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The information in this report was provided by manufacturers and the focused ultrasound research community to the Focused Ultrasound Foundation. The FUS Foundation aims to provide the most accurate information; if you have more current or updated information please send it to: engagement@fusfoundation.org.
Introduction

**Breakthrough Treatment**

Focused ultrasound is an early stage, non-invasive therapeutic technology with the potential to transform the treatment of many medical disorders by using ultrasonic energy to target tissue deep in the body without incisions or radiation. Focused ultrasound is the union of two innovative technologies:

- focused ultrasound—which provides the energy to treat tissue deep in the body precisely and noninvasively
- magnetic resonance or ultrasound imaging—which is used to identify and target the tissue to be treated, guide and control the treatment in real time, and confirm the effectiveness of the treatment.

The fundamental principle is analogous to using a magnifying glass to focus beams of sunlight on a single point to burn a hole in a leaf. With focused ultrasound, an acoustic lens is used to concentrate multiple intersecting beams of ultrasound on a target deep in the body with extreme precision and accuracy.

Where each of the individual beams passes through the tissue, there is no effect. But, at the focal point, the convergence of the multiple beams of focused ultrasound energy results in many important biological effects, creating the possibility of treating a variety of medical disorders.

Focused ultrasound treatments can be performed on an outpatient basis, require no incisions, and can result in minimal discomfort and few complications, allowing for rapid recovery.

**Field Expanding Through Research, Development, and Commercialization**

Even though focused ultrasound is currently in the early stages of development and adoption, it has the potential to transform the treatment of a variety of serious medical conditions, including neurological disorders, many cancers, cardiovascular disease and endocrine disorders.

All indicators point toward the evolution of this platform technology into a robust medical field, with the pace of research and development, publications, patient treatments and the number of device manufacturers all increasing rapidly in the past few years.

There are focused ultrasound systems currently approved in the U.S. to treat uterine fibroids and the pain from bone metastases. In addition, there are more than 15 applications of the technology approved for commercial use in Europe and other regions of the world. More uses are still undergoing research, with opportunities for patients to participate in clinical trials at leading medical research institutions. And even more potential uses of the technology are in the early stages of technical research.

**Advancing the Technology Through Venture Philanthropy**

The Focused Ultrasound Foundation was created to improve the lives of millions of people worldwide by accelerating the development and adoption of focused ultrasound therapies. The Foundation works to clear the path to global adoption by coordinating and funding research and educational activities, fostering collaboration among stakeholders, and building awareness of the technology among patients and professionals. The Foundation is dedicated to ensuring that focused ultrasound finds its place as a mainstream therapy for a range of neurological disorders, cancer and other life-threatening conditions within years, not decades.

Since its establishment in 2006, the Foundation has become the largest non-governmental source of funding for focused ultrasound research.
Executive Summary

The Field of Focused Ultrasound is Growing

Over the past several years, this technology has evolved from being primarily utilized by a select group of innovators at academic centers to being widely diffused among influential early adopters around the globe. There are currently 28 manufacturers, 225 research sites, and 391 commercial treatment centers worldwide.

More than 8,000 patients were treated commercially or in clinical trials worldwide in 2014. To date, nearly 90,000 patients have undergone focused ultrasound treatment for a range of serious medical conditions. Approved to treat 19 medical conditions in regions around the world, focused ultrasound has been most widely used to treat prostate cancer, followed by uterine fibroids and liver cancer.

Clinical and Overall Research Increasing

Not surprisingly, a majority of clinical research has been conducted around the most widely approved indications—uterine fibroids, prostate cancer, and bone metastases. The top emerging areas of clinical research include neurological disorders, tumors of the pancreas, liver and soft tissue, osteoid osteoma and uterine adenomyosis.

This report presents data to reflect a 33 percent increase in the total number of research sites around the world and an 11 percent increase in the number of sites that have been involved in clinical trials in the past year. This growth is due to the initiation of focused ultrasound research at many new sites as well as the Foundation’s identification of more active research sites in Asia.

New Areas Emerge in Pre-Clinical Research

While historically the top three areas for pre-clinical research have been uterine fibroids, liver tumors and prostate cancer, the highest growth areas for this early research are stroke* and epilepsy, as indicated by the greatest percentage of new research sites. Robust pre-clinical groundwork is essential for translation of focused ultrasound to the clinic—particularly for brain applications. We expect to see a continued rise in pre-clinical and clinical research for a variety of new neurological indications over the coming years.

Funding on the Rise

U.S. National Institutes of Health (NIH) funding for focused ultrasound research saw a 48% increase from $21 million in 2013 to $31 million in 2014. This boost in government funding may stem from an overall increase in the budget for the NIH, up $2 billion from 2013 to 2014, as well as increased awareness and interest in the potential of focused ultrasound.

Increased funding of focused ultrasound research by the NIH, the Foundation, and other public and private organizations, has also encouraged more research in the field. Furthermore, the results of this research have been more widely reported in the literature, as indicated by a 25% increase in the number of articles published and over 11,000 citations of focused ultrasound papers within this same time frame.

*Despite this growth, the Foundation’s perspective is that the role of focused ultrasound in treating stroke will be eclipsed by other technologies.
Executive Summary

State of Research and Regulatory Approval by Indications

### Steps to regulatory approval:

#### Cardiovascular
- Hypertension
- Atherosclerosis
- Atrial fibrillation
- Cardiac pacing
- Deep vein thrombosis
- HLHS
- Septal perforation

#### Endocrine Disorders
- Thyroid nodules
- Diabetes
- Obesity

#### Miscellaneous
- Glaucoma
- Hypersplenism

#### Musculoskeletal
- Back and neck pain
- Osteoid osteoma
- Sacrolilits
- Osteoarthritis
- Disc degeneration
- Spinal cord injury
- Spinal tumors
- Muscle atrophy

#### Oncological
- Bone metastases
- Liver tumors
- Pancreatic tumors
- Soft tissue tumors
- Pediatric oncology
- Head & neck cancer
- Lung cancer
- Colon cancer
- Esophageal cancer

#### Neurological
- Essential tremor
- Parkinson’s disease
- Neuropathic pain
- Brain tumors
- OCD
- Alzheimer’s disease
- Epilepsy
- Hydrocephalus
- Stroke
- Traumatic brain injury
- Trigeminal neuralgia
- AVM’s
- Cancer pain
- Depression
- Multiple sclerosis

#### Urological
- Prostate cancer
- Kidney tumors
- BPH
- Kidney stones
- Acute tubular necrosis
- Ureteroscope
- Acute kidney injury
- Bladder cancer

#### Women’s Health
- Uterine fibroids
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Tubal pregnancy
- Fetal surgery
- PCOS

---

State of Research and Regulatory Approval by Development Stage

### Steps to regulatory approval:

- Conceptual
- Pre-clinical
- Anecdotal
- Pilot Trials
- Pivotal Trials
- FDA Approvals
- Outside US Approvals
- Reimbursement

---

Sparsely supported:
- Bone metastases
- Uterine fibroids
- Back pain
- Bone metastases
- Breast cancer
- Breast fibroadenoma
- Essential tremor
- Glaucoma
- Kidney tumors
- Liver tumors
- Neuropathic pain
- Osteoid osteoma
- Pancreatic tumors
- Parkinson’s disease
- Prostate cancer
- Soft tissue tumors
- Thyroid nodules
- Uterine adenomyosis
- Uterine fibroids

BPH
- Brain tumors
- Hypersplenisim
- Hypertension
- Kidney stones
- OCD
- Pediatric oncology
- Sacrolilits
- Tubal pregnancy

Fetal surgery
- Osteoarthritis

### Acute conditions
- Acute tubular necrosis
- Alzheimer’s disease
- Atherosclerosis
- Atrial fibrillation
- Cardiac pacing
- Deep vein thrombosis
- Diabetes
- Disc degeneration
- Epilepsy
- Head & neck cancer
- Hydrocephalus
- HLHS
- Lung cancer
- Obesity
- PCOS
- Septal perforation
- Spinal cord injury
- Spinal tumors

Stroke
- Traumatic brain injury
- Trigeminal neuralgia
- Ureteroscope

Acute kidney injury
- AVM’s
- Bladder cancer
- Cancer pain
- Colon cancer
- Depression
- Esophageal cancer
- Multiple sclerosis
- Muscle atrophy
State of the Field

FUS Publications
Per year

Source: Data from Medline as of January 2015.
Publications for 2014 are still being indexed by Medline and are not included in this graph.

FUS Citations
Per year

Source: Web of Science.

Abstracts Presented at FUS Symposia

Total Awards for All FUS NIH Research Grants
Dollars in millions

Source: NIH
State of the Field

First in Human Treatments
Clinical trials or commercial treatments

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<td>Pain</td>
<td>Movement Disorder</td>
<td>Glaucoma</td>
<td>BPH</td>
<td>Bladder cancer</td>
<td>Adenomyosis</td>
<td>Bone metastases</td>
</tr>
</tbody>
</table>

- 35
- 28
- 21
- 14
- 7

Treatments by Indication
Up to 2014

89,544 Treatments

- Prostate cancer: 49,010 (55%)
- Uterine fibroids: 22,144 (25%)
- Liver cancer: 15,000 (17%)
- Bone metastases: 1,256 (1%)
- BPH: 725 (>1%)
- Breast cancer: 520 (>1%)
- Others*: 889 (>1%)

*Brain, Bone Non-Metastases, Breast Fibroadenoma, Kidney, MSK, Pancreas, Parathyroid, Rectal Carcinoma, Thyroid, Vascular

Manufacturer supplied data
The number of patient treatments reported is lower than the actual number procedures because of incomplete reporting from manufacturers and treatment sites.
## FUS Approvals by Region and Manufacturer

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>North America</th>
<th>Europe</th>
<th>Asia</th>
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<td></td>
<td>US</td>
<td>Canada</td>
<td>China</td>
<td>India</td>
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<td>Back pain &amp; neck pain</td>
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<tr>
<td>Bone metastases</td>
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<td>Breast cancer</td>
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<td></td>
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<tr>
<td>Breast fibroadenoma</td>
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<td>⭐</td>
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<tr>
<td>Essential tremor</td>
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<td>Neuropathic pain</td>
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<td>Osteoid osteoma</td>
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<td>Pancreatic tumors</td>
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<td>Parkinsonian tremor</td>
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<td>Prostate cancer</td>
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<tr>
<td>Soft tissue tumors</td>
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<td>Thyroid nodules</td>
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<td>Uterine adenomyosis</td>
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<td>⭐</td>
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</table>

**Manufacturers**

- ⭐ Chongqing Haifu (HIFU) Medical Technology Co., LTD, Chongqing, China
- ⭐ EDAP TMS S.A., Vaulx-en-Velin, France
- ⭐ EyeTechCare, Rilieux-la-Pape, France
- ⭐ InSightec LTD, Tirt Carmel, Israel
- ⭐ Philips Healthcare Eindhoven, The Netherlands
- ⭐ SonaCare Medical, LLC, Charlotte, North Carolina
- ⭐ Therac-10, Malakoff, France
Manufacturers

Manufacturers by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Manufacturers</th>
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</table>
| North America | FUS Instruments Inc. Toronto, Canada  
|             | Histosonics, Inc. Ann Arbor, Michigan  
|             | International Cardio Corporation, LLC Minnetonka, Minnesota  
|             | Kona Medical Bellevue, Washington  
|             | Mirabilis Medica Bothell, Washington  
|             | Profound Medical Inc. Toronto, Canada  
|             | SonaCare Medical, LLC Charlotte, North Carolina  
|             | Sonic Concepts Bothell, Washington  
|             | Verasonics Redmond, Washington  |
| Europe      | Acublate London, UK  
|             | EDAP TMS S.A. Vaulx-en-Velin, France  
|             | EyeTechCare Rillieux-la-Pape, France  
|             | Image Guided Therapy (IGT) Pessac, France  
|             | Imasonic Voray-sur-l’Ognon, France  
|             | InSightec LTD Tirat Carmel, Israel  
|             | Medsonic LTD Limassol, Cyprus  
|             | Philips Healthcare Eindhoven, The Netherlands  
|             | Slender Medical LTD Herzliya, Isreal  
|             | Supersonic Imagine Aix-en-Provence, France  
|             | Theracction Malakoff, France  |
| Asia        | Alpinion Medical Systems Seoul, Korea  
|             | Changjiangyuan Technology Development Co., LTD Shenyang, China  
|             | Chongqing Haifu (HIFU) Medical Technology Co., LTD Chongqing, China  
|             | Mianyang Sonic (SUONIKE) Electronic Mianyang, China  
|             | Shanghai A&S Co., LTD Shanghai, China  
|             | Shenzhen PRO-HIFU Medical Tech. Co., LTD Shenzhen, China  
|             | Shenzhen Wikkon Shenzhen, China  
|             | Sumo Corporations Shanghai, China  |

Manufacturer Criteria: Ultrasound technology must be 1) therapeutic 2) non-invasive 3) focused 4) image-guided
Manufacturers

Growth of FUS Manufacturers

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<tr>
<th>Year</th>
<th>US guidance</th>
<th>MR guidance</th>
<th>MR &amp; US guidance</th>
<th>Camera guidance</th>
<th>Transducers</th>
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Number of Manufacturers

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Source: Manufacturer supplied data
Research Trends

Total Research Sites Growth
July 2013 to January 2015

Total Research Sites by Region
January 2015

Research Sites Growth by Region
July 2013 to January 2015

North America  Europe  Asia  Oceania  South America
Research Trends

Leading Indications by Number of Sites

**Pre-clinical**

1. **Uterine Fibroids**
2. **Liver tumors**
3. **Prostate cancer**
4. **Bone metastases**
5. **Brain tumors**

**Clinical**

1. **Uterine Fibroids**
2. **Prostate cancer**
3. **Bone metastases**
4. **Soft tissue tumors**
5. **Liver tumors**

Emerging Research Indications by Number of Sites

**Pre-clinical**, % change over 1 year ending January 2015 (at least 10 sites)

1. **86%** Stroke (13 sites)
2. **67%** Epilepsy (10 sites)
3. **40%** Prostate cancer (28 sites)
4. **40%** Breast cancer (21 sites)
5. **30%** Soft tissue tumors (13 sites)

**Clinical**, % change over 1 year ending January 2015 (at least 10 sites)

1. **100%** Pancreatic tumors (10 sites)
2. **45%** Uterine adenomyosis (16 sites)
3. **13%** Osteoid osteoma (27 sites)
4. **12%** Liver tumors (28 sites)
5. **12%** Soft tissue tumors (28 sites)
Research Sites

All Research Sites by Region

225 Worldwide Total

86 North America
79 Europe
57 Asia
1 South America
2 Oceania

Any FUS research site conducting technical, pre-clinical, or clinical FUS research.
Research Sites

Ontario
- Can-AmHIFU
- Lawson Health Research Institute
- London Health Sciences Centre
- Princess Margaret Hospital
- Ryerson University
- Sunnybrook Health Sciences Centre
- The Hospital for Sick Children

Thunder Bay Regional Research Institute
- Toronto General Hospital
- Toronto Western Hospital
- University of Western Ontario

Québec
- Jewish General Hospital

United States

Alabama
- Urology Centers of Alabama

California
- BURL Concepts Inc.
- UCLA Ronald Reagan Medical Center
- Long Beach Eye Care Associates
- Stanford University School of Medicine
- University of California at Los Angeles
- University of California San Diego
- University of California San Francisco
- University of California, Davis
- City of Hope

Kansas
- University of Kansas

Louisiana
- Tulane University

Massachusetts
- Boston University
- Brigham and Women’s Hospital

Maryland
- Johns Hopkins University School of Medicine
- University of Maryland School of Medicine
- Walter Reed National Military Medical Center
- National Institutes of Health
- Food and Drug Administration

Michigan
- William Beaumont Health Systems
- University of Michigan

Minnesota
- Mayo Clinic–Minnesota
- University of Minnesota

New Jersey
- Artann Laboratories

Nebraska
- University of Nebraska Medical Center

Canada

Ontario
- Can-AmHIFU
- Lawson Health Research Institute
- London Health Sciences Centre
- Princess Margaret Hospital
- Ryerson University
- Sunnybrook Health Sciences Centre
- The Hospital for Sick Children

Thunder Bay Regional Research Institute
- Toronto General Hospital
- Toronto Western Hospital
- University of Western Ontario

Québec
- Jewish General Hospital

12 Research Sites

74 Research Sites

Any FUS research site conducting technical, biological effects, pre-clinical, or clinical FUS research.
Research Sites

New York
Montefiore Medical Center
Roswell Park Cancer Institute
Winthrop University Hospital
City College of New York
Memorial Sloan-Kettering Cancer Center
New York University
Columbia University

North Carolina
Wake Forest University Baptist Medical Center
North Carolina State University
University of North Carolina
Duke University

Ohio
Cincinnati Children’s Hospital Medical Center
University Hospitals of Cleveland Case Medical Center
Cleveland Clinic
ProMedica Toledo Hospital
University of Cincinnati

Oregon
Oregon Health and Science University

Pennsylvania
Drexel University
Urologic Consultants of Southeastern Pennsylvania
University of Pittsburgh Medical Center
Fox Chase Cancer Center

Puerto Rico
University of Puerto Rico

South Carolina
Grand Strand Urology
Medical University of South Carolina

Tennessee
Southeast Urology Network
Vanderbilt University

Texas
Urology of San Antonio
University of Texas MD Anderson Cancer Center
University of Houston
MD Anderson Cancer Center
The Methodist Hospital
CH St. Luke’s Health
UT Southwestern

Utah
University of Utah

Virginia
Virginia Tech Carilion Reseach Institute
University of Virginia

Washington
Swedish Neurosciences Institute
University of Washington

Wisconsin
University of Wisconsin Carbone Cancer Center

Brazil
Instituto do Cancer do Estado de Sao Paulo (ICESP)

Any FUS research site conducting technical, biological effects, pre-clinical, or clinical FUS research.
Research Sites

Europe

79 Sites

- Spain: 16
- Italy: 13
- Germany: 1
- Czech Republic: 1
- Finland: 1
- Norway: 2
- Russia: 2
- UK: 5
- Sweden: 10
- The Netherlands: 2
- Belgium: 1
- Switzerland: 15
- France: 15
- Bulgaria: 2
- Cyprus: 3
- Israel: 1

Total: 79 sites
Research Sites

By Region

Europe

Belgium
Institut Jules Bordet

Bulgaria
Pleven Medical University
University Hospital of Endocrinology

Cyprus
Cyprus University of Technology

Czech Republic
Thomayer University Hospital

Finland
VTT Technical Research Centre of Finland

France
Centre Léon Bérard
CHU de Bordeaux - Hôpital du Tondu
CHU de Bordeaux - Hôpital Saint-André
CHU de Lille - Hôpital Huriez
CHU de Toulouse - Hôpital Rangueil
CHU de Tours - Hôpital Bretonneau
Hôpital Cochin
Hôpital Pitié-Salpêtrière
Hospices Civils de Lyon
Inserm Lyon
Institut Gustave Roussy
Institut Mutualiste Montsouris
Institut Langevin
University Hospital of Grenoble
University of Nice Sophia Antipolis

Germany
Amper Klinik
Brustzentrum Marienhospital Bottrop
Charité Universitätsmedizin Berlin
Fraunhofer Institut emt
German Cancer Research Center
Klinikum Fürth
swn Waldklinikum Gera
Universitätsklinikum Tübingen
University Hospital Frankfurt
University Hospital Schleswig-Holstein
University of Heidelberg
University of Munich
Urologische Universitätsklinik Magdeburg

Israel
Chaim Sheba Medical Center
Rambam Medical Center
Technion–Israel Institute of Technology

Italy
Azienda Ospedaliera San Paolo
Careggi General Hospital
Cisanello Hospital of University of Pisa
Clinica oculistica Università–Ospedale oftalmico
European Institute of Oncology
Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico
Istituto Ortopedico Rizzoli
Laboratorio di Tecnologie Oncologiche ISNR Giglio–
    Fondazione Istituto San Raffaele G. Giglio di Cefalù
Niguarda Hospital
Ospedale Generale Regionale “Francis Miulli”
Scuola Superiore Sant’Anna
Università degli Studi di Parma
University of L’Aquila
University of Perugia
University of Rome–La Sapienza
University of Turin

The Netherlands
Eindhoven University of Technology
University Medical Center Utrecht

Norway
Norwegian University of Science and Technology
The Intervention Centre, Oslo University Hospital Rikshospitalet

Russia
Medical Center of Central Bank of Russian Federation
National Medical Surgery Center
N. N. Petrov Research Institute of Oncology
Research Center for Obstetrics, Gynecology and Perinatology
    of Russian Ministry of Health and Social Development
Rostov Scientific Research Institute of Oncology

Spain
Hospital Clínic de Barcelona
Instituto Cartuja de Técnicas Avanzadas en Medicina

Switzerland
Hôpitaux Universitaires de Genève
Kantonsspital Aarau
Kantonsspital Winterthur
University Children’s Hospital Zurich
University of Geneva

United Kingdom
Basingstoke and North Hampshire Hospital
Churchill Hospital
Imperial College London
Institute for Medical Science and Technology (iMSAT)
St. Guy’s and St. Thomas Hospital
St. Mary’s Hospital
The Institute of Cancer Research
University of Dundee
University of Hull
University of Oxford
Research Sites

Asia and Oceania

57 Sites in Asia
2 Sites in Oceania

- 27 China
- 3 India
- 1 Kazakhstan
- 10 Korea
- 6 Taiwan
- 1 Singapore
- 1 Malaysia
- 2 Australia
Research Sites

By Region

57

Asia

China
- 307 Hospital of PLA
- Central Hospital of Shanghai Xuhui District
- Children’s Hospital of Chongqing Medical University
- Chinese University of Hong Kong
- Chongqing Medical University
- First Affiliated Hospital of Medical College of Xi’an Jiaotong University
- First Affiliated Hospital of Zunyi Medical College
- First Maternal and Child Health Hospital of Shanghai
- Fundan University Huashan Hospital
- Fundan University Shanghai Cancer Center
- HARTU Hospital
- Institute of Ultrasonic Engineering in Medicine and Clinical Centre for Tumour Therapy
- Peking Union Hospital, Chinese Academy of Medical Sciences
- Peking University First Hospital
- PLA 301 Hospital
- Queen Mary Hospital of the University of Hong Kong
- Shanghai Jiaotong University
- Shenzhen University
- Southern Medical University
- Suining Central Hospital
- The First Affiliated Hospital of Chongqing Medical University
- The Second Artillery General Hospital of Chinese PLA
- The Third Xiangya Hospital of Central South University
- Third Military Medical University
- Tianjin Medical University
- Wuhan University
- Xi’an Jiaotong University

India
- Apollo Specialty Hospital, Chennai
- GSL Medical College
- Jaslok Hospital and Research Centre

Japan
- Breastopia Namba Hospital
- Kochi University Hospital
- Shinsumu General Hospital
- Tokai University
- Tokyo Medical University
- Tokyo Women’s Medical Hospital
- Washokai Sadamoto Hospital

Kazakhstan
- National Medical Research Center

Korea
- Asan Medical Center
- CHA Bundang Medical Center
- Chaum Hospital
- Jeju National University
- Korea Institute of Science and Technology
- Samsung Medical Center
- Seoul National University Hospital
- The Catholic University of Korea
- YOUC Gangnam Severance Hospital
- YOUC Severance Hospital

Malaysia
- University of Malaya

Singapore
- Nanyang Technological University

Taiwan
- Chang Gung University
- National Chiao Tung University
- National Health Research Institutes
- National Taiwan University
- National Tsing Hua University
- Taipei Medical University Hospital

2

Oceania

Australia
- Future Medical Imaging Group
- Royal Women’s Hospital Melbourne

Any FUS research site conducting technical, biological effects, pre-clinical, or clinical FUS research.
Pre-Clinical

Research Sites

Any FUS research site conducting animal research.
## Sites by Region

### North America

**Canada**
- **Lawson Health Research Institute**
- **Sunnybrook Health Sciences Centre**
- **The Hospital for Sick Children**
- **Thunder Bay Regional Research Institute**

**United States**
- **Artann Laboratories**
- **Boston University**
- **Brigham and Women’s Hospital**
- **BURL Concepts Inc.**
- **CHI St. Luke’s Health**
- **City of Hope**
- **Columbia University**
- **Drexel University**
- **Duke University**
- **Fox Chase Cancer Center**
- **Indiana University Health**
- **Johns Hopkins University**
- **Mayo Clinic - Minnesota**
- **Medical University of South Carolina**
- **Memorial Sloan-Kettering Cancer Center**
- **Montefiore Medical Center**
- **National Institutes of Health**
- **NYP - Weill Cornell Medical Center**
- **Stanford University School of Medicine**
- **Swedish Neurosciences Institute**
- **The Methodist Hospital**
- **Tulane University**
- **UCLA Ronald Reagan Medical Center**
- **University MRI & Diagnostic Imaging Centers - South**
- **University of California, Davis**
- **University of California Los Angeles**
- **University of California San Diego**
- **University of California San Francisco**

### Cardiovascular
- Atherosclerosis
- Atrial fibrillation
- Deep vein thrombosis
- Hypertension
- Septal perforation

### Endocrine Disorders
- Diabetes
- Obesity
- Thyroid and parathyroid tumors
- Thyroid nodules

### Musculoskeletal
- Back and neck pain
- Bone cancer
- Osteoarthritis
- Osteoid osteoma
- Spinal cord injury
- Spinal tumors

### Miscellaneous
- **Glaucoma**

### Neurological
- Alzheimer’s disease
- Brain tumors
- Cancer pain
- Depression
- Epilepsy
- Essential tremor
- Hydrocephalus
- Neuropathic pain
- Parkinson’s disease
- Stroke
- Traumatic brain injury
- Trigeminal neuralgia

### Oncological
- Bone metastases
- Colon cancer
- Esophageal cancer
- Head & Neck Cancer
- Liver tumors
- Lung cancer
- Pancreatic tumors
- Pediatric oncology
- Soft tissue tumors

### Urological
- Benign prostatic hyperplasia
- Bladder tumors
- Kidney stones
- Kidney tumors
- Prostate cancer
- Ureteroceles

### Women’s Health
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

*Not in this region

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Any FUS research site conducting animal research.
Any FUS research site conducting animal research.
Pre-clinical Research Sites by Region

29

Europe

Cyprus
- Cyprus University of Technology

France
- Centre Léon Bérard
- CHU de Bordeaux - Hôpital Saint-André
- Hôpital Cochin
- Hospices Civils de Lyon
- Inserm Lyon
- Institut Langevin
- University Hospital of Grenoble

Germany
- German Cancer Research Center
- Klinikum Fürth
- SRH Waldklinikum Gera
- University Hospital Frankfurt
- University of Heidelberg
- University of Munich

Israel
- Chaim Sheba Medical Center
- Rambam Medical Center

Italy
- European Institute of Oncology
- Scuola Superiore Sant’Anna

The Netherlands
- University Medical Center Utrecht

Norway
- The Intervention Centre, Oslo University Hospital Rikshospitalet

Spain
- Hospital Clinico San Carlos
- Instituto Cartuja de Técnicas Avanzadas en Medicina

Switzerland
- FUS-Center, University of Zurich, Children’s Hospital
- Hôpitaux Universitaires de Genève
- University of Geneva

United Kingdom
- Churchill Hospital
- Institute for Medical Science and Technology
- St. Mary’s Hospital
- The Institute of Cancer Research

Cardiovascular
- Atherosclerosis
- Atrial fibrillation
- Deep vein thrombosis
- Hypertension
- Septal perforation

Endocrine Disorders
- Diabetes
- Obesity
- Thyroid and parathyroid tumors
- Thyroid nodules

Miscellaneous
- Glaucoma

Musculoskeletal
- Back and neck pain
- Bone cancer
- Osteoarthritis
- Osteoid osteoma
- Spinal cord injury
- Spinal tumors

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- Neuropathic pain
- Parkinson’s disease
- Stroke
- Traumatic brain injury
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- Colon cancer
- Esophageal cancer
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- Liver tumors
- Lung cancer
- Pancreatic tumors
- Pediatric oncology
- Soft tissue tumors

Urological
- Benign prostatic hyperplasia
- Bladder tumors
- Kidney stones
- Kidney tumors
- Prostate cancer
- Ureterocele

Women’s Health
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site conducting animal research.

Focused Ultrasound: State of the Field 2015
Pre-clinical Research Sites by Region

**14**

**Asia**

- **China**
  - Chongqing Medical University
  - Fundan University Shanghai Cancer Center
  - Peking Union Hospital, Chinese Academy of Medical Sciences
  - PLA 301 Hospital

- **Japan**
  - Breastopia Namba Hospital
  - Kochi University Hospital

- **Malaysia**
  - University of Malaya

- **Republic of Korea**
  - Chaum Hospital
  - Samsung Medical Center

- **Singapore**
  - Nanyang Technological University

- **Taiwan**
  - Taipei Medical University Hospital

**2**

**Oceania**

- **Australia**
  - Future Medical Imaging Group
  - Royal Women’s Hospital Melbourne

**Cardiovascular**
- Atherosclerosis*
- Atrial fibrillation*
- Deep vein thrombosis*
- Hypertension
- Septal perforation*

**Endocrine Disorders**
- Diabetes
- Obesity*
- Thyroid and parathyroid tumors*
- Thyroid nodules*

**Miscellaneous**
- Glaucoma

**Musculoskeletal**
- Back and neck pain
- Bone cancer*
- Osteoarthritis
- Osteoid osteoma
- Spinal cord injury*
- Spinal tumors*

**Neurological**
- Alzheimer’s disease*
- Brain tumors*
- Cancer pain*
- Depression*
- Epilepsy*
- Essential tremor*
- Hydrocephalus*
- Neuropathic pain*
- Parkinson’s disease*
- Stroke
- Traumatic brain injury*
- Trigeminal neuralgia*

**Oncological**
- Bone metastases
- Colon cancer*
- Esophageal cancer*
- Head & Neck Cancer*
- Liver tumors
- Lung cancer
- Pancreatic tumors
- Pediatric oncology*
- Soft tissue tumors

**Urological**
- Benign prostatic hyperplasia
- Bladder tumors
- Kidney stones
- Kidney tumors
- Prostate cancer
- Ureterocele*

**Women’s Health**
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site conducting animal research.
Clinical Research Sites by Region

- **North America**: 55
- **Europe**: 58
- **Asia**: 40
- **South America**: 1
- **Oceania**: 2

**Worldwide Total**: 156

*Any FUS research site treating patients as part of a clinical study.*
Focused Ultrasound: State of the Field 2015

Clinical

Clinical Research Sites by Region

55

North America

Canada
- Can-AmHIFU
- Jewish General Hospital
- London Health Sciences Centre
- Princess Margaret Hospital
- Sunnybrook Health Sciences Centre
- Thnder Bay Regional Research Institute
- Toronto General Hospital
- Toronto Western Hospital
- University of Western Ontario

United States
- Artann Laboratories
- Brigham and Women’s Hospital (BWH)
- CHI St. Luke’s Health
- Children’s National Hospital
- Cincinnati Children’s Hospital Medical Center
- City of Hope
- Cleveland Clinic
- Duke University
- Grand Strand Urology
- Indiana University Health, University Hospital
- Johns Hopkins University School of Medicine
- Long Beach Eye Care Associates
- Mayo Clinic - Minnesota
- Memorial Sloan-Kettering Cancer Center
- Metropolitan Urology
- Montefiore Medical Center
- National Institutes of Health
- New York University
- NYP - Weill Cornell Medical Center
- Oregon Health and Science University
- ProMedica Toledo Hospital
- Southeast Urology Network
- Sunnybrook Health Sciences Centre
- Thunder Bay Regional Research Institute
- Toronto General Hospital
- University of Western Ontario
- United States
- Artann Laboratories
- Brigham and Women’s Hospital (BWH)
- CHI St. Luke’s Health
- Children’s National Hospital
- Cincinnati Children’s Hospital Medical Center
- City of Hope
- Cleveland Clinic
- Duke University
- Grand Strand Urology
- Indiana University Health, University Hospital
- Johns Hopkins University School of Medicine
- Long Beach Eye Care Associates
- Mayo Clinic - Minnesota
- Memorial Sloan-Kettering Cancer Center
- Metropolitan Urology
- Montefiore Medical Center
- National Institutes of Health
- New York University
- NYP - Weill Cornell Medical Center
- Oregon Health and Science University
- ProMedica Toledo Hospital
- Southeast Urology Network
- Sunnybrook Health Sciences Centre
- Thunder Bay Regional Research Institute
- Toronto General Hospital
- University of Western Ontario

Cardiovascular
- Hypertension*

Endocrine Disorders
- Diabetes
- Obesity
- Thyroid and parathyroid tumors
- Thyroid nodules*

Musculoskeletal
- Back and neck pain
- Bone cancer
- Osteoarthritis
- Osteoid osteoma
- Sacroiliitis

Miscellaneous
- Glaucoma
- Hypersplenism*

Neurological
- Brain tumors
- Cancer pain
- Depression
- Epilepsy
- Essential tremor
- Neuropathic pain
- Obsessive-compulsive disorder
- Parkinson’s disease
- Stroke*
- Trigeminal neuralgia*

Oncological
- Bone metastases
- Colon cancer*
- Liver tumors
- Pancreatic tumors*
- Pediatric oncology
- Soft tissue tumors

Urological
- Benign prostatic hyperplasia
- Kidney stones*
- Kidney tumors
- Prostate cancer

Women’s Health
- Breast cancer*
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site treating patients as part of a clinical study.
Clinical Research Sites by Region

**South America**

**Brazil**
- University Hospitals of Cleveland Case Medical Center
- University of California Los Angeles
- University of California San Francisco
- University of Chicago
- University of Cincinnati
- University of Houston
- University of Maryland
- University of Texas MD Anderson Cancer Center
- Instituto do Cancer do Estado de Sao Paulo

**Cardiovascular**
- Hypertension*

**Endocrine Disorders**
- Diabetes
- Obesity
- Thyroid and parathyroid tumors
- Thyroid nodules*

**Musculoskeletal**
- Back and neck pain
- Bone cancer
- Osteoarthritis
- Osteoporosis
- Sacroiliitis

**Miscellaneous**
- Glaucoma
- Hypersplenism*

**Neurological**
- Brain tumors
- Cancer pain
- Depression
- Epilepsy
- Essential tremor
- Neuropathic pain
- Obsessive-compulsive disorder
- Parkinson’s disease
- Stroke*
- Trigeminal neuralgia*

**Oncological**
- Bone metastases
- Colon cancer*
- Liver tumors
- Pancreatic tumors*
- Pediatric oncology
- Soft tissue tumors

**Urological**
- Benign prostatic hyperplasia
- Kidney stones*
- Kidney tumors
- Prostate cancer

**Women’s Health**
- Breast cancer*
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site treating patients as part of a clinical study.
## Clinical Research Sites by Region

### 58 Europe

#### Belgium
- Institut Jules Bordet

#### Bulgaria
- Pleven Medical University
- University Hospital of Endocrinology

#### Czech Republic
- Thomayer University Hospital

#### France
- Centre Léon Bérard
- CHU de Bordeaux - Hôpital du Tondu
- CHU de Bordeaux - Hôpital Saint-André
- CHU de Lille - Hôpital Huriez
- CHU de Toulouse - Hôpital Rangueil
- CHU de Tours - Hôpital Bretonneau
- Hôpital Pitié-Salpêtrière
- Hospices Civils de Lyon
- Inserm Lyon
- Institut Gustave Roussy
- Institut Mutualiste Montsouris
- University of Nice Sophia Antipolis

#### Germany
- Amper Klinik
- Brustzentrum Marienhospital Bottrop
- Charité Universitätsmedizin Berlin
- Klinikum Fürth
- Universitätsklinikum Tübingen
- University Hospital Schleswig-Holstein
- University of Heidelberg
- University of Munich
- Urologische Universitätsklinik Magdeburg

#### Israel
- Chaim Sheba Medical Center

#### Italy
- Azienda Ospedaliera San Paolo
- Careggi General Hospital
- Cisanello Hospital of University of Pisa
- Clinica oculistica Università - Ospedale ooftalmico
- European Institute of Oncology
- Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico

### Cardiovascular
- Hypertension*

### Endocrine Disorders
- Diabetes
- Obesity
- Thyroid and parathyroid tumors
- Thyroid nodules

### Musculoskeletal
- Back and neck pain
- Bone cancer*
- Osteoarthritis
- Osteoid osteoma
- Sacroiliitis

### Miscellaneous
- Glaucoma
- Hypersplenism*

### Neurological
- Brain tumors
- Cancer pain
- Depression*
- Epilepsy*
- Essential tremor
- Neuropathic pain
- Obsessive-compulsive disorder*
- Parkinson’s disease
- Stroke
- Trigeminal neuralgia

### Oncological
- Bone metastases
- Colon cancer
- Liver tumors
- Pancreatic tumors
- Pediatric oncology*
- Soft tissue tumors

### Urological
- Benign prostatic hyperplasia*
- Kidney stones*
- Kidney tumors
- Prostate cancer

### Women’s Health
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site treating patients as part of a clinical study.
Clinical Research Sites by Region

**Cardiovascular**
- Hypertension*

**Endocrine Disorders**
- Diabetes
- Obesity
- Thyroid and parathyroid tumors
- Thyroid nodules

**Musculoskeletal**
- Back and neck pain
- Bone cancer*
- Osteoarthritis
- Osteoid osteoma
- Sacroiliitis

**Miscellaneous**
- Glaucoma
- Hypersplenism*

**Neurological**
- Brain tumors
- Cancer pain
- Depression*
- Epilepsy*
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- Neuropathic pain
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- Colon cancer
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- Benign prostatic hyperplasia*
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**Women’s Health**
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site treating patients as part of a clinical study.
Focused Ultrasound: State of the Field 2015

Clinical Research Sites by Region

40 Asia

China
- 307 Hospital of PLA
- Central Hospital of Shanghai Xuhui District
- Children’s Hospital of Chongqing Medical University
- Chinese University of Hong Kong
- Chongqing Medical University
- First Affiliated Hospital of Medical College of Xi’an Jiaotong University
- First Affiliated Hospital of Zunyi Medical College
- First Maternal and Child Health Hospital of Shanghai
- Fundan University Huashan Hospital
- Fundan University Shanghai Cancer Center
- HAIFU Hospital
- Institute of Ultrasonic Engineering in Medicine and Clinical Centre for Tumour Therapy
- Peking Union Hospital, Chinese Academy of Medical Sciences
- PLA 301 Hospital
- Queen Mary Hospital of the University of Hong Kong
- Shanghai Jiaotong University
- Suining Central Hospital
- The First Affiliated Hospital of Chongqing Medical University
- The Second Artillery General Hospital of Chinese PLA
- The Third Xiangya Hospital of Central South University
- Tianjin Medical University

India
- Apollo Specialty Hospital, Chennai
- Gsl Medical College
- Jaslok Hospital and Research Centre

Japan
- Breastopia Namba Hospital
- Kochi University Hospital
- Shinsuma General Hospital

Cardiovascular
- Hypertension

Endocrine Disorders
- Diabetes*
- Obesity*
- Thyroid and parathyroid tumors*
- Thyroid nodules*

Musculoskeletal
- Back and neck pain
- Bone cancer
- Osteoarthritis
- Osteoid osteoma
- Sacroiliitis*

Miscellaneous
- Glaucoma
- Hypersplenism

Neurological
- Brain tumors*
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- Depression*
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- Essential tremor
- Neuropathic pain*
- Obsessive-compulsive disorder
- Parkinson’s disease
- Stroke
- Trigeminal neuralgia*

Oncological
- Bone metastases
- Colon cancer
- Liver tumors
- Pancreatic tumors
- Pediatric oncology*
- Soft tissue tumors

Urological
- Benign prostatic hyperplasia
- Kidney stones
- Kidney tumors
- Prostate cancer

Women’s Health
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site treating patients as part of a clinical study.
Clinical Research Sites by Region

**Oceania**

- Tokai University
- Tokyo Medical University
- Tokyo Women’s Medical Hospital

**Kazakhstan**
- National Medical Research Center
- University of Malaya

**Republic of Korea**
- Chaum Hospital
- Samsung Medical Center
- YUMC Gangnam Severance Hospital

**Malaysia**
- University of Malaya

**Singapore**
- Nanyang Technological University

**Taiwan**
- Taipei Medical University Hospital

**Australia**
- Future Medical Imaging Group
- Royal Women's Hospital Melbourne

**Cardiovascular**
- Hypertension
- Diabetes*
- Obesity*
- Thyroid and parathyroid tumors*
- Thyroid nodules*

**Endocrine Disorders**
- Glaucoma
- Hypersplenism
- Back and neck pain
- Bone cancer
- Osteoarthritis
- Osteoid osteoma
- Sacroiliitis*

**Musculoskeletal**
- Brain tumors*
- Cancer pain
- Depression*
- Epilepsy*
- Essential tremor
- Neuropathic pain*
- Obsessive-compulsive disorder
- Parkinson’s disease
- Stroke
- Trigeminal neuralgia*

**Oncological**
- Bone metastases
- Colon cancer
- Liver tumors
- Pancreatic tumors
- Pediatric oncology*
- Soft tissue tumors

**Urological**
- Benign prostatic hyperplasia
- Kidney stones
- Kidney tumors
- Prostate cancer

**Women’s Health**
- Breast cancer
- Breast fibroadenoma
- Uterine adenomyosis
- Uterine fibroids

* Not in this region

Any FUS research site treating patients as part of a clinical study.
Commercial Treatment Sites by Indications and Regions

North America
- ✤ 6 Bone metastases
- ✰ 1 Breast cancer
- ◆ 1 Kidney tumors
- ✰ 1 Liver tumors
- ✰ 1 Osteoid osteoma
- 15 Prostate cancer
- ✰ 1 Soft tissue tumors
- ✰ 15 Uterine fibroids

Europe
- ✤ 14 Bone metastases
- ✰ 14 Breast cancer
- ✰ 10 Breast fibroadenoma
- ◆ 3 Essential tremor
- 14 Kidney tumors
- ✰ 14 Liver Tumors
- ✰ 2 Neuropathic pain
- ◆ 14 Osteoid osteoma
- ✰ 3 Parkinson’s tremor
- ✤ 154 Prostate cancer
- ✰ 14 Soft tissue tumors
- ▲ 2 Thyroid nodules
- ✰ 1 Trigeminal neuralgia
- ✰ 43 Uterine fibroids

Asia
- ✤ 2 Bone metastases
- ✰ 89 Breast cancer
- ◆ 88 Kidney tumors
- ✰ 88 Liver tumors
- ◆ 88 Osteoid osteoma
- ✰ 26 Prostate cancer
- ✰ 91 Soft tissue tumors
- ✰ 113 Uterine fibroids

South America
- ◆ 7 Prostate cancer
- ✰ 1 Uterine fibroids

Africa
- ◆ 1 Prostate cancer

Oceania
- ✰ 2 Uterine fibroids

Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.
Commercial Treatment Sites by Country

Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.

- **North America**
  1. Bahamas
  1. Bermuda
  7. Canada
  1. Costa Rica
  1. Cuba
  2. Dominican Republic
  1. Grand Cayman
  4. Mexico
  14. United States

- **South America**
  1. Argentina
  1. Bolivia
  3. Brazil
  1. Cuba
  2. Dominican Republic
  1. Grand Cayman
  4. Mexico
  14. United States

- **Europe**
  4. Austria
  6. Belgium
  2. Bulgaria
  1. Denmark
  38. France
  50. Germany
  2. Israel
  32. Italy
  1. Monaco
  4. The Netherlands
  1. Norway
  3. Poland
  2. Romania
  27. Russia
  6. Spain
  9. Switzerland
  1. Ukraine
  25. United Kingdom

- **Asia**
  83. China
  11. India
  12. Japan
  2. Kazakhstan
  2. Kingdom of Saudi Arabia
  1. Lebanon
  1. Malaysia
  1. Qatar
  6. Republic of Korea
  1. Singapore
  16. Taiwan
  1. Thailand
  1. United Arab Emirates
  1. Vietnam

- **Oceania**
  2. Australia

- **Africa**
  1. South Africa
Commercial Treatment Sites by Region

- **North America**: 32 sites
- **Europe**: 210 sites
- **Asia**: 138 sites
- **South America**: 8 sites
- **Africa**: 1 site
- **Oceania**: 2 sites

**Worldwide Total**: 391 sites

*Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.*
## Commercial Treatment Sites by Region

### North America

<table>
<thead>
<tr>
<th>Region</th>
<th>Commercial Treatment Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahamas</td>
<td>Doctors Hospital</td>
</tr>
<tr>
<td>Bermuda</td>
<td>King Edward VII Memorial Hospital</td>
</tr>
<tr>
<td>Canada</td>
<td>Can-Am HIFU</td>
</tr>
<tr>
<td></td>
<td>Don Mills Surgical Unit</td>
</tr>
<tr>
<td></td>
<td>Les Cours Medical Centre</td>
</tr>
<tr>
<td></td>
<td>Maples Surgical Center</td>
</tr>
<tr>
<td></td>
<td>Sunnybrook Health Sciences Centre</td>
</tr>
<tr>
<td></td>
<td>Thunder Bay Regional Research Institute</td>
</tr>
<tr>
<td></td>
<td>University of Western Ontario</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Hospital CIMA San Jose</td>
</tr>
<tr>
<td>Cuba</td>
<td>Hospital Medical Surgical Research Center</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Center for Advanced Medicine</td>
</tr>
<tr>
<td></td>
<td>Clinica Union Medica</td>
</tr>
<tr>
<td>Grand Cayman</td>
<td>Chrissie Tomlinson Hospital</td>
</tr>
</tbody>
</table>

### Mexico

<table>
<thead>
<tr>
<th>Commercial Treatment Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centro Médico Puerta de Hierro</td>
</tr>
<tr>
<td>Hospital Galenia</td>
</tr>
<tr>
<td>Medica Sur Tlalpan</td>
</tr>
<tr>
<td>San Javier Hospital Marina</td>
</tr>
</tbody>
</table>

### United States

<table>
<thead>
<tr>
<th>Commercial Treatment Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brigham and Women’s Hospital</td>
</tr>
<tr>
<td>City of Hope</td>
</tr>
<tr>
<td>Duke Health Center at Southpoint</td>
</tr>
<tr>
<td>Focused Ultrasound Northwest</td>
</tr>
<tr>
<td>Fox Chase Cancer Center</td>
</tr>
<tr>
<td>Mayo Clinic - Minnesota</td>
</tr>
<tr>
<td>Memorial Sloan-Kettering Cancer Center</td>
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<tr>
<td>Riverside Methodist Hospital</td>
</tr>
<tr>
<td>Stanford University Medical Center</td>
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<tr>
<td>UCLA Ronald Reagan Medical Center</td>
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<tr>
<td>University MRI &amp; Diagnostic Imaging Centers - South</td>
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<tr>
<td>University of California San Diego</td>
</tr>
<tr>
<td>University of California San Francisco</td>
</tr>
<tr>
<td>University of Virginia</td>
</tr>
</tbody>
</table>

### Endocrine Disorders

- Thyroid nodules
- Osteoid osteoma

### Neurological

- Essential tremor
- Neuropathic pain
- Parkinson’s disease
- Trigeminal neuralgia

### Oncological

- Bone metastases
- Liver tumors
- Soft tissue tumors

### Urological

- Kidney tumors
- Prostate cancer

### Women’s Health

- Breast cancer
- Breast fibroadenoma
- Uterine fibroids

* Not in this region

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Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.
Commercial Treatment Sites by Region

**Argentina**
- Centro de Urologia

**Bolivia**
- Centro de urología avanzada de la Clínica Incor

**Brazil**
- Centro de Prostata San Paulo
- Hospital AC Camargo de São Paulo
- Instituto do Cancer do Estado de Sao Paulo

**Ecuador**
- Hospital Carlos Andrade Marin
- Hospital IESS
- Hospital Polícia Nacional Guayaqui

### Endocrine Disorders
- Thyroid nodules*

### Musculoskeletal
- Osteoid osteoma*

### Neurological
- Essential tremor*
- Neuropathic pain*
- Parkinson’s disease*
- Trigeminal neuralgia*

### Oncological
- Bone metastases*
- Liver tumors*
- Soft tissue tumors*

### Urological
- Kidney tumors*
- Prostate cancer

### Women’s Health
- Breast cancer*
- Breast fibroadenoma*
- Uterine fibroids
- Not in this region

* Not in this region

Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.
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Commercial Treatment

Commercial Treatment Sites by Region

Europe

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Austria
- Allgemeines Krankenhaus der Stadt Wien
- Krankenhaus der Barmherzigen Brüder Wien
- TILAK Unternehmen Gesundheit
- University of Vienna

Belgium
- Algemeen Ziekenhuis Middelheim
- Institut Jules Bordet

Bulgaria
- Saint Marina Hospital
- University Hospital of Endocrinology

Denmark
- Aarhus University Hospital

France
- American Hospital of Paris
- Centre Hospitalier de Chambéry
- Centre Hospitalier de Saintonge
- Centre Hospitalier Nord de Marseille - CHU
- Centre Hospitalier Saint Joseph - Saint Luc
- Centre Hospitalier Universitaire de Caen
- CHU de Bordeaux - Hôpital du Tondu
- CHU de Bordeaux - Hôpital Saint-André
- CHU de Guadeloupe - Hôpital les Abymes
- CHU de Lille - Hôpital Huriez
- CHU de Limoges - Hôpital Dupuytren
- CHU de Nancy - Hôpital de Brabois
- CHU de Nice - Hôpital Pasteur
- CHU de Reims - Hôpital Robert Debré

Germany
- Agaplesion Diakonieklinikum Hamburg
- Universitat Freiburg
- Amper Klinik

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Commercial Treatment Sites by Region

- Asklepios Kliniken Weißenfels-Hohenmölsen GmbH
- Asklepios Klinik Uckermark
- Asklepios Paulinen Klinik
- Brustzentrum Marienhospital Bottrop
- Charité Universitätsmedizin Berlin
- Diagnoseklinik Stephansplatz
- Diakonie-Klinikum Stuttgart
- DRK-SeeK park Klinik Debstedt GmbH
- Ev. Jung-Stilling-Krankenhaus
- Ev. Krankenhaus Göttingen-Weende e.V.
- Franziskus-Krankenhaus
- Gemeinschaftspraxis für urologie GmbH - Urologische Ambulanz
- GPR Gesundheits-und Pflegezentrum Russelsheim gGmbH-Klinikum
- HELIOS Klinik Schkeuditz
- Katholisches Klinikum Essen GmbH
- Klinik für Prostata-Therapie GmbH
- Universität Regensburg
- Klinikum Fürth
- Klinikum Itzehoe
- Klinikum Konstanz
- Klinikum Nürnberg
- Krankenhaus Dresden-Friedrichstadt
- Krankenhaus Nordwest
- Marien-Hospital Marl
- Marienhospital
- Marienhospital Arnsberg GmbH
- Paracelsus Klinik Golzheim
- Paracelsus Klinik Reichenbach GmbH
- Radiologische Gemeinschaftspraxis
- Rotkreuzklinikum München
- Sankt Katharinen Krankenhaus
- St. Antonius-Hospital
- St. Barbara Hospital
- St. Elisabethen-Krankenhaus der Katharina-Kasper gGmbH
- St. Elisabeth-Krankenhaus Köln-Hohenlind
- St. Elisabeth-Krankenhaus Leipzig
- St. Josefs Hospital GmbH
- Staedtisches Klinikum München
- Theresienkrankenhaus Mannheim
- Universitätsklinikum Aachen
- Universitätsklinikum Bonn
- University Medical Center Lubeck
- University of Cologne
- University of Munich
- Urologennetz Region Düsseldorf
- Urologische Universitätsklinik Heidelberg
- Chaim Sheba Medical Center
- Rambam Medical Center
- Alliance Medical, Italy
- Azienda Ospedaliera ’Di Venere - Giovanni XXIII
- Azienda Ospedaliera A. Cardarelli
- Azienda Ospedaliera S. Maria degli Angeli

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- Kidney tumors
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**Women’s Health**
- Breast cancer
- Breast fibroadenoma
- Uterine fibroids

*Not in this region*

Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.
Commercial Treatment Sites by Region

- **Careggi General Hospital**
- **Casa di Cura Abano Terme**
- **Casa di Cura Columbus**
- **Cisanello Hospital of University of Pisa**
- **CROB IRCCS Rionero**
- **European Institute of Oncology**
- **Foligno Hospital**
- **INI Divisione Canistro**
- **INI Divisione Grottaferrata**
- **Laboratorio di Tecnologie Oncologiche**
- **HIFU, Fondazione Istituto San Raffaele G. Giglio di Cefalu**
- **Niguarda Hospital**
- **Nuova Villa Claudia**
- **Ospedale Cardinal Massaia di Asti**
- **Ospedale Misericordia e Dolce di Prato**
- **Ospedale di Massa**
- **Ospedale di Nocera Inferiore Umberto I**
- **Ospedale San Bartolomeo di Sarzana**
- **Ospedale San Giovanni Bosco**
- **Ospedale San Raffaele Giglio di Cefalu**
- **Ospedale Sant’ Anna di Como**
- **P.O. di Castellanza**
- **P.O. di Este**
- **Policlinico Gemelli**
- **Rome American Hospital**
- **Sora Cancer Centre**
- **University of L’Aquila**
- **University of Perugia**
- **University of Rome - La Sapienza**
- **Centre Hospitalier Grace de Monaco**
- **Amphia Ziekenhuis**
- **Franciscus Ziekenhuis**
- **University Medical Center Utrecht**
- **Zaans Medisch Centrum**
- **The Intervention Centre, Oslo University Hospital Rikshospitalet**
- **ESKULAP Hospital**
- **HIFU Clinic Warsaw**
- **Szpital Pro-Familia**
- **DTL Medica**
- **HIFU Terramed Conformal Centre**
- **Center of Family Planning & Reproduction**
- **Central Bank Medical Center**
- **Central Institute of Traumatology and Orthopedics**
- **City Hospital No. 2**
- **Clinical Diagnostis Center Zdorovie**

**Endocrine Disorders**
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### Commercial Treatment Sites by Region

| Russia | | Spain | | Switzerland | | Ukraine | | United Kingdom |
|--------| |--------| |-----------------| |-----------------| |-----------------| |-----------------|
| | ◆ Ekaterinburg Regional Hospital N1/Ural Medical University Central Ural Region | ◆ Clínica Virgen Blanca S.A. | | | | | | |
| | ◆ Far Eastern Federal University | ◆ Hospital General Universitario Gregorio Maranon | | | | | | |
| | ◆ Gazprom Medical Centre, Omsk West Siberia Region | ◆ Instituto Cartuja de Técnicas Avanzadas en Medicina | | | | | | |
| | ◆ Hospital of Veterans of War | ◆ Policlinica San Antonio | | | | | | |
| | ◆ Main Military Clinical Burdenko’s Hospital | ◆ ResoFus - Centre Medico Alomar | | | | | | |
| | ◆ Medical Center of Central Bank of Russian Federation | | | | | | | |
| | ◆ Military Medical Academy St. Petersburg | | | | | | | |
| | ◆ Moniki | | | | | | | |
| | ◆ Moscow City Clinical Hospital Botkin | | | | | | | |
| | ◆ Moscow Regional Rehabilitation Center of Roszdraz | | | | | | | |
| | ◆ N. N. Petrov Research Institute of Oncology | | | | | | | |
| | ◆ National Medical Surgery Center | | | | | | | |
| | ◆ NII of Urology | | | | | | | |
| | ◆ Orenbourg Oncology Center | | | | | | | |
| | ◆ Russian Ministry of Health and Social Development | | | | | | | |
| | ◆ Rostov Scientific Research Institute of Oncology | | | | | | | |
| | ◆ Russian Railways Hospital Central Siberia | | | | | | | |
| | ◆ Samara Oncoly Centre | | | | | | | |
| | ◆ Saratov City Medical Academy | | | | | | | |
| | ◆ St. Petersburg Oncology Dispanser | | | | | | | |
| | ◆ The I.M. Sechenov Moscow Medical Academy | | | | | | | |
| | ◆ Ufa Oncology Center | | | | | | | |

#### Endocrine Disorders
- Thyroid nodules

#### Musculoskeletal
- Superior osteoid osteoma

#### Neurological
- Essential tremor
- Neuropathic pain
- Parkinson’s disease
- Trigeminal neuralgia

#### Oncological
- Bone metastases
- Liver tumors
- Soft tissue tumors

#### Urological
- Kidney tumors
- Prostate cancer

#### Women's Health
- Breast cancer
- Breast fibroadenoma
- Uterine fibroids

*Not in this region

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Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.
Commercial Treatment

Commercial Treatment Sites by Region

- Brighton and Sussex University Hospital
- Churchill Hospital
- King’s College Hospital
- Mount Alvernia Hospital
- Nottingham University City Hospital NHS Trust
- Nuada Medical
- Princess Grace Hospital
- Spire Parkway Hospital
- St. Mary’s Hospital
- Stepping Hill NHS Hospital
- Sussex Nuffield Hospital
- The Essex Nuffield
- The HIFUClinic Spire Gatwick Park Hospital
- The Institute of Cancer Research
- The King George Hospital NHS Trust
- The Princess Royal Hospital NHS Trust
- The Priory Hospital
- The Royal Surrey County Hospital NHS Trust
- The Winterbourne Hospital
- University College London Hospitals
- University of Oxford

**Endocrine Disorders**
- Thyroid nodules

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**Women’s Health**
- Breast cancer
- Breast fibroadenoma
- Uterine fibroids

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Any site with a focused ultrasound system and regulatory approval from the respective country and currently providing treatments.
Commercial Treatment Sites by Region

<table>
<thead>
<tr>
<th>China</th>
<th>Commercial treatment centers for six indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>307 Hospital of PLA</td>
<td></td>
</tr>
</tbody>
</table>
Affiliated Hospital of Armed Police’s Medical College |
Affiliated Hospital of Chuanbei Medical College |
Affiliated Hospital of Qinghai Medical College |
Affiliated Hospital of Xinxiang Medical College |
Baoji Maternal and Child Health Hospital |
Beijing Cancer Hospital |
Beijing Hospital |
Chengdu Shuangnan Hospital |
Children’s Hospital of Chongqing Medical University |
Chongqing Three Gorges Central Hospital |
City Hospital of Bincheng District in Binzhou City |
Dalian Friendship Hospital |
Daxian People’s Hospital |
Dengfeng People’s Hospital |
First Affiliated Hospital of Guangxi Medical University |
First Affiliated Hospital of Kunming Medical University |
First Affiliated Hospital of Zunyi Medical College |
First Maternal and Child Health Hospital of Shanghai |
Fujian Provincial Hospital |
Fuling Center Hospital of Chongqing |
Fundan University Shanghai Cancer Center |
Guangzhou First Municipal People’s Hospital |
Guantao People’s Hospital of Hebei |
HAIFU Hospital |
Haifu Hospital of Tangshan Transportation Group Co. Ltd |
Haikou Municipal Hospital |
Huabei Oil Field General Hospital Group |
Huainan Eastern Hospital |
Huagang Center Hospital |
Hubei Maternal and Child Health Hospital |
Institute of Ultrasonic Engineering in Medicine and Clinical Centre for Tumour Therapy |
Jiangmen Wuyi Traditional Chinese Medicine Hospital |
Jiangsu Armed Police Corps Hospital |
Jiangsu Cancer Hospital |
Jilin Center Hospital |
Jiujiang Hospital |
Jiuxian People’s Hospital |
Lianyungang Orient Hospital |
Liaoning Fushun Cancer Hospital |
Luoyang Center Hospital |
Maternal and Child Health Hospital of Yubei District |
Nanshi Hospital |
No. 91 Central Hospital of the Liberation Army |
Nong Ken Hospital |
Obstetric Hospital of Changchun |
People’s Hospital of Hunan Province |
People’s Hospital of Nanchuan District |
People’s Hospital of Xingtai |
PLA 301 Hospital (General Hospital of the People’s Liberation Army) |
Queen Mary Hospital of the University of Hong Kong |
Shaanxi Maternal and Child Health Hospital |
Shandong Cancer Hospital |
Shandong Guangrao Traditional Chinese Medicine Hospital |
Shandong Qianfoshan Hospital |
Shanxi Traditional Chinese Medicine Hospital |
Shenzhen Maternal and Child Health Center Hospital |
Suining Central Hospital |
Suining Hospital of Traditional Chinese Medicine |
Sun Yat-Sen University Cancer Center |
The 452nd PLA Hospital |
The Daqing Oil Field General Hospital Group |
The First Affiliated Hospital of Chongqing Medical University |

### Endocrine Disorders
- Thyroid nodules*

### Neurological
- Essential tremor*
- Neuropathic pain*
- Parkinson’s disease*
- Trigeminal neuralgia*

### Oncological
- Bone metastases
- Liver tumors
- Soft tissue tumors

### Urological
- Kidney tumors
- Prostate cancer

### Urological
- Breast cancer
- Breast fibroadenoma*
- Uterine fibroids

* Not in this region

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### Commercial Treatment Sites by Region

<table>
<thead>
<tr>
<th>Location</th>
<th>Commercial treatment centers for other indications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>India</strong></td>
<td>First Affiliated Hospital of Medical College of Xi’an Jiaotong University, Foshan Hospital, Peking Union Medical Center</td>
</tr>
</tbody>
</table>
|                           | **Bharat Scans**  
|                           | **Clumax Diagnostics**  
|                           | **Concept Medicare Pvt Ltd.**  
|                           | **Fortis Hospital**  
|                           | **Jaslok Hospital and Research Centre**  
|                           | **Primus Super Specialty Hospital**  
|                           | **Rajiv Gandhi Cancer Research Hospital**  
|                           | **Ramayya Pramila Urology Hospital**  
|                           | **srl. Diagnostics - Jankharia Imaging**  
|                           | **Sunrise Hospital**  
|                           | **Women’s Center India**  |
| **Japan**                 | **Affiliated Hospital of Yokohama University**  
|                           | **Aizu Chuo Hospital**  
|                           | **Breastopia Namba Hospital**  
|                           | **Clinical E.T.**  
|                           | **Fukuoka Tokushukai Medical Center**  
|                           | **Itabashi Chuo Medical Center, Tokyo**  
|                           | **Japan Affiliated Hospital of Chiba University**  
|                           | **Kochi University Hospital**  |
| **Kazakhstan**            | **National Medical Research Center**  |
| **Kingdom of Saudi Arabia**| **King Fahad Medical City**  
|                           | **King Khalid University Hospital**  |
| **Lebanon**               | **Bellevue Medical Center**  |
| **Malaysia**              | **Hospital Universiti of Sains Malaysia**  |
| **Qatar**                 | **Sidra Medical and Research Center**  |
| **Republic Of Korea**     | **CHA Bundang Medical Center**  
|                           | **Chaum Hospital**  
|                           | **Incheon Christian Hospital**  
|                           | **Incheon St. Mary’s Hospital of the Catholic University**  
|                           | **Samsung Medical Center**  
|                           | **Yonsei University Health System**  |

<table>
<thead>
<tr>
<th><strong>Endocrine Disorders</strong></th>
<th><strong>Neurological</strong></th>
<th><strong>Oncological</strong></th>
<th><strong>Urological</strong></th>
<th><strong>Women’s Health</strong></th>
</tr>
</thead>
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<tr>
<td>Thyroid nodules*</td>
<td>Essential tremor*</td>
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<td>Breast cancer</td>
</tr>
<tr>
<td>Osteoid osteoma</td>
<td>Neuropathic pain*</td>
<td>Liver tumors</td>
<td>Prostate cancer</td>
<td>Breast fibroadenoma*</td>
</tr>
<tr>
<td></td>
<td>Parkinson’s disease*</td>
<td>Soft tissue tumors</td>
<td></td>
<td>Uterine fibroids</td>
</tr>
<tr>
<td></td>
<td>Trigeminal neuralgia*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Commercial Treatment Sites by Region

**Singapore**
- KK Women and Children’s Hospital

**Taiwan**
- Cardinal Tien Hospital
- Chang Gung Memorial Hospital (Chiayi)
- Chang Gung Memorial Hospital (Keelung)
- Chang Gung Memorial Hospital (Linkou)
- Chang Gung Memorial Hospital (Taipei)
- Changhua Christian Hospital
- China Medical University Beigang Hospital
- China Medical University Hospital
- E-Da Hospital
- Kaoshiung Veterans General Hospital
- Mackay Memorial Hospital
- New Taipei City Hospital Banciao Branch
- New Taipei City Hospital Sanchong Branch
- Taichung Veterans General Hospital
- Taipei Medical University Hospital
- Tung’s Taichung MetroHarbor Hospital

**Thailand**
- Samitivej Sukhumvit Hospital

**United Arab Emirates**
- Al Zahra Hospital

**Vietnam**
- Bao Son Hospital

**Australia**
- Future Medical Imaging Group (FMIG)
- The Royal Women’s Hospital Melbourne

**South Africa**
- Netcare Christiaan Barnard Memorial Hospital

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- Breast cancer
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**Women’s Health**
- Not in this region

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The information in this report was provided by manufacturers and the focused ultrasound research community to the Focused Ultrasound Foundation. The FUS Foundation aims to provide the most accurate information; if you have more current or updated information please send it to: engagement@fusfoundation.org.