



FibroScan ^{touch} **502**
POWERED BY VCTE™

INNOVATION in liver disease management

Discover FibroScan®, the state of the art technology that will improve your liver diagnosis.

This unique, accurate and efficient device brings you extra clinical confidence to support your patient management.

FibroScan touch **502**



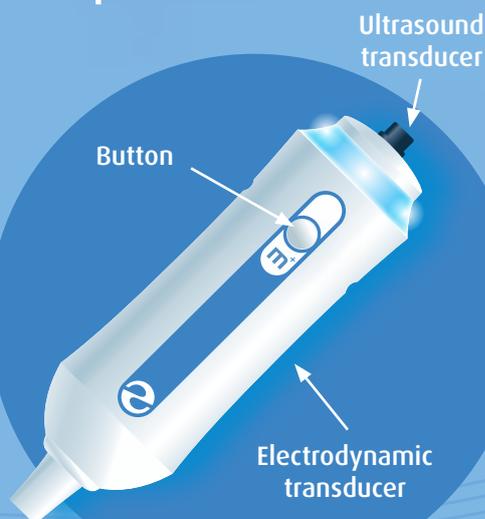
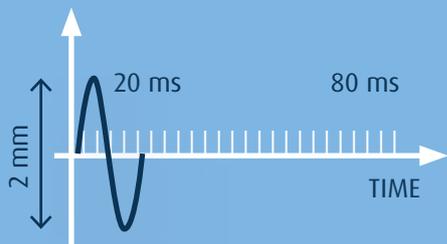


Sharing INNOVATIVE technology

Based on patented Vibration-Controlled Transient Elastography (VCTE™), FibroScan® 502 Touch provides multiple controls for reliable, accurate and reproducible assessment of liver tissue stiffness: CONTROLLED VIBRATION, CONTROLLED ENERGY, CONTROLLED ALGORITHM.

POWERED BY **VCTE™**

CONTROLLED VIBRATION



- This custom-designed ergonomic transducer generates a controlled vibration which induces a mechanical shear wave with consistent frequency and energy
- Static force is monitored in real time to prevent wave distortions
- Shear wave center frequency is 50Hz

CONTROLLED ENERGY

- Propagation of the mechanical shear wave through the skin and liver tissues is measured using low energy 3.5 MHz ultrasound
- Large explored volume of 3 cm³ (at least 100 times more than a biopsy)
- Depth of measurement from 15 to 75 mm depending on probe



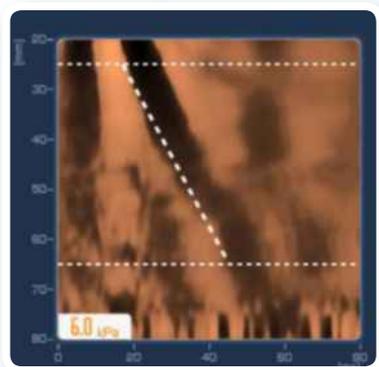
25 mm

CONTROLLED ALGORITHM



- VCTE guidance process ensures the operator obtains measurements of the liver
- A sophisticated algorithm computes liver stiffness and ultrasound attenuation
- A quality controlled calculation is performed automatically, the algorithm selects the valid measurements

Stiffness (E)



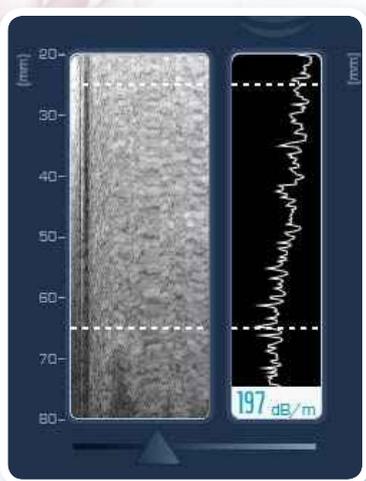
- Stiffness is computed from the **ELASTOGRAM**
- The Elastogram is a **GRAPHIC REPRESENTATION** of the shear wave propagation as a function of time and depth
- The Young's Modulus (E) is expressed in **KILOPASCAL (kPa)**

FIBROSIS⁽¹⁻²²⁾

3 CM³

- **At least 100 TIMES LARGER** than with a liver biopsy
- **Steatosis and stiffness are simultaneously measured IN THE SAME LIVER VOLUME**
- **Stiffness & CAP results are the MEDIAN of 10 valid measurements**

Controlled Attenuation Parameter (CAP™)



- CAP is computed from the **ULTRASOUND** acquired for stiffness measurement
- CAP **IS ONLY CALCULATED** if the stiffness acquisition is **VALID**
- CAP is expressed in **DECIBEL PER METER (dB/m)**

STEATOSIS⁽²³⁻²⁷⁾

Sharing INNOVATIVE features:



NON INVASIVE ASSESSMENT AND QUANTIFICATION OF LIVER STEATOSIS

CAP is a measure of the ultrasound attenuation which corresponds to the decrease in amplitude of ultrasound waves as they propagate through the liver.

CAP is powered by a sophisticated guidance process based on VCTE:

- **Steatosis and stiffness are simultaneously measured in the same liver volume**
- Liver steatosis is calculated only if liver stiffness measurement is valid

- Gain (ultrasound amplitude)
- Ultrasound frequency
- Area of measurement

ARE CONTROLLED AND PREDEFINED

- CAP is measured at 3.5 MHz and is expressed in decibel per meter (dB/m)
- CAP is measured with the M probe at depth between 25 and 65 mm for adult patients with a thoracic perimeter > 75 cm and a skin capsula distance < 2.5 cm
- CAP is measured with the XL probe at depth between 35 and 75 mm for adult patients with a skin capsula distance between 2.5 cm and 3.5 cm.

CAP measurement

Like liver stiffness measurement with the FibroScan® 502 Touch, CAP measurement:

- IS NON INVASIVE
- IS IMMEDIATE: does not lengthen the FibroScan® examination
- can be performed by an operator without any ultrasound imaging skills

*CAP is a tool for non invasive assessment and **QUANTIFICATION OF STEATOSIS** enhancing the spectrum of non invasive methods for the examination and follow-up of patients with liver disease.*



*CAP is a non invasive
physical quantitative
parameter AVAILABLE with the*

FibroScan ^{touch} **502**



Sharing CLINICAL DATA

LITERATURE OVERVIEW

FibroScan® procedures are easy to put into routine practice for all chronic liver diseases.

- **To date, more than 900 peer reviewed original articles have demonstrated the usefulness of liver stiffness measurement with the FibroScan®**
- **As a stand-alone tool or as an adjunct to liver biopsy, FibroScan® allows accurate decisions as part of your patient management strategy**
- **From mass screening to follow-up of post transplanted patients and prognostic value, liver stiffness measured by FibroScan® has a wide range of use**

Liver stiffness

FIBROSCAN® HAS BEEN STUDIED IN DIFFERENT CLINICAL SETTINGS

- Tertiary units
- Mass screening [18]
- Street-based outreach for drug users [19]
- Paediatrics [20, 21]
- Tropical medicine [22]

CHRONIC HEPATITIS C (HCV)

In chronic viral hepatitis C, the diagnosis accuracy of liver stiffness measurement is good to excellent. According to the first pivotal study [1], the AUROC* were:

- **0.79 for the diagnosis of significant fibrosis**
- **0.91 for the diagnosis of advanced fibrosis**
- **0.97 for the diagnosis of cirrhosis**

Overall, the diagnosis accuracy depends on the quality of the liver biopsies used as the reference and the distribution of patients into the different stages of fibrosis.

CHRONIC HEPATITIS B (HBV)

The diagnosis accuracy of FibroScan® to assess fibrosis has been shown to be similar in patients

with chronic hepatitis B compared to patients with chronic hepatitis C [2]. However, necro-inflammatory activity has also been shown to significantly affect liver stiffness in this etiology [3].

HIV-HCV CO-INFECTION

The presence of HIV co-infection with HCV, does not impair the diagnosis accuracy of FibroScan® [4].

ALCOHOLIC LIVER DISEASE (ALD)

Liver stiffness measured by FibroScan® can be used to assess liver fibrosis in patients with alcoholic liver disease with diagnosis accuracies similar to those obtained in chronic viral hepatitis [5].

Moreover, the FibroScan® procedure is very well accepted by patients with alcohol dependence or abuse and therefore appears as a first choice tool to detect advance fibrosis or cirrhosis at-risk population with a better accuracy than simple biological evidence [6].

NON ALCOHOLIC FATTY LIVER DISEASE (NALFD)

A recent meta-analysis [7] based on 6 different studies has shown that liver stiffness measured with FibroScan® is good to detect :

- significant liver fibrosis with a **mean AUROC* of 0.84 (95% CI** : 0.79-0.90)**
- excellent to detect cirrhosis with a **mean AUROC of 0.94 (0.86-0.99).**

* AUROC: area under Receiver Operator Characteristics curve

** 95% CI : 95% confidence interval

Moreover, the availability of the XL probe dedicated to overweight patients with a skin-to-liver capsula distance greater than 2.5 cm will allow assessment of a large portion of the patients that could not previously benefit from the FibroScan® procedure [8].

BILIARY DISEASE

Liver stiffness has also been shown to be of clinical use to detect fibrosis and cirrhosis in patients with primary biliary cirrhosis and primary sclerosing cholangitis [9].

Controlled Attenuation Parameter (CAP)

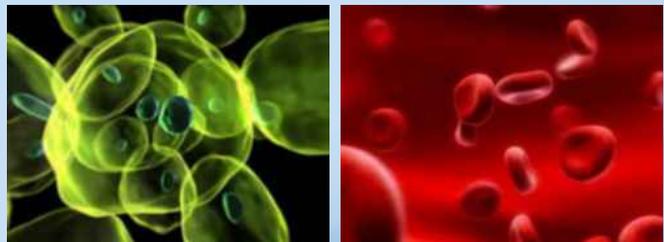
In addition to measuring liver stiffness, FibroScan® 502 Touch now allows you to also assess the Controlled Attenuation Parameter (CAP) which has been developed for the detection of liver steatosis. Several publications and communications support this new feature of the FibroScan® 502 Touch.

→ A proof of concept publication on the CAP™ technology [23]

→ In a cohort of 115 patients with various chronic liver diseases, the AUROC* of CAP to assess steatosis were:

- 0.91 for steatosis superior or equal to 11%
- 0.94 for steatosis superior or equal to 34%
- 0.89 for steatosis superior or equal to 67%

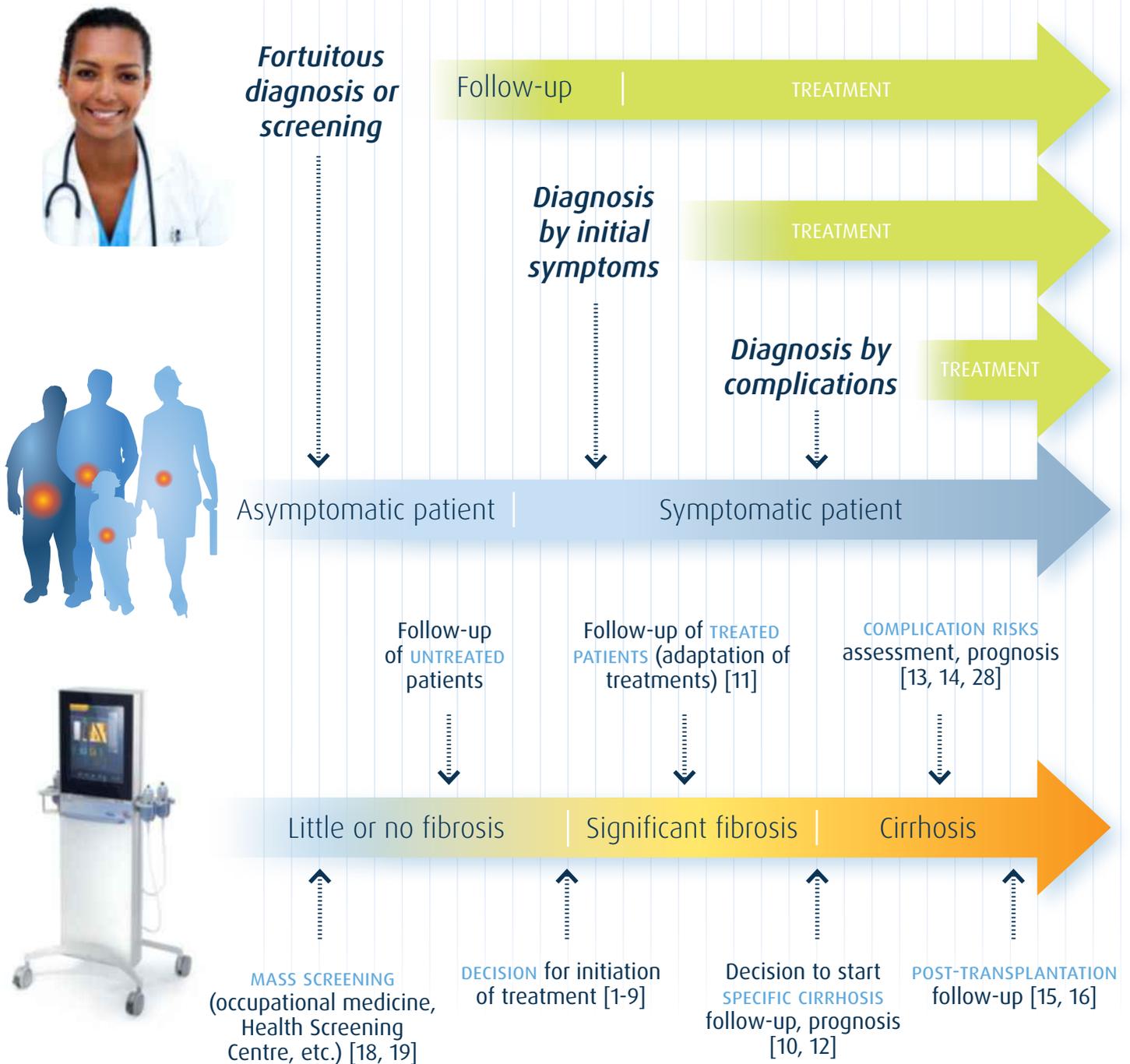
→ Several communications in international hepatology meetings (AASLD, EASL, APASL) [24-27]



FibroScan® 502 Touch, with its dedicated probes, is a diagnostic aid measuring liver stiffness and Controlled Attenuation Parameter.

These values must be interpreted by a medical doctor specialized in liver disease taking into account the complete medical record of the patient, presence of identified confounding factors and the quality of the measurement procedure (number of valid measurements, dispersion,...).

FibroScan® is of use THROUGHOUT THE COURSE of chronic liver disease



*Your patients will be asking you:
"Can I have a FibroScan® exam?"*



Sharing POWERFUL practice

AN INNOVATIVE DESIGN WHICH IMPROVES PRODUCTIVITY

To date, thousands **FibroScan®** devices have been installed worldwide. FibroScan® is used to aid diagnosis in 1.5 million men, women and children every year.



New Software

TACTILE INTERFACE WITH A NEW DESIGN

- Optimized ergonomomy & data workflow
- User-friendly interface
- Easy to use

PATIENT DATA MANAGEMENT

- Organized by patients
- Multi-criteria search (last name, first name, date...)

NETWORK CONNECTION

- Easy data export
- Push data to shared network directories



Smart Tools

AUTOMATED PROBE SELECTION

- An indicator to recommend the probe best suited to the patient's morphology

LIVER TARGETING TOOL

- An indicator to target optimal measurement areas

FIBROSCAN® REPORTS

- Generate and edit multilingual reports
- Personalize reports with hospital logo, address...
- Print examination history



FibroScan® 502 Touch expert tools

Non invasive liver stiffness measurement
Innovative steatosis quantification

Hardware

TOUCH SCREEN

- Optimal comfort & image quality in all situation
- High contrast & brightness
- Wide viewing angle

ADVANCED CONNECTIVITY OPTIONS

- Save & export data to removable drive (USB key...) or network (FibroView).

2 PROBE CONNECTORS

- Connect two probes simultaneously

FRONT AND REAR HANDLES

- Easy to move and manipulate

ADVANCED ELECTRONIC FOR FAST AND EFFECTIVE EXAMINATION

- High speed elastometry engine





Probes

THREE DIFFERENT ERGONOMIC PROBES ENABLE YOU TO ADDRESS A FULL RANGE OF CLINICAL AND MORPHOLOGICAL NEEDS

Each patient is different. Echosens has designed its probes to ensure efficient diagnosis in all circumstances.



PAEDIATRIC PROBE

- Transducer specifically designed for being placed into narrow intercostal space
- A higher ultrasound frequency, 5 MHz, enabling measurements adapted for chest perimeter from 45 to 75 cm
- Depth of measurement are adapted from 15 to 50 mm depending on children's morphology



ADULT PROBE

- The M probe is designed for the general population. It is used for the majority of adults with a thoracic perimeter of more than 75 cm
- Ultrasound frequency is 3.5 MHz
- Liver stiffness measurements take place between 25 and 65 mm under the skin



PROBE FOR OVERWEIGHT PATIENTS

- A more sensitive ultrasound sensor at the frequency of 2.5 MHz has been designed to enhance deeper signal penetration through tissues over a 35 to 75 mm depth
- XL probe must be used on patient with a skin capsula distance (SCD) greater than 2.5 cm. Automated probe selection will recommend the probe best suited to the patient's morphology

RECOMMENDATIONS FOR USE

- Training: Echosens or its representative must certify the operator to ensure the proper use of the device and all its features
- Examination procedures provide better reproducibility and accuracy with 10 valid stiffness measurements at the same measurement point



Sharing SERVICE solutions

DISTRIBUTION, TRAINING AND AFTER-SALES SERVICE

Distribution

OUR DISTRIBUTOR NETWORK IN YOUR COUNTRY IS YOUR DIRECT CONTACT

Echosens has an exclusive distribution network that provides sales, training and after-sales support.

We will also provide direct support in countries we serve directly.

For more information, contact our sales team:
distribution@echosens.com or your local distributor

Training

HOW TO ACHIEVE BEST PRACTICE

After on site training, you will be certified to use FibroScan®. The training is mandatory in order to obtain accurate and reliable measurements. Nurses can use the equipment but only physicians can interpret the results in light of the patient's history.

Dedicated training includes:

- A custom-designed theory session aimed at understanding indications and criteria for use of the device and individual probes
- A practical session to teach in good examination practice

For more information, contact our training team:
training@echosens.com





**Accessing technology know-how
after you acquire your FibroScan®**

After-sales service

LOCAL SUPPORT IS AVAILABLE

Distributors are in charge of ensuring the after-sales service of all Echosens products. Our specially trained and certified engineers will take care of your device. We ensure fast and efficient answers that will keep your device up and running*.

ACCESSORIES AND SUPPLIES

To enhance your productivity, the Echosens Service Centre or your local distributor will support you with calibration, repairs, parts and maintenance services.

→ ***FibroScan® probes need to be calibrated every year to maintain proper performance.***

SERVICE CONTRACT

Service contracts with local support.

It can range from probe maintenance alone to an all-inclusive contract. You're free to choose.

For more information, contact our team after-sales service:
service@echosens.com

* After acceptance of an estimate or under a service contract

Sharing EXPERTISE & INNOVATION

ABOUT ECHOSENS

Echosens is actively expanding its global presence. We are supported by a team of medical experts who have helped to transform our core technology*, VCTE, into the first commercially available product with Transient Elastography: FibroScan®.

OUR MISSION

Offer to our customers technological and ergonomic solutions in hepatology to improve patient quality of life based on:

- A robust portfolio of patents
- A totally non-invasive solution

OUR PARTNERS

Echosens establishes many medical and scientific partnerships around the world (Germany, China, USA, United Kingdom...).

In France, we develop strong links with the universities as:

- Université Rabelais de Tours
- Centre d'investigation Clinique – Innovation Technologie, CHRU de Tours, Hôpital Bretonneau
- Institut Pierre et Marie Curie, Paris
- Telecom ParisTech
- INSERM

OUR COMMITMENT

Our commitment to quality is shown by:

- ISO 13485 certification since 2005
- CE mark since 2003



* Echosens owns 17 patents in the domain of transient elastography.

BIBLIOGRAPHY

1. Ziol, M., et al., *Non-invasive assessment of liver fibrosis by stiffness measurement: a prospective multicentre study in patients with chronic hepatitis C*. *Hepatology*, 2005. **41**(1): p. 48-54.
2. Marcellin, P., et al., *Non-invasive assessment of liver fibrosis by stiffness measurement in patients with chronic hepatitis B*. *Liver International*, 2009. **29** (2): p. 242-247.
3. Chan, H.L., et al., *Alanine aminotransferase-based algorithms of liver stiffness measurement by transient elastography (Fibroscan) for liver fibrosis in chronic hepatitis B*. *Journal of viral hepatitis*, 2009. **16**(1): p. 36-44.
4. Vergara, S., et al., *The use of transient elastometry for assessing liver fibrosis in patients with HIV and hepatitis C virus coinfection*. *Clinical Infectious Diseases*, 2007. **45**(8): p. 969-74.
5. Nguyen-Khac, E., et al., *Assessment of asymptomatic liver fibrosis in alcoholic patients using fibroscan: prospective comparison with 7 non-invasive laboratory tests*. *Alimentary Pharmacology & Therapeutics*, 2008. **28**(10): p. 1188-98.
6. Melin, P., et al., *Dépistage non invasif de la fibrose: Intérêt du FibroScan® en consultation d'alcoologie [Noninvasive screening of fibrosis: interest of FibroScan® in alcohol addiction consultation]*. *Alcoologie et Addictologie*, 2005. **27**(3): p. 191-196.
7. Musso, G., et al., *Meta-analysis: Natural history of non-alcoholic fatty liver disease (NAFLD) and diagnostic accuracy of non-invasive tests for liver disease severity*. *Annals of Medicine*, 2010. **In press**.
8. de Ledinghen, V., et al., *Feasibility of liver transient elastography with FibroScan(R) using a new probe for obese patients*. *Liver International*, 2010. **30**(7): p. 1043-1048.
9. Corpechot, C., et al., *Assessment of biliary fibrosis by transient elastography in patients with PBC and PSC*. *Hepatology*, 2006. **43**(5): p. 1118-1124.
10. Friedrich-Rust, M., et al., *Performance of transient elastography for the staging of liver fibrosis: a meta-analysis*. *Gastroenterology*, 2008. **134**(4): p. 960-74.
11. Arima, Y., et al., *Reduction of liver stiffness by interferon treatment in the patients with chronic hepatitis C*. *Hepatology Research*, 2010. **40**(4): p. 383-92.
12. Malik, R., et al., *Comparison of transient elastography, serum markers and clinical signs for the diagnosis of compensated cirrhosis*. *Journal of Gastroenterology & Hepatology*, 2010. **25**(9): p. 1562-8.
13. Vizzutti, F., et al., *Liver stiffness measurement predicts severe portal hypertension in patients with HCV-related cirrhosis*. *Hepatology*, 2007. **45**(5): p. 1290-7.
14. Masuzaki, R., et al., *Prospective risk assessment for hepatocellular carcinoma development in patients with chronic hepatitis C by transient elastography*. *Hepatology*, 2009. **49**(10): p. 1954-61.
15. Rigamonti, C., M.F. Donato, and M. Colombo, *Transient elastography in the early prediction of progressive recurrent hepatitis C following liver transplantation*. *Hepatology*, 2010. **52**(2): p. 800-1.
16. Carrión, J.A., et al., *Liver stiffness identifies two different patterns of fibrosis progression in patients with HCV recurrence after liver transplantation*. *Hepatology*, 2010. **51**(1): p. 23-34.
17. Laharie, D., et al., *Assessment of liver fibrosis with transient elastography and FibroTest in patients treated with methotrexate for chronic inflammatory diseases: A case-control study*. *Journal of Hepatology*, 2010. **53**(6): p. 1035-40.
18. Roulot, D., et al., *Transient elastography as a screening tool for liver fibrosis and cirrhosis in a community-based population over 45 years*. *Gut*, 2010. **In Press**.
19. Foucher, J., et al., *FibroScan® used in street-based outreach for drug users is useful for hepatitis C virus screening and management: a prospective study*. *Journal of Viral Hepatitis*, 2009. **16**(2): p. 121-31.
20. Menten, R., et al., *Transient elastography in patients with cystic fibrosis*. *Pediatric Radiology*, 2010. **40**(7): p. 1231-5.
21. Nobili, V., et al., *Accuracy and reproducibility of transient elastography for the diagnosis of fibrosis in pediatric nonalcoholic steatohepatitis*. *Hepatology*, 2008. **48**(2): p. 442-8.
22. Bonnard, P., et al., *Comparison of elastography, serum marker scores, and histology for the assessment of liver fibrosis in hepatitis B virus (HBV)-infected patients in Burkina Faso*. *The American Journal of Tropical Medicine and Hygiene*, 2010. **82**(3): p. 454-8.
23. Sasso, M., et al., *Controlled attenuation parameter (CAP): a novel VCTE guided ultrasonic attenuation measurement for the evaluation of hepatic steatosis - Preliminary study and validation in a cohort of patients with chronic liver disease from various causes*. *Ultrasound in Medicine and Biology*, 2010. **36**(11): p. 1825-1835.
24. Sasso, M., et al., *Controlled attenuation parameter (CAP): a novel VCTE guided ultrasonic attenuation measurement for the evaluation of hepatic steatosis - Preliminary study and validation in a cohort of patients with chronic liver disease from various causes*. *Ultrasound in Medicine and Biology*, 2010. **36**(11): p. 1825-1835.
25. Myers, R.P., et al., *Controlled Attenuation Parameter (CAP): a noninvasive method for the detection of hepatic steatosis based on transient elastography*. *Liver International*, 2012. **32**(6): p. 902-10.
26. de Ledinghen, V., et al., *Non-invasive diagnosis of liver steatosis using controlled attenuation parameter (CAP) and transient elastography*. *Liver Int*, 2012. **32**(6): p. 911-8.
27. Sasso, M., et al., *Novel Controlled Attenuation Parameter (CAP) for noninvasive assessment of steatosis using Fibroscan®: validation in chronic hepatitis C*. *Journal of Viral Hepatitis*, 2012. **36**(1): p. 73-20.
28. Vergniol, J., et al., *Non-Invasive Tests for Fibrosis and Liver Stiffness Predict 5-Year Outcomes of Patients with Chronic Hepatitis C*. *Gastroenterology*, 2011. **In Press**.

F5502T072015 - Revision date [07/15] - FibroScan® 502 Touch is a class IIa medical device according to Directive EC/93/42 and is manufactured by Echosens. Assessment of its conformity with the essential requirements of the Directive EC/93/42 is established by the LNE-G-MED (n°0459) - France. FibroScan® is indicated for the noninvasive measurement of liver stiffness (E) and controlled attenuation parameter (CAP) in humans.

It is expressly recommended to carefully read the guidance within the users' guide and labeling of the device. FibroScan® examination must only be performed by operators certified by the manufacturer or its accredited local representative. The values obtained with FibroScan® must be interpreted by a physician experienced in dealing with liver disease, taking into account the complete medical record of the patient. In France, liver stiffness measurement by FibroScan® is reimbursed by national Social Security medical insurance, in some circumstances and under certain conditions: see terms on the ameli.fr website.

FibroScan® and its probes (M+ and XL+) is a class II medical device according to the Code of Federal regulation (21 CFR Sections 892.1560 and 892.1570). The FibroScan® system is intended to provide 50Hz shear wave speed measurements through internal structure of the body. FibroScan® is indicated for noninvasive measurement of shear wave speed at 50Hz in the liver. The shear wave speed may be used as an aid to clinical management of patients with liver disease.



FLASH THIS CODE



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