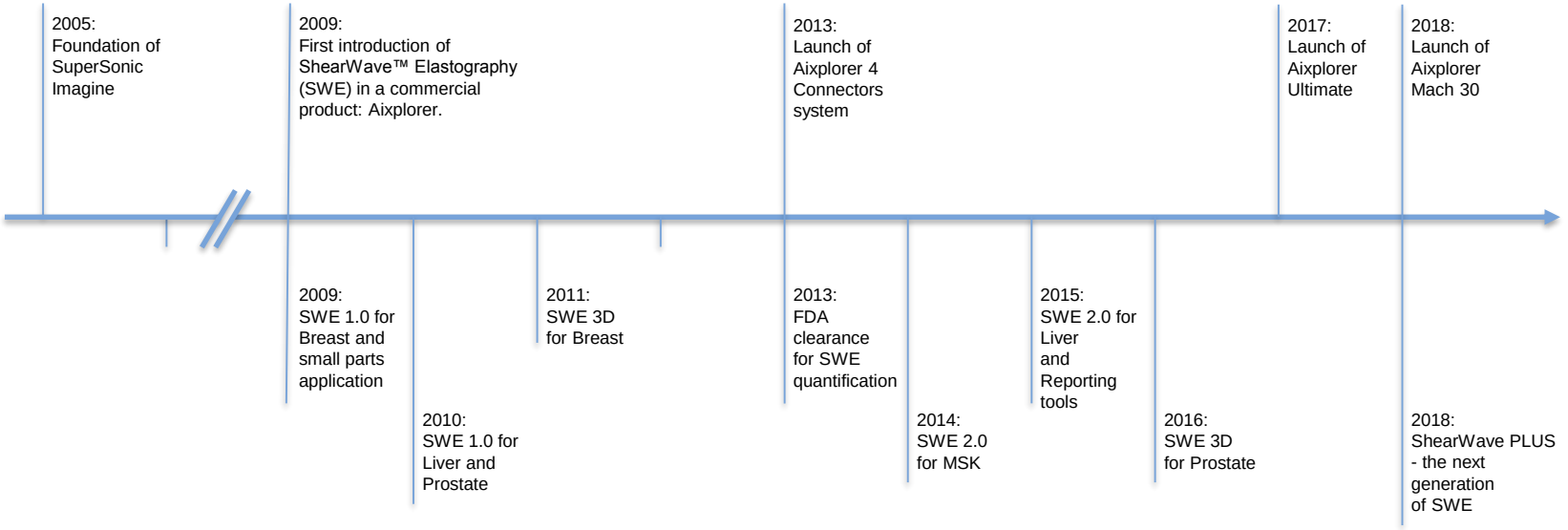
SHEARWAVE PLUS

THE NEXT LEVEL OF SHEARWAVE® ELASTOGRAPHY PERFORMANCE

SUPERSONIC IMAGINE: FROM PIONEER TO MARKET LEADER



SSI has pioneered the field of US shear wave-based elastography by removing blocking constraints.

For 10 years, SSI has set new standards for a unique user experience.

SOURCE: SUPERSONIC IMAGINE

FROM SHEARWAVE® ELASTOGRAPHY TO SHEARWAVE® PLUS

- SWE™ AND SHEARWAVE™ PLUS

  - THE ONLY IMPLEMENTATIONS OF ULTRASOUND SHEAR WAVE-BASED ELASTOGRAPHY that use supersonic pushes and UltraFast imaging.

  - ALL OTHER IMPLEMENTATIONS GENERATE NON-AMPLIFIED SHEAR WAVES, leading to sub-optimal signal-to-noise ratio.

- WHAT ARE THE UNIQUE TECHNOLOGICAL ADVANTAGES OF SHEARWAVE PLUS?

  - AMPLIFICATION OF THE SHEAR WAVE FRONT WITH THE SUPERSONIC EFFECT: the only way to amplify the shear wave amplitude.

  - ULTRAFAST™ PLANE WAVE IMAGING: storing and computing power of GPUs has led to software beam formation.

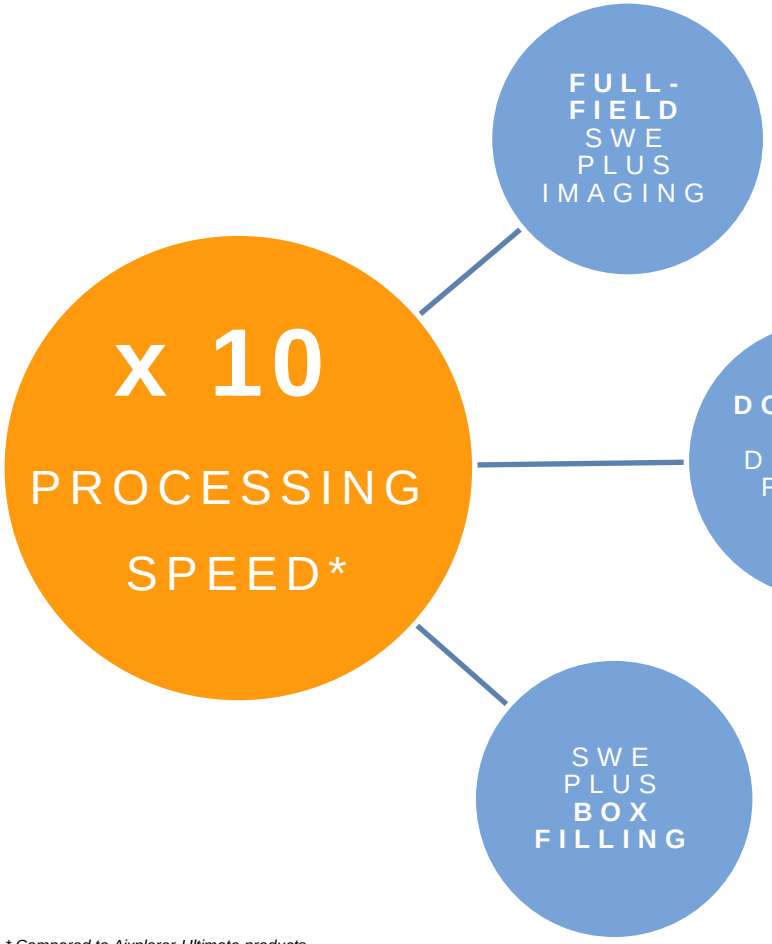
ONLY AVAILABLE ON AIXPLORER® PRODUCTS

FORGET ABOUT TRADE-OFF AND COMPROMISE IN ULTRASOUND IMAGING

CONVENTIONAL FOCUSING US IMAGING PLATFORMS	ULTRAFAST™ PLANE WAVE US IMAGING PLATFORM
TRADE-OFF IS THE RULE.	TRADE-OFF IS OUT OF THE EQUATION.
	
FIELD OF VIEW WIDTH	FIELD OF VIEW WIDTH
OR	AND
SPATIAL RESOLUTION	SPATIAL RESOLUTION
OR	AND
PENETRATION	PENETRATION
OR	AND
DISPLAY FRAME RATE	DISPLAY FRAME RATE

SOURCE: SUPERSONIC IMAGINE

SHEARWAVE™ PLUS: NO COMPROMISE IN YOUR ELASTOGRAPHY PRACTICE!



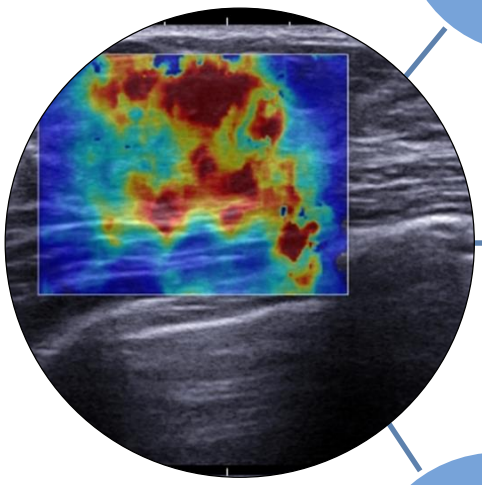
- Full coverage of ultrasound field of view
- Still no compromise on SWE spatial resolution and frame rate
- Still no compromise on B mode imaging
- Quick assessment of large lesions and masses
- Study of organs heterogeneities

- Real-time SWE imaging keeps improving
- Up to 5 SWE images per second
- Sustained practical use and clinical utility
- Dynamic evaluation of stiffness changes

- Boosted signal-to-noise ratio
- Enhanced reliability
- Accelerated SWE PLUS box filling

** Compared to Aixplorer Ultimate products*

SHEARWAVE™ PLUS: REAL-TIME IMAGING AND IMAGE-GUIDED QUANTIFICATION



RELIABLE

- THE best shear amplitude (supersonic mode, breaking the « shear barrier »)
- THE best way to measure shear wave speed (plane wave ultrafast imaging)
- Optimal recording of signal vs noise (SNR)
- Optimal resolution in spatial sampling
- We measure pure shear wave, nothing else

VALIDATED

600+

- Breast SWE:
  - +140 publications
  - Included in ACR BI-RADS: Ultrasound (2015)
  - Included in KSUM Guidelines for breast elastography (2014)
  - Part of the EFSUMB and WFUMB Guidelines
- Liver SWE:
  - New liver-specific EFSUMB Guidelines (2017)
  - Additional Indication For Use from the U.S. FDA as an aid to clinical management of patients with liver disease
  - Steatosis, Fibrosis
  - Complications of cirrhosis
  - Screening and characterization of liver nodules

FULLY USABLE

- All-in-one equipment, with all imaging modes
- Enjoy innovation without compromise
- Real-time SWE mapping for image guidance
- Full-field SWE maps and quantification tools
- High applicability and reliability of SWE measurements
- SWE measurements fully integrated in reporting tools

SOURCE: SUPERSONIC IMAGINE

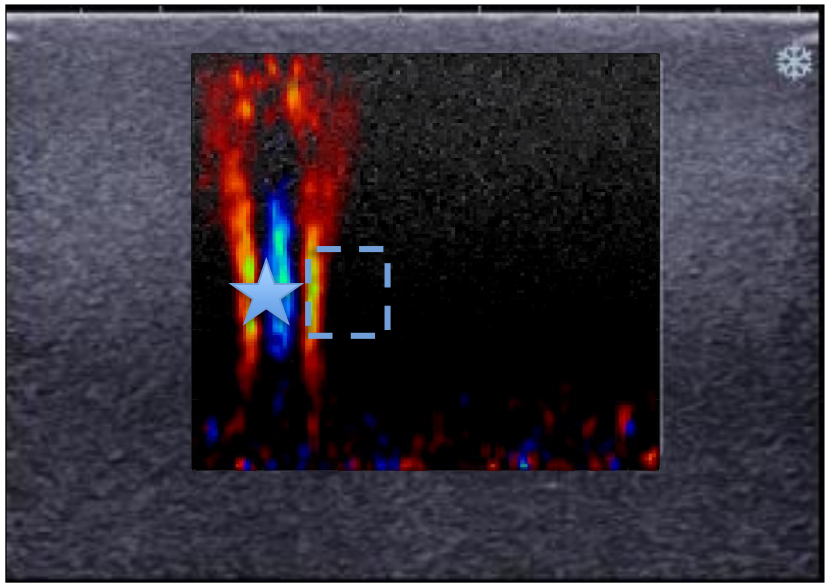
RELIABILITY

RELIABILITY OF SUPERSONIC SHEAR & ULTRAFAST PLANE WAVE IMAGING

GENERATION OF THE SHEAR WAVE WITH SUPERSONIC ACOUSTIC RADIATION FORCE

1 SINGLE FIXED SOURCE

Sub-optimal yield

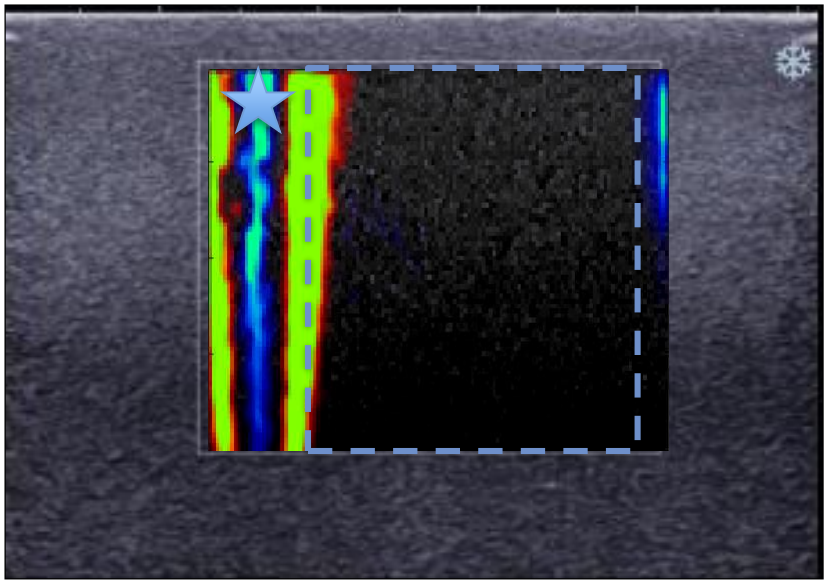


SHORT DISTANCE TRACKING +
SHORT DEPTH

The shear wave front has
low amplitude and attenuates very fast

1 MOVING SUPERSONIC SOURCE

Amplification of the shear wave



LONG DISTANCE TRACKING +
WIDE DEPTH

The shear wave front has
high amplitude and attenuates more slowly

SUPERSONIC SHEAR IMAGING: THE ONLY OPTION TO PERFORM
SWE™ IN REAL-TIME WITH MILLIMETRIC SPATIAL RESOLUTION.

SOURCE: SUPERSONIC IMAGINE

GENERATION OF THE SHEAR WAVE WITH SUPERSONIC ACOUSTIC RADIATION FORCE

OTHER SHEAR WAVE-BASED ELASTOGRAPHY PLATFORMS generate this with isolated individual pushes

SWE PLUS generates this with the supersonic push

RELIABLE ESTIMATIONS OF SHEAR WAVE SPEED

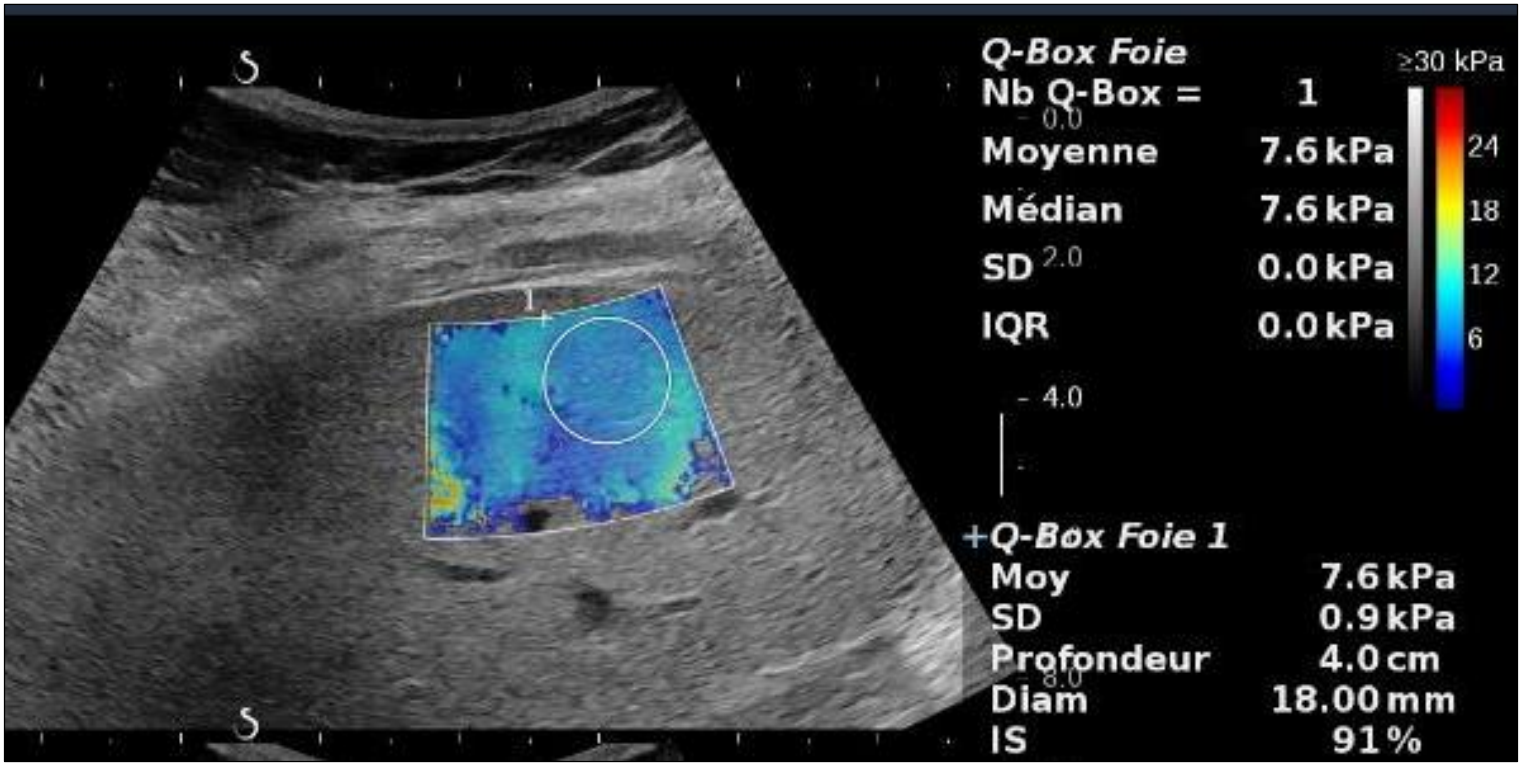
SUPERSONIC AMPLIFICATION OF THE SHEAR WAVE: GUARANTEE OF A COMFORTABLE SHEAR WAVE AMPLITUDE THAT CAN BE RELIABLY TRACKED OVER THE 2D AREA OF INTEREST

SOURCE: SUPERSONIC IMAGINE

REAL-TIME MAPPING WITH ENHANCED SPATIAL RESOLUTION (1/2)

1 Q-BOX™ TRADE

≥ 150 SWE PLUS MEASURES*



* Number of measurements within a Q-Box™ of 10 mm in diameter and with a SWE Box maximum depth at 12 cm.

REAL-TIME MAPPING WITH ENHANCED SPATIAL RESOLUTION (2/2)

- PLANE WAVE IMAGING AT ULTRAFAST™ ACQUISITION RATE (3 - 20 KHZ) GUARANTEES:
  - real-time imaging frame rate (3 images per second) and
  - millimetric spatial resolution.

Q-Box™ diameter (mm)	Number of SWE™ PLUS measurements
10	220
15	490
18	700
20	870

Number of SWE measurements within a Q-Box centered between 3 and 5 cm in depth in standard conditions.

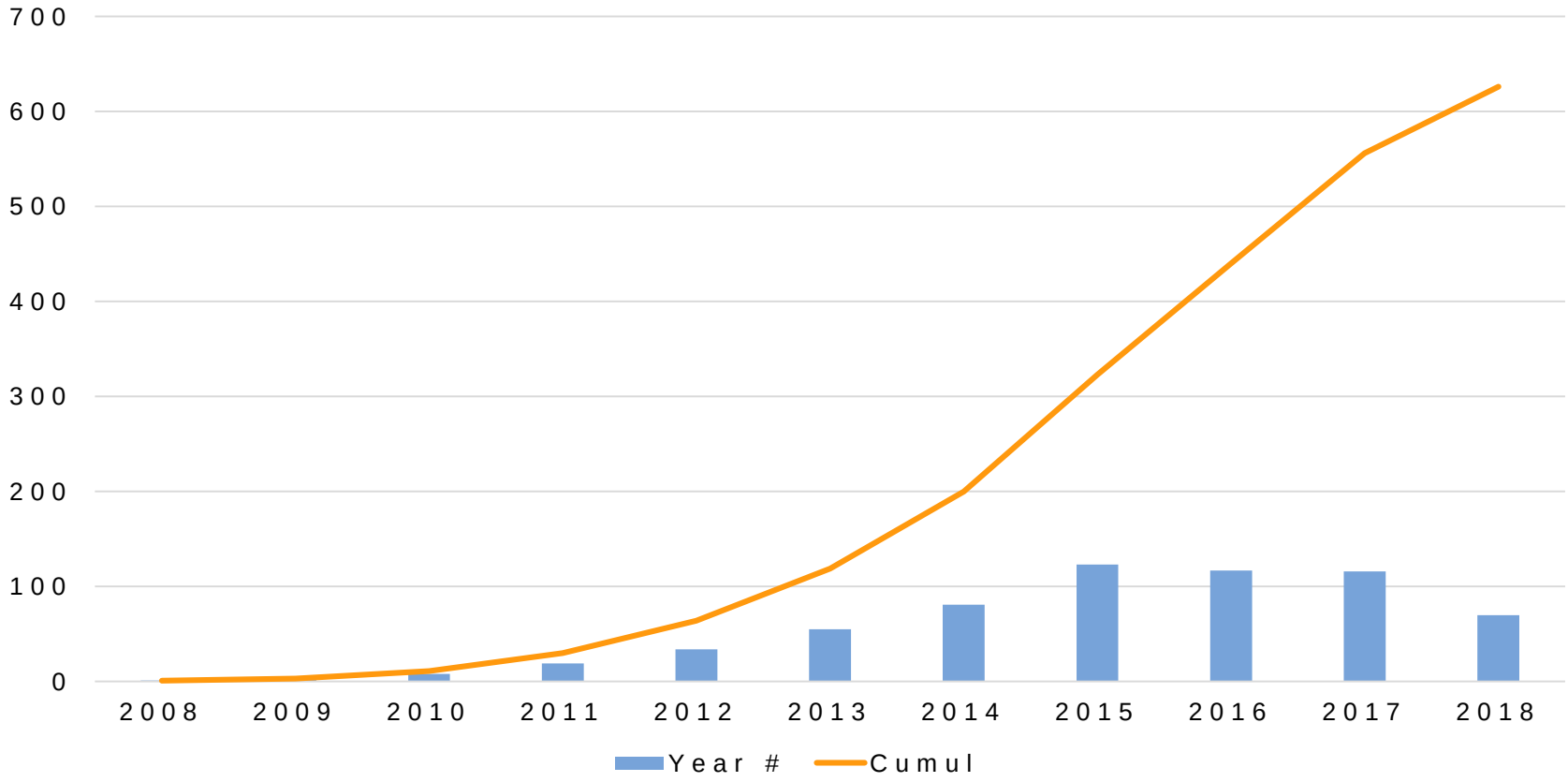
VALIDATION

CLINICAL VALIDATION OF UTILITY OF SWE™ IN SCIENTIFIC PUBLICATIONS

STUDY RESULTS PUBLISHED IN MORE THAN 600 PEER-REVIEWED PUBLICATIONS

Scientific and clinical publications*

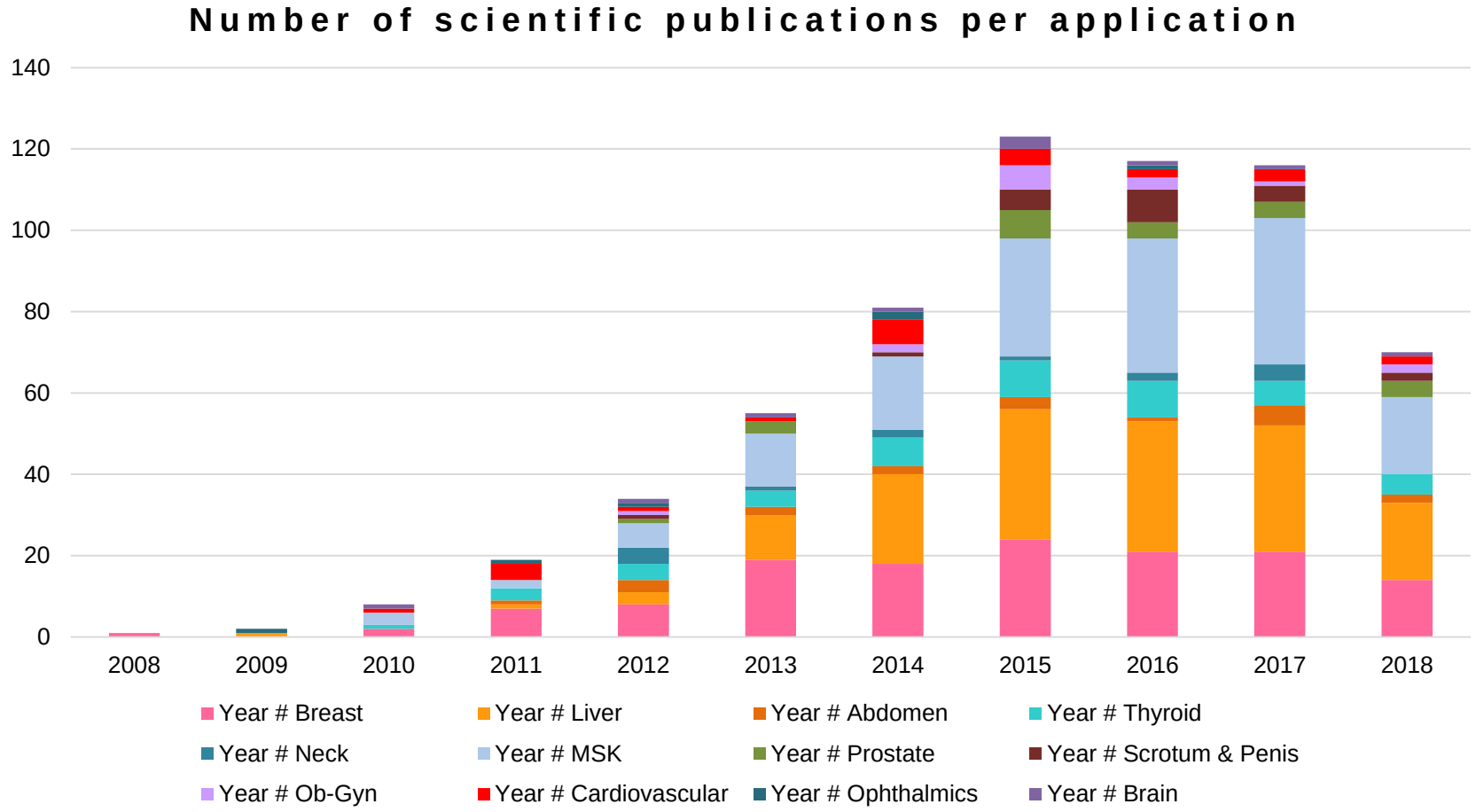
Over the last 10 years with sustained on-going interest



*All applications.

SOURCE: SUPERSONIC IMAGINE

STUDIES AND VALIDATION IN ALL CLINICAL APPLICATIONS



*All applications.

SOURCE: SUPERSONIC IMAGINE

EXTENDED CLINICAL VALIDATION (1/3)

SWE PLUS BENEFITS FROM A UNIQUE LEVEL OF SCIENTIFIC EVIDENCE IN 3 MAJOR APPLICATIONS: BREAST IMAGING, LIVER DISEASE ASSESSMENT AND MUSCULOSKELETAL IMAGING

BREAST IMAGING

130 PUBLICATIONS

- Aid in breast lesion diagnosis and characterization
- Reduction of false positives of ultrasound characterization
- Increase in positive predictive value of biopsy recommendation
- Aid in biopsy guidance on 2nd-look ultrasound
- Aid in detection and diagnosis of non-mass lesions
- Reduction of false positives of screening ultrasound with SWE and color Doppler
- Improved surgery planning with accurate invasive size measurement and histological upgrade prediction
- Improved decision-making for treatment
- Chemotherapy response prediction and monitoring

SOURCE: SUPERSONIC IMAGINE

EXTENDED CLINICAL VALIDATION (2/3)

SWE PLUS BENEFITS FROM A UNIQUE LEVEL OF SCIENTIFIC EVIDENCE IN 3 MAJOR APPLICATIONS: BREAST IMAGING, LIVER DISEASE ASSESSMENT AND MUSCULOSKELETAL IMAGING

LIVER DISEASE ASSESSMENT

150 PUBLICATIONS

- High applicability even in challenging patients
- Provision of reliable liver stiffness estimates
- Screening and severity assessment of liver fibrosis
- Follow-up of patients, monitoring of disease progression
- Prediction of cirrhosis complications or disease worsening
- Non-invasive marker of decompensation clinical events, including portal hypertension and esophageal varices
- Prediction of the presence of HCC in cirrhotic livers
- Aid to characterization of liver nodules
- Planning and monitoring of liver transplantation

SOURCE: SUPERSONIC IMAGINE

EXTENDED CLINICAL VALIDATION (3/3)

SWE PLUS BENEFITS FROM A UNIQUE LEVEL OF SCIENTIFIC EVIDENCE IN 3 MAJOR APPLICATIONS: BREAST IMAGING, LIVER DISEASE ASSESSMENT AND MUSCULOSKELETAL IMAGING

MUSCULOSKELETAL IMAGING

160 PUBLICATIONS

- Screening and assessment of mechanical and inflammatory tendinopathies
- Provision of reliable liver stiffness estimates that turn subjective examinations to objective assessments
- SWE PLUS brings the best of ultrasound innovation to the service of athletic performance for the non-invasive assessment and preservation of athletes' physical integrity
- Aid to personnalize training programs and to monitor maturation profiles
- SWE PLUS is THE most relevant and efficient tool for studying dynamically damages and integrity of the musculo-tendinous unit

SOURCE: SUPERSONIC IMAGINE

SCIENTIFIC AND ACADEMIC RECOGNITION

In Ultrasound imaging

WFUMB
EFSUMB
KSUM

In Radiology

RSNA QIBA
ACR BI-RADS
SRU

THE ULTIMATE RECOGNITION in Chronic Liver Disease:
Extended “Indication For Use” as an aid to liver disease management cleared by the U.S. FDA (K173021 and K180572).

Aixplorer and its SWE Mode has become the 1st ultrasound imaging device that was cleared by the FDA to be used as an aid to the clinical management of patients with liver disease.

CLINICAL VALUE OF SWE PLUS MEASUREMENTS IN CHRONIC LIVER DISEASES

- AIXPLORER®, AIXPLORER® ULTIMATE AND AIXPLORER MACH® 30
  - The 1st ultrasound imaging devices that can be used as an aid to the clinical management of patients with liver disease.

- AIXPLORER AND SSI-SWE: RECOGNITION BY THE U.S. FDA TO ACHIEVE CLINICAL UTILITY THAT IS EQUIVALENT TO THAT OF FIBROSCAN AND VCTE*
  - Aixplorer can be used as an aid to fibrosis assessment (using liver stiffness estimates)
  - Aixplorer can be used as an aid to steatosis assessment (using brightness ratio measurement)

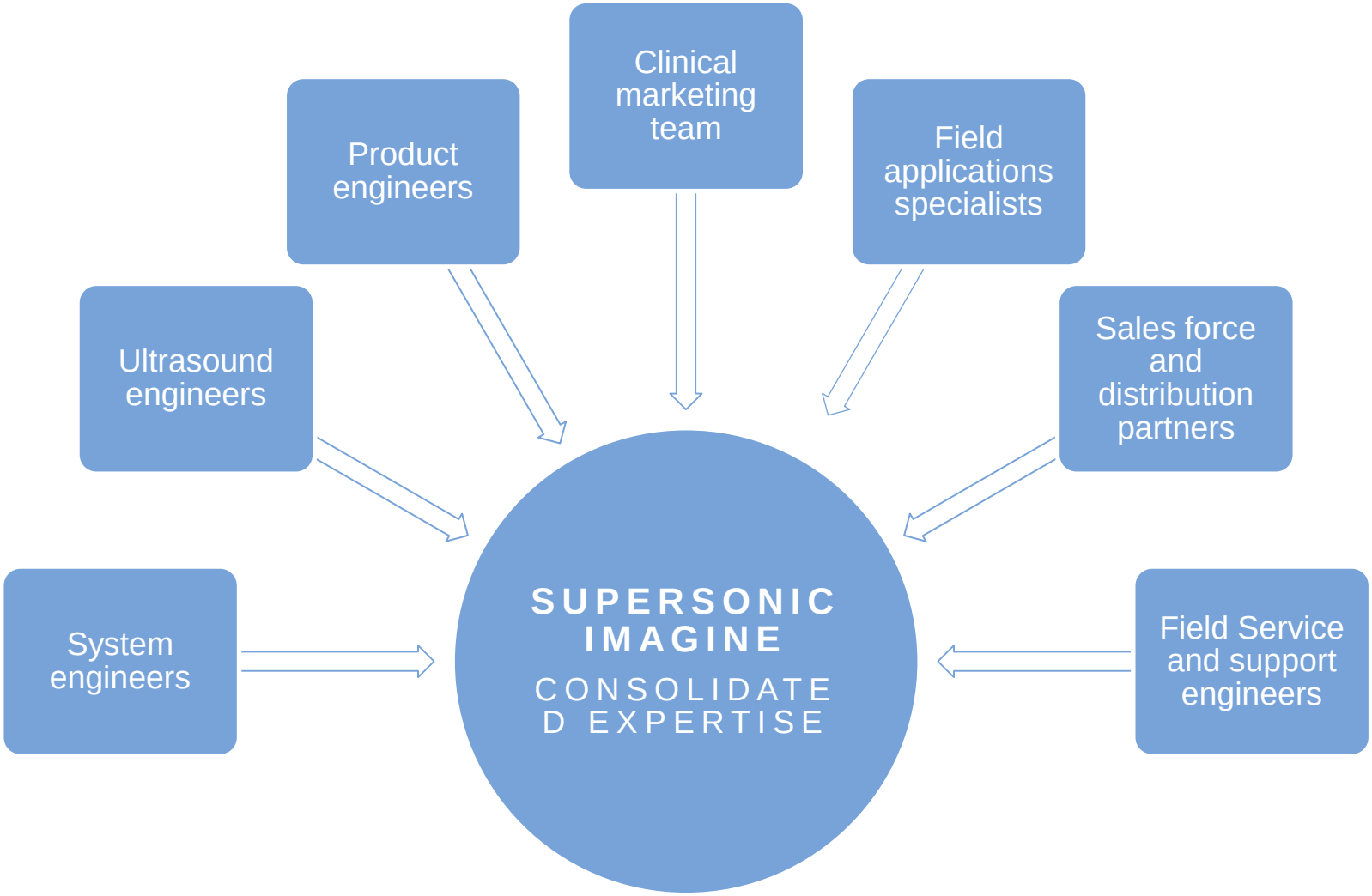
- AIXPLORER PRODUCT FAMILY: A COMPLETE TOOL THAT AIDS THE CLINICAL MANAGEMENT OF PATIENTS WITH LIVER DISEASE
  - SSI-SWE as an aid to screen and evaluate liver fibrosis
  - HRI as an aid to screen and evaluate liver steatosis
  - Doppler, Angio PL.U.S. and CEUS as an aid to screen and characterize liver nodules

* For detailed information on equivalence studies with VCTE, please refer to Annex of this presentation.

EXPERTISE

BUILT-IN EXPERTISE: ELASTICITY IMAGING, STIFFNESS MEASUREMENTS AND CLINICAL NEED

EXPERTS IN ULTRAFAST™ IMAGING, SHEARWAVE PLUS & CLINICAL VALUATION



SOURCE: SUPERSONIC IMAGINE

WE INVENTED AND WE UNDERSTAND SHEARWAVE™ ELASTOGRAPHY

- WE KNOW HOW SWE PLUS CAN INTEGRATE ROUTINE PRACTICE
  - Breast ultrasound imaging
  - Liver imaging and non-invasive assessment
  - Abdominal imaging
  - Uro-genital and prostate ultrasound imaging
  - Musculo-skeletal imaging, rheumatology and sports medicine

- WE KNOW THE ADVANTAGES AND LIMITATIONS OF TISSUE STIFFNESS MEASUREMENTS AND THEIR CLINICAL INTERPRETATION.

- WE DRIVE PRACTICAL RECOMMENDATIONS FOR USE OF SWE PLUS
  - Imaging and quantification protocols
  - Understanding of clinical need
  - Interpretation of stiffness values (cutoffs, confounding factors, limitations…)

- WE KNOW THE FUNDAMENTALS OF
  - Visco-elastic properties of biological tissue
  - Elasticity imaging
  - Shear wave elastography
  - Transient elastography
  - Supersonic shear imaging

- WE UNDERSTAND THAT DIAGNOSTIC CUT-OFF VALUES ARE EQUIPMENT-SPECIFIC.

Dietrich CF et al. EFSUMB Guidelines and Recommendations on the Clinical Use of Liver Ultrasound Elastography, Update 2017. Ultraschall in Med 2017; 38: e16–e47

SCIENTIFIC INTERACTIONS WITH A NETWORK OF OPINION LEADERS

NETWORK OF EXPERTS CENTERS AND OPINION LEADERS

EUROPE, MIDDLE EAST & AFRICA: FRANCE, GERMANY, SWITZERLAND, GREECE, ISRAEL
UNITED STATES
ASIA-PACIFIC: CHINA, AUSTRALIA, NEW ZEALAND, INDIA, SOUTH KOREA

SOURCE: SUPERSONIC IMAGINE

EXPERTS IN CLINICAL VALUATION FOR LIVER DISEASE MANAGEMENT

- SUPERSONIC IMAGINE'S EXPERTISE IN SHEAR WAVE-BASED ELASTOGRAPHY, AND ESPECIALLY SWE™ PLUS
  - has allowed the company to consolidate and propose liver stiffness diagnostic cut-off values for the evaluation of liver fibrosis severity.
  - This work consolidates results and conclusions of about 20 peer-reviewed publications using liver stiffness estimates by SWE™ to assess non-invasively liver fibrosis, using histology from liver biopsy or partial hepatectomy as the Reference Standard.
  - Such consolidation has enabled to propose diagnostic cut-offs values depending on the clinical objectives that pertain to medical specialties (radiologists, hepato-gastroenterologists, internists, infectious medicine specialists…)

Aixplorer products have become the 1st ultrasound imaging device that was cleared by the FDA to be used as an **aid to the clinical management of patients with liver disease**.

SOURCE: SUPERSONIC IMAGINE

PROPOSAL OF SWE™ DIAGNOSTIC CUT-OFF VALUES

SUPERSONIC imagine

BREAST LESIONS ULTRASOUND DIAGNOSIS

BREAST LESION CHARACTERIZATION AND *REDUCTION OF FALSE POSITIVES*

Shear-wave elastography improves the specificity of breast US: the BE1 multinational study of 939 masses. Berg WA et al. Radiology. 2012 Feb;262(2):435-49.

Upgrade BI-RADS 3

Red

Emax ≥**160 kPa**

Sens: 97% => 98-99%

Downgrade BI-RADS 4a

Light blue

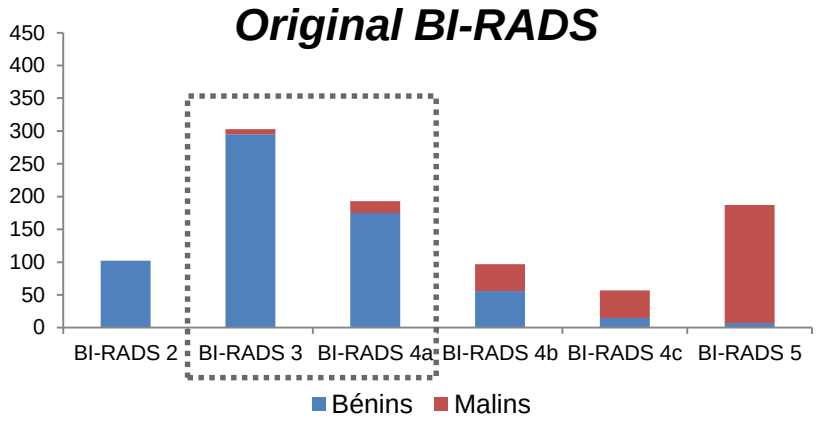
Emax≤ **80kPa**

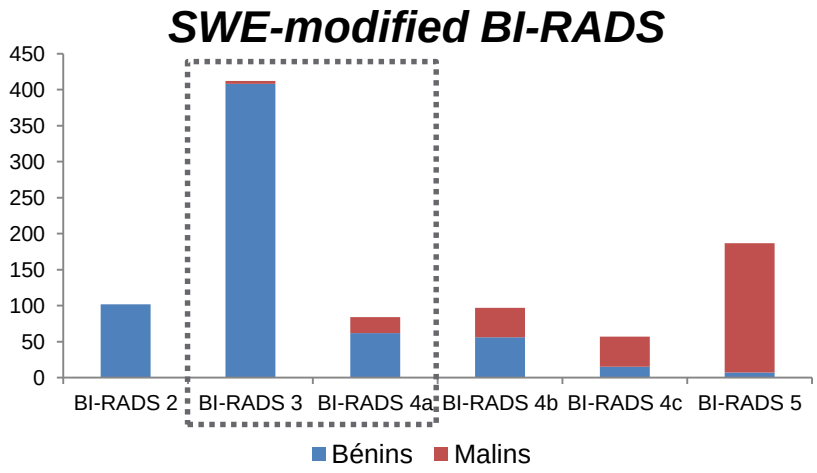
Spec: 61% => 78%

Dark blue

Emax≤ **30kPa**

Spec: 61% => 70%





CAN SWE ***REDUCE FALSE NEGATIVES*** OF BREAST ULTRASOUND?

Shear-wave elastography improves the specificity of breast US: the BE1 multinational study of 939 masses. Berg WA et al. Radiology. 2012 Feb;262(2):435-49.

Consider biopsy if BI-RADS® 3 EMax ≥ 160 kPa

In BE1 study, for ***oval circumscribed masses*** without any suspicious features, sensitivity would have increased from **0% to 100%**!

All 4 BI-RADS 3 cancers would have been biopsied thanks to SWE™.

Differentiating benign from malignant solid breast masses: value of shear wave elastography according to lesion stiffness combined with greyscale ultrasound according to BI-RADS classification. Evans A et al. Br J Cancer. 2012 Jul 10;107(2):224-9.

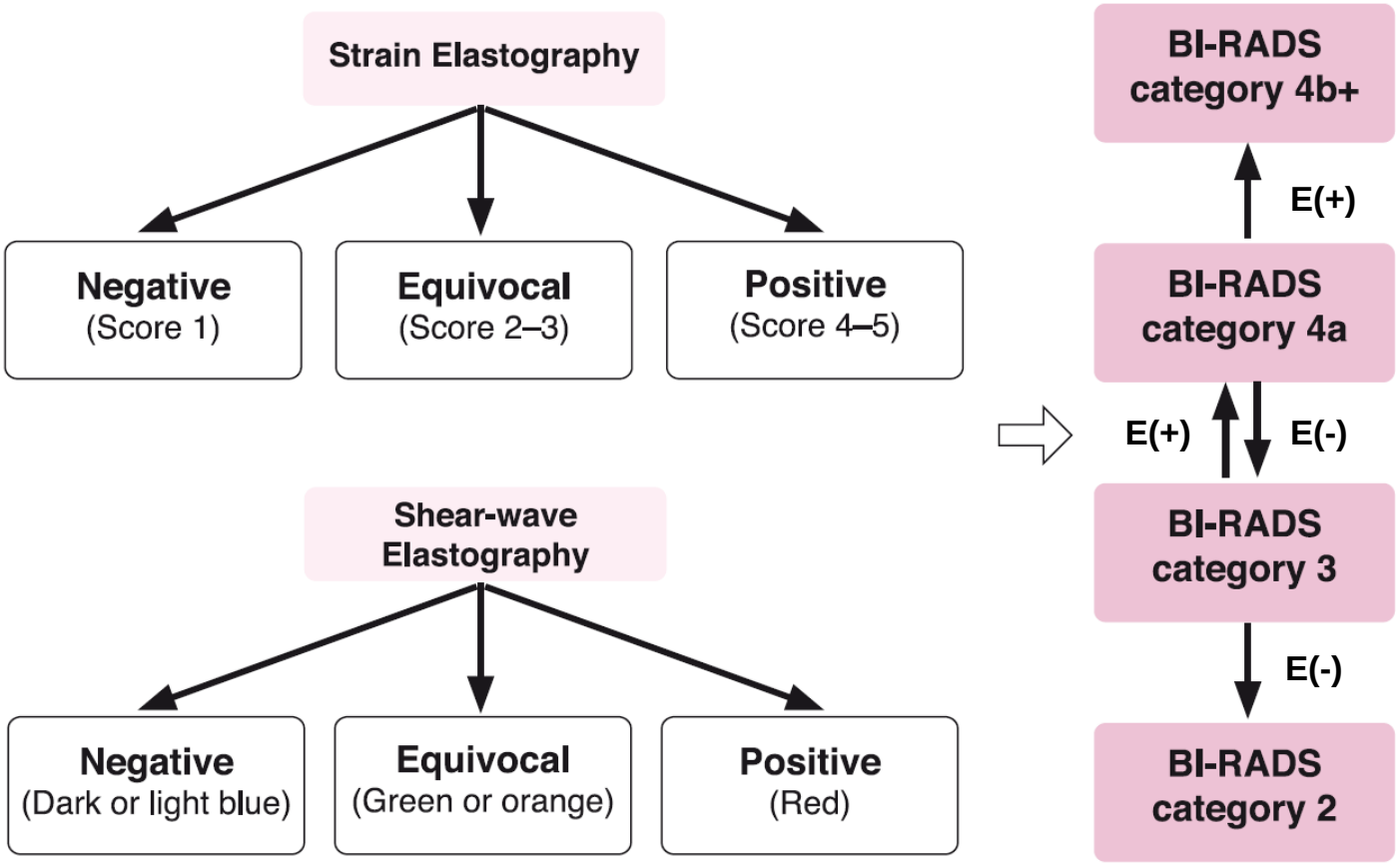
	BI-RADS	SWE	BI-RADS + SWE
Sensitivity	95	95	100
Specificity	69	77	61
PPV	84	88	82
NPV	90	91	100

Consider biopsy for BI-RADS® 3 masses with EMean ≥ 50 kPa

In Prof Evans' experience, this leads to a 100% sensitivity, at the expense of a decrease in specificity.

RECOMMANDATION OF THE KOREAN SOCIETY OF MEDICAL ULTRASOUND

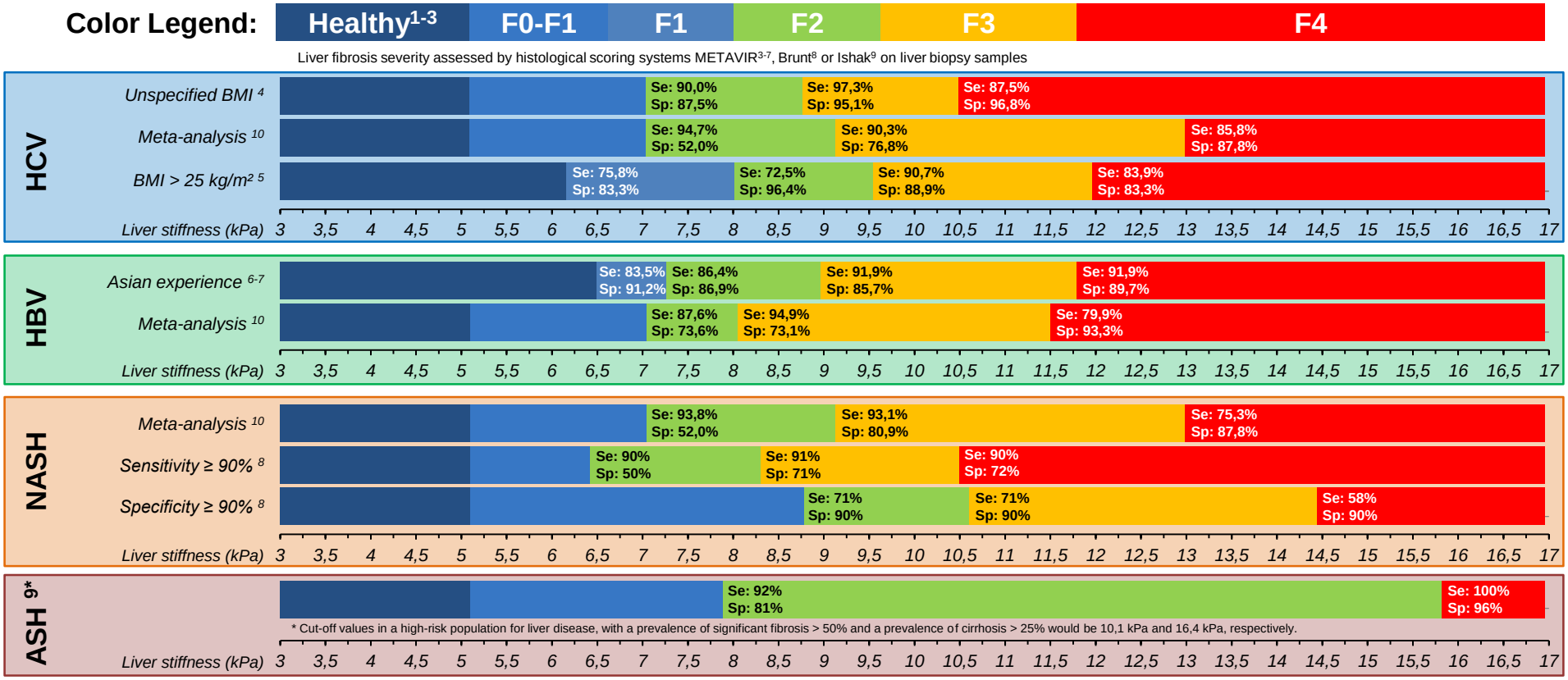
LEE ET AL. ULTRASONOGRAPHY. 2014 JAN;33(1):3-10.



LIVER FIBROSIS ASSESSMENT

FOR HEPATOLOGISTS AND CLINICIANS

EVALUATION OF LIVER FIBROSIS SEVERITY BY SWE™ FOR HEPATOLOGISTS



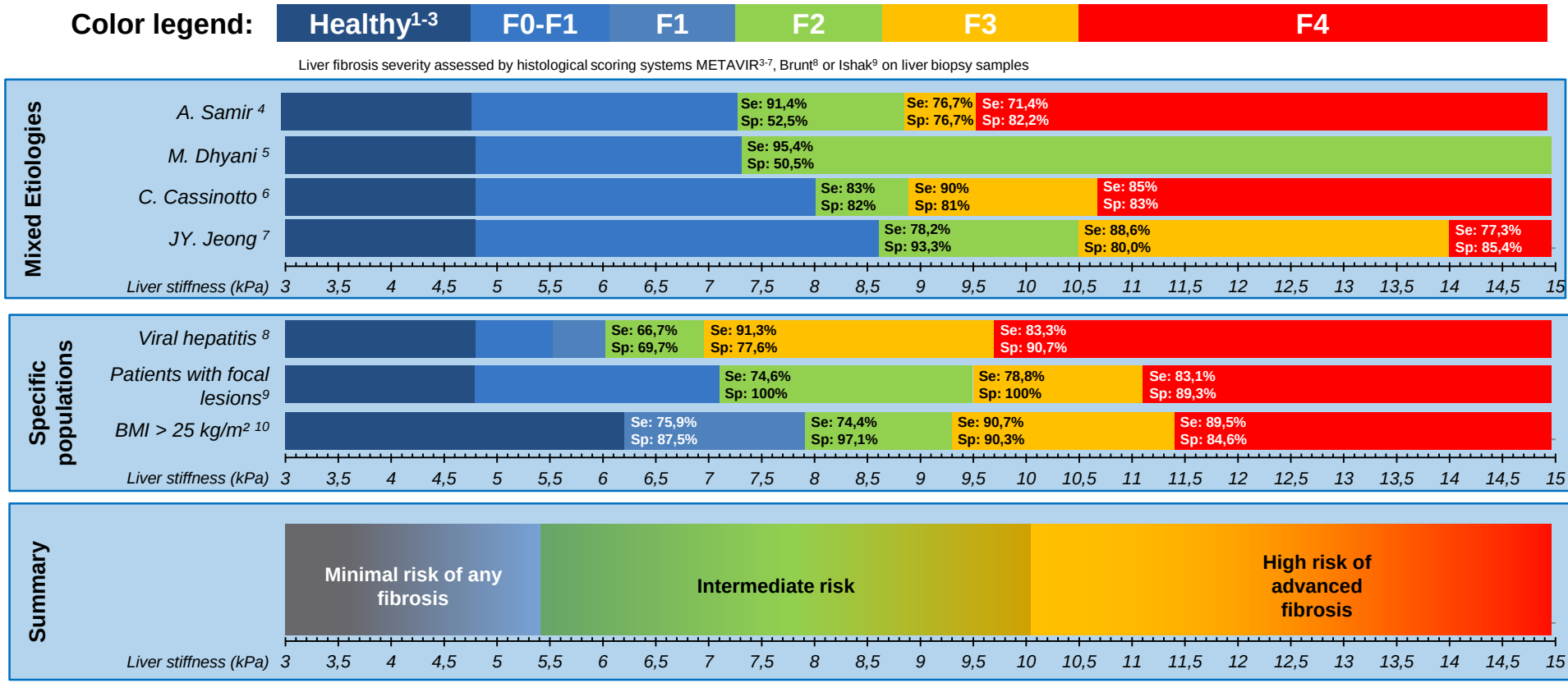
References :

1. Reproducibility of real-time shear wave elastography in the evaluation of liver elasticity. Ferraioli G et al. Eur J Radiol. 2012 Nov;81(11):3102-6.
2. Inter- and intra-operator reliability and repeatability of shear wave elastography in the liver: a study in healthy volunteers. Hudson JM et al. Ultrasound Med Biol. 2013 Jun;39(6):950-5.
3. Staging of hepatic fibrosis: comparison of magnetic resonance elastography and shear wave elastography in the same individuals. Yoon JH et al. Korean J Radiol. 2013 Mar-Apr;14(2):202-12.
4. Accuracy of real-time shear wave elastography for assessing liver fibrosis in chronic hepatitis C: a pilot study. Ferraioli G et al. Hepatology. 2012 Dec;56(6):2125-33
5. Supersonic Shear Imaging and Transient Elastography With the XL Probe Accurately Detect Fibrosis in Overweight or Obese Patients With Chronic Liver Disease. Yoneda M et al. Clin Gastroenterol Hepatol. 2015 Aug;13(8):1502-9.e5.
6. Quantitative Elastography of Liver Fibrosis and Spleen Stiffness in Chronic Hepatitis B Carriers: Comparison of Shear-Wave Elastography and Transient Elastography with Liver Biopsy Correlation. Leung VY et al. Radiology. 2013 Dec;269(3):910-8.
7. Diagnostic accuracy of two-dimensional shear wave elastography for the non-invasive staging of hepatic fibrosis in chronic hepatitis B: a cohort study with internal validation. Zeng J et al. Eur Radiol. 2014 Oct;24(10):2572-81.
8. Liver stiffness in nonalcoholic fatty liver disease: A comparison of Supersonic Shear Imaging, FibroScan and ARFI with liver biopsy. Cassinotto C et al. Hepatology. 2015 Dec 13. doi: 10.1002/hep.28394.
9. Transient and 2-Dimensional Shear-Wave Elastography Provide Comparable Assessment of Alcoholic Liver Fibrosis and Cirrhosis. Thiele M et al. Gastroenterology. 2016 Jan;150(1):123-33.
10. Assessment of biopsy-proven liver fibrosis by 2D-shear wave elastography: An individual patient data based meta-analysis. Herrmann E et al. Hepatology. 2017 Mar 31. doi: 10.1002/hep.29179.

LIVER FIBROSIS ASSESSMENT

FOR RADIOLOGISTS AND ULTRASOUND SPECIALISTS

EVALUATION OF LIVER FIBROSIS SEVERITY BY SWE™ FOR RADIOLOGISTS



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3. Staging of hepatic fibrosis: comparison of magnetic resonance elastography and shear wave elastography in the same individuals. Yoon JH et al. Korean J Radiol. 2013 Mar-Apr;14(2):202-12.
4. Shear-wave elastography for the estimation of liver fibrosis in chronic liver disease: determining accuracy and ideal site for measurement. Samir AE et al. Radiology. 2015 Mar;274(3):888-96.
5. Validation of Shear Wave Elastography Cutoff Values on the Supersonic Aixplorer for Practical Clinical Use in Liver Fibrosis Staging. Dhyani M et al. Ultrasound Med Biol. 2017 Jun;43(6):1125-1133.
1. Non-invasive assessment of liver fibrosis with impulse elastography: Comparison of Supersonic Shear Imaging with ARFI and FibroScan®. Cassinotto C et al.. J Hepatol. 2014 Sep;61(3):550-7.
2. Real time shear wave elastography in chronic liver diseases: accuracy for predicting liver fibrosis, in comparison with serum markers. Jeong JY et al. World J Gastroenterol. 2014 Oct 14;20(38):13920-9.
3. Assessment of liver fibrosis in chronic hepatitis: comparison of shear wave elastography and transient elastography. Paul SB. Abdom Radiol (NY). 2017 Jun 22. doi: 10.1007/s00261-017-1213-5.
4. Assessing Hepatic Fibrosis Using 2-D Shear Wave Elastography in Patients with Liver Tumors: A Prospective Single-Center Study. Huang Z. Ultrasound Med Biol. 2017 Aug 11. pii: S0301-5629(17)30322-8. doi: 10.1016/j.ultrasmedbio.2017.07.003.
5. Supersonic Shear Imaging and Transient Elastography With the XL Probe Accurately Detect Fibrosis in Overweight or Obese Patients With Chronic Liver Disease. Yoneda M et al. Clin Gastroenterol Hepatol. 2015 Aug;13(8):1502-9.e5.

SUPERSONIC imagine

CONCLUSION

SUSTAINED ADVANTAGES AND UNRIVALED CLINICAL PERFORMANCES

STAY AT THE FOREFRONT!

TRUST THE PIONEER INVENTOR
OF THE ORIGINAL REAL-TIME SHEARWAVE® ELASTOGRAPHY.

ShearWave® PLUS, only available on Aixplorer MACH 30, leverages SuperSonic Imagine proprietary architecture to bring the next level of ShearWave® elastography.

AIXPLORER mach 30
ULTRAFAST™ INTELLIGENCE

SOURCE: SUPERSONIC IMAGINE

END OF DOCUMENT

Indications for Use: The SuperSonic Imagine Aixplorer MACH® 30 ultrasound diagnostic system and transducers are intended for general purpose pulse echo ultrasound imaging, Doppler fluid flow analysis of the human body, and soft tissue elasticity imaging. The Aixplorer MACH 30 ultrasound diagnostic system is indicated for use in the following applications, for imaging and measurement of anatomical structures: Abdominal, Small Organs, Musculoskeletal, Superficial Musculoskeletal, Vascular, Peripheral Vascular, OB-GYN, Pelvic, Pediatric, Trans-rectal, Trans-vaginal, Urology, Neonatal/Adult Cephalic and Non-invasive Cardiac. In addition, the SuperSonic Imagine Aixplorer MACH 30 ultrasound diagnostic system and associated transducers are intended for: measurements of abdominal anatomical structures; measurements of broadband shear wave speed, and tissue stiffness in internal structures of the liver and the spleen; measurements of brightness ratio between liver and kidney; visualization of abdominal vascularization, microvascularization and perfusion; quantification of abdominal vascularization and perfusion. The shear wave speed and stiffness measurements, the brightness ratio, the visualization of vascularization, microvascularization and perfusion, the quantification of vascularization and perfusion may be used as an aid to clinical management of adult and pediatric patients with liver disease. It is intended for use by a licensed personnel qualified to direct the use of the medical ultrasound devices. CE certificate no. 26415, FDA cleared - K180572.

ANNEX

Clinical studies used to build scientific evidence of equivalence between SWE™ and SWE™ PLUS measurements for liver disease assessment with VCTE submitted to the U.S. FDA.

EQUIVALENCE OF STIFFNESS ESTIMATES

Study Ref	First author	Journal	Year	Study design	Nb patients	Patients population	Reference Standard	Equivalence of estimates
08	Bavu	Ultrasound in Medicine and Biology	2011	Comparative Prospective Cross-sectional Single center	113 108 included	Patients with chronic hepatitis C infection	Combination of concordant surrogate serum markers and liver biopsy on a METAVIR fibrosis scale from 0 to 4	R=0.8296, $p<10^{-5}$ offset of 2.40 kPa between 2 methods
13	Sporea	Eur J Radiol	2014	Non-comparative Prospective	383	Healthy volunteers and patients with chronic liver diseases	TE	R=0.682; p<0.0001
16	Procopet	Journal of Hepatology	2015	Comparative Prospective Single center	88	Patients with advanced cirrhosis	Hepatic vein pressure gradient (HVPG) measurements	R=0.817; p<0.0001
23	Cassinotto	Hepatology	2016	Comparative Prospective Two centers	291	Patients with non-alcoholic fatty liver disease or non-alcoholic steatohepatitis	Histological liver fibrosis scoring from liver biopsy	r^2=0.70
28	Zeng	Ultrasound in Medicine and Biology	2017	Comparative Prospective Single center	257	Patients with chronic hepatitis B infection	Histological liver fibrosis scoring from liver biopsy	R=0.835, R^2=0.802 p<0.001

EQUIVALENCE OF TECHNICAL SUCCESS

Study Ref	First author	Journal	Year	Study design	Nb patients	Patients population	Reference Standard	Equivalence of technical success
12	Leung	Radiology	2013	Comparative Prospective Single center	226	Patients with chronic hepatitis B infection	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 98.9% Predicate: 89.6% (p=0.001)
14	Cassinotto	Journal of Hepatology	2014	Comparative Prospective Single center	349	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 89.6% Predicate: 97.4% (p=0.0002)
16	Procopet	Journal of Hepatology	2015	Comparative Prospective Single center	88	Patients with advanced cirrhosis	Hepatic vein pressure gradient (HVPG) measurements	SSI-SWE: 99% Predicate: 75%
17	Cassinotto	Digestive and Liver Diseases	2015	Comparative Prospective Single center	401	Patients with liver cirrhosis	Cirrhosis was biopsy-proven in 176 patients (43.9%) or diagnosed on results of combined physical, biological, radiological and Fibroscan findings in the other 225 patients (56.1%).	SSI-SWE: 93.8% Predicate: 81.5%
19	Yoneda	Clinical Gastroenterology and Hepatology	2015	Comparative Prospective Single center	124	Patients with chronic liver diseases BMI≥25 kg/m²	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 94.6% Predicate: 96.1%
21	Gerber	Ultrasound in Medicine and Biology	2015	Comparative Prospective Single center	132	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 100% Predicate: 84.2%
22	Thiele	Gastroenterology	2016	Comparative Prospective Two center	199	Patients with ongoing or prior alcohol abuse without known liver disease	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 96% Predicate: 95% (p=0.102)
23	Cassinotto	Hepatology	2016	Comparative Prospective Two centers	291	Patients with non-alcoholic fatty liver disease or non-alcoholic steatohepatitis	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 87% Predicate: 85.6% (p>0.05)
28	Zeng	Ultrasound in Medicine and Biology	2017	Comparative Prospective Single center	257	Patients with chronic hepatitis B infection	Histological liver fibrosis scoring from liver biopsy	SSI-SWE: 99.2% Predicate: 96.9% (p=0.117)

EQUIVALENCE OF RELIABILITY

Study Ref	First author	Journal	Year	Study design	Nb patients	Patients population	Reference Standard	Equivalence of reliability or applicability
10	Poynard	Journal of Hepatology	2013	Comparative Prospective Cross-sectional Single center	422	Patients with chronic liver diseases	Strength of concordance, discordance analysis and latent class analysis (LCM)	Applicability SSI-SWE: 91.7% Applicability M probe: 90.5% Applicability XL probe: 90.3%
11	Sporea	Ultrasound in Medicine and Biology	2013	Comparative Cross-sectional Single center	332	Healthy volunteers and patients with chronic liver diseases	None for feasibility TE for diagnostic	Reliability SSI-SWE: 71.3% Reliability predicate: 72.2% (p=0.86)
13	Sporea	Eur J Radiol	2014	Non-comparative Prospective	383	Healthy volunteers and patients with chronic liver diseases	TE	Reliability SSI-SWE: 79.9% Reliability Predicate: 73.9% (p=0.06)
14	Cassinotto	Journal of Hepatology	2014	Comparative Prospective Single center	349	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	Reliability SSI-SWE: 89.6% Reliability Predicate: 91.5% (p=0.43)
15	Elkrief	Radiology	2015	Comparative Prospective Single center	79	Patients with advanced cirrhosis	Hepatic vein pressure gradient (HVPG) measurements	Applicability SSI-SWE: 97% Applicability Predicate: 44%
20	Bota	Ultrasound in Medicine and Biology	2015	Comparative Prospective Single center	127	Patients with chronic liver diseases	None for feasibility TE for diagnostic	Reliability SSI-SWE: 99.2% Reliability Predicate: 74.8% (p<0.0001)
23	Cassinotto	Hepatology	2016	Comparative Prospective Two centers	291	Patients with non-alcoholic fatty liver disease or non-alcoholic steatohepatitis	Histological liver fibrosis scoring from liver biopsy	Reliability SSI-SWE: 79.7% Reliability Predicate: 76.6% (p=0.4)
25	Staugaard	Scandinavian Journal of Gastroenterology	2016	Comparative feasibility study Single center	54	Patients with failed TE measurements	N/A	Reliability SSI-SWE: 63% Reliability Predicate: 96% (p<0.001)
26	Poynard	PLosOne	2016	Comparative Prospective Single center	2251	Patients with chronic liver diseases	FibroTest®	Applicability SSI-SWE: 89.6% Applicability Predicate (M): 85.6% (p<0.0001) Applicability Predicate (XL): 88.2% (p=0.15)
28	Zeng	Ultrasound in Medicine and Biology	2017	Comparative Prospective Single center	257	Patients with chronic hepatitis B infection	Histological liver fibrosis scoring from liver biopsy	Applicability SSI-SWE: 98.1% Applicability Predicate: 93% (p=0.011)

DIAGNOSTIC EQUIVALENCE (1/2)

Study Ref	First author	Journal	Year	Study design	Nb patients	Patients population	Reference Standard	Equivalence of diagnostic performances
08	Bavu	Ultrasound in Medicine and Biology	2011	Comparative Prospective Cross-sectional Single center	113 108 included	Patients with chronic hepatitis C infection	Combination of concordant surrogate serum markers and liver biopsy on a METAVIR fibrosis scale from 0 to 4	AUROC SSI-SWE – Predicate for≥F2 10% (p=0.005) AUROC SSI-SWE – Predicate for≥F3 10% (p=0.001) AUROC SSI-SWE – Predicate for F4 2.7% (p=0.154)
09	Ferraioli	Hepatology	2012	Comparative Prospective Cross-sectional Single center	121	Patients with chronic hepatitis C infection	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F2 8% (p=0.002) AUROC SSI-SWE – Predicate for≥F3 2% (p>0.05) AUROC SSI-SWE – Predicate for F4 2% (p>0.05)
12	Leung	Radiology	2013	Comparative Prospective Single center	226	Patients with chronic hepatitis B infection	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F1 6% (p=0.04) AUROC SSI-SWE – Predicate for≥F2 10% (p=0.01) AUROC SSI-SWE – Predicate for≥F3 10% (p=0.01) AUROC SSI-SWE – Predicate for F4 6% (p=0.04)
14	Cassinotto	Journal of Hepatology	2014	Comparative Prospective Single center	349	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F1 3% (p=0.34) AUROC SSI-SWE – Predicate for≥F2 4% (p=0.072) AUROC SSI-SWE – Predicate for≥F3 6% (p=0.0016) AUROC SSI-SWE – Predicate for F4 3% (p=0.09)
15	Elkrief	Radiology	2015	Comparative Prospective Single center	79	Patients with advanced cirrhosis	Hepatic vein pressure gradient (HVPG) measurements	AUROC SSI-SWE – Predicate for CSPH: 1% (p=0.95)
16	Procopet	Journal of Hepatology	2015	Comparative Prospective Single center	88	Patients with advanced cirrhosis	Hepatic vein pressure gradient (HVPG) measurements	AUROC SSI-SWE – Predicate for CSPH: 1.3% (p=0.40)
17	Cassinotto	Digestive and Liver Diseases	2015	Comparative Prospective Single center	401	Patients with liver cirrhosis	Cirrhosis was biopsy-proven in 176 patients (43.9%) or diagnosed on results of combined physical, biological, radiological and Fibroscan findings in the other 225 patients (56.1%).	AUROC SSI-SWE – Predicate for esophageal varices: 0% (p>0.05)

DIAGNOSTIC EQUIVALENCE (2/2)

Study Ref	First author	Journal	Year	Study design	Nb patients	Patients population	Reference Standard	Equivalence of diagnostic performances
18	Kim	Journal of Physical Therapy Science	2015	Comparative Retrospective Single center	304	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for F4 5.3% (p not reported)
19	Yoneda	Clinical Gastroenterology and Hepatology	2015	Comparative Prospective Single center	124	Patients with chronic liver diseases BMI≥25 kg/m²	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F3 0.1% (p=0.1274) AUROC SSI-SWE – Predicate for F4 1% (p=0.4255)
21	Gerber	Ultrasound in Medicine and Biology	2015	Comparative Prospective Single center	132	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F1 1% (p>0.05) AUROC SSI-SWE – Predicate for≥F2 -4% (p>0.05) AUROC SSI-SWE – Predicate for≥F3 -3% (p>0.05) AUROC SSI-SWE – Predicate for F4 -1% (p>0.05)
22	Thiele	Gastroenterology	2016	Comparative Prospective Two center	199	Patients with ongoing or prior alcohol abuse without known liver disease	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F2* -1% (p>0.05) AUROC SSI-SWE – Predicate for F4* 0% (p>0.05) * on Ishak fibrosis severity scale
23	Cassinotto	Hepatology	2016	Comparative Prospective Two centers	291	Patients with non-alcoholic fatty liver disease or non-alcoholic steatohepatitis	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F2 2% (p=0.5) AUROC SSI-SWE – Predicate for≥F3 1% (p=0.5) AUROC SSI-SWE – Predicate for F4 2% (p=0.5)
27	Herrmann	Hepatology	2017	Comparative Retrospective Multicenter	665	Patients with chronic liver diseases	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F2 5.3% (p=0.001) AUROC SSI-SWE – Predicate for≥F3 3.4% (p=0.035) AUROC SSI-SWE – Predicate for F4 1.8% (p=0.022)
28	Zeng	Ultrasound in Medicine and Biology	2017	Comparative Prospective Single center	257	Patients with chronic hepatitis B infection	Histological liver fibrosis scoring from liver biopsy	AUROC SSI-SWE – Predicate for≥F2 3.3% (p=0.092) AUROC SSI-SWE – Predicate for≥F3 3.4% (p=0.057) AUROC SSI-SWE – Predicate for F4 1.7% (p=0.372)