing the FibroScan but not the costs

of a referral for a hepatologist outpatient appointment that would happen in practice if a GP decided that the scan was needed. The EAG noted that the NHS reference cost for this appointment is £268 (cost in individual trusts may vary). The committee concluded that while there is uncertainty about the exact cost of testing, it is likely that the model underestimates the cost of doing FibroScan in secondary care.

The extent of use of FibroScan in primary or community care will affect cost per use

3.12 The committee noted that the cost the company has provided for FibroScan in primary or community care in their original submission is higher (£58.00 per scan, plus £10.50 staff time to do and evaluate FibroScan result) than the HRG code cost used in the EAG's base case and scenario analysis for FibroScan in secondary or specialist care (see section 3.11). This was based on a fixed cost being charged by the company per scan, with no upfront cost for the machine. At consultation, the company submitted an alternative costing model in which the FibroScan device was purchased outright, which included a maintenance contract over the assumed 7-year lifespan of the device. The average cost per scan, calculated assuming 500 scans per year being done based on Southampton clinical commissioning group use, was £34.29 plus staff time to do the test. The EAG did a threshold analysis and found that the device would have to be used at least 300 times a year for this model to be cheaper than the pay-per-scan model originally suggested. The company stated that their intended use of the tests in primary and community care is in hubs and diagnostic centres, rather than single GP practices, where use would be expected to be higher. The committee agreed that this usage may be achieved if the device was used in primary care networks or community diagnostic hubs (see section 3.7). But, it noted that only a single estimate of expected use in primary or community care had been provided by the company. The committee recalled that moving FibroScan testing to primary or community care would potentially move workload to other settings for activities that happen based on test

results, such as lifestyle advice, and questioned whether the time taken by healthcare professionals to do this has been adequately captured in costs of doing the test outside secondary or specialist care. They further highlighted that even if a person is not referred to a specialist service after a test done outside this setting, advice from staff in these services may be sought. A clinical expert emphasised that community and primary care staff such as nurses and healthcare assistants are experienced in providing lifestyle and diet advice (see section 3.2) and that any advice could be given in the same appointment as the FibroScan test was done. The committee concluded that there was uncertainty about whether the costs of doing FibroScan in primary or community care used in the company's model was an accurate reflection of the true cost of testing. It further noted that if buying the FibroScan outright, the cost per use would depend on the extent of use, and asked for further information to support estimates of expected use. In advance of the third committee meeting, the company provided further analysis. Using local real-world data and national data sources, the company estimated that 1 FibroScan device shared between 5 primary care networks would be used for 2,500 to 5,000 scans per year. The EAG considered the estimates based on real-world data more robust but stated that using 6 sources of information provided by the company, the EAG found only 1 example where FibroScan was used in as many as 500 to 1,000 people per year per primary care network. But of the 8 clinical experts consulted by the EAG, 5 said sharing 1 device between 5 primary care networks was plausible in some scenarios and all thought a single network would be able to do 500 scans per year. The clinical experts attending the committee meeting supported this view. The committee noted that in its updated submissions, the company had provided the cost per FibroScan done in primary care based on buying the device outright and at least 500 scans per device being done per year (£44.79), rather than the cost per scan based on a pay-per-scan charging model as in its original submission (£58.00 per scan, plus £10.50 for staff time).

Using FibroScan in primary or community care is likely to cost less than doing the test in secondary care

3.13 There is still uncertainty about the true cost of doing a test both in secondary or specialist care (see section 3.11) and in primary or community care (see section 3.12). The committee recalled that it is likely that the model underestimated the cost of testing in secondary care (see section 3.11). Higher cost of testing in this setting would make testing in primary or community care more likely to be cost saving. The committee concluded that, based on buying FibroScan 430 Mini+ outright (see section 2.11) and an expected use of at least 500 scans per year per device as modelled by the company, the immediate costs related to a test with FibroScan were likely to be lower in primary or community care compared with secondary or specialist care. The committee also recalled that making sure FibroScan was used enough in primary or community care was important to make sure operators do enough scans to maintain their expertise (see section 3.7).The committee further recalled that there is considerable uncertainty about the long-term effect on costs of using the test in primary or community care (see section 3.10). On balance, the committee concluded that there was enough certainty that the immediate cost of using FibroScan for assessing liver fibrosis and cirrhosis in primary or community care are likely to be lower than the cost of referring people for testing in secondary or specialist care to allow it to recommend use in this setting.

It would be beneficial to monitor the effect of FibroScan in primary or community care to make sure that the expected benefits are seen

3.14 The committee commented that it would be beneficial to monitor the effect of greater availability of FibroScan in primary or community care on relevant costs and outcomes to make sure that the proposed benefits were being achieved in practice in the NHS.

4 Review

NICE reviews the evidence 3 years after publication to ensure that any relevant new evidence is identified. However, NICE may review and update the guidance at any time if significant new evidence becomes available.

Brian Shine

Chair, diagnostics advisory committee

November 2022

8 Diagnostics advisory committee members and NICE project team

Committee members

This topic was considered by the diagnostics advisory committee, which is a standing advisory committee of NICE.

Committee members are asked to declare any interests in the test to be assessed. If it is considered there is a conflict of interest, the member is excluded from participating further in that assessment.

The minutes of each committee meeting, which include the names of the members who attended and their declarations of interests, are posted on the NICE website.

NICE project team

Each diagnostics assessment is assigned to a team consisting of a technical analyst (who acts as the topic lead), a technical adviser and a project manager.

Jacob Grant

Topic lead (until July 2022)

Suvi Härmälä

Topic lead (from August 2022)

Thomas Walker

Technical adviser

Donna Barnes

Project manager (until April 2022)

Toni Gasse

Project manager (from May 2022)

ISBN: