Knowing us

Early years of development before CSUM

The use and development of ultrasound in medicine, in fact, started fairly early in China compared with many other countries. Our history began in Shanghai in 1958 with the establishment of the Shanghai Ultrasonic Medical Research Group at the Sixth People’s Hospital of Shanghai (Fig. 1). Dr. Shih An led the group in collaboration with researchers from the Shanghai First and Second Medical Colleges. They used a Chiang Nan Type 1 (Fig. 2), a metal flaw detector with a frequency of 2.5 megahertz. The first National Ultrasound Conference was held in Wuhan in July 1959, where the usefulness of ultrasonics was brought to the attention of the medical community. In their first papers in 1960 and 1962, A-scope patterns of diseases of the liver, stomach, cervical cancer, breast tumours, normal pregnancies and hydatidiform moles were pictorially and impressively presented. This was a seminal paper regarding the hydatidiform mole, as this has yet to be formally reported in the literature.

Fig. 1 The front page of the first report on the clinical application of ultrasound, which appeared in the Chinese Medical Journal in 1960 from the Shanghai Ultrasound Research Group led by Dr. Shih An.

Fig. 2 A-mode scanner used by the Shanghai Ultrasound Research Group in 1958
The first book on ultrasound, *Ultrasonic Diagnosis*, was published in China in July 1961. Its contents included basic physics and equipment operations only. 2,500 copies were printed and circulated. Also, in 1962, findings on A-mode used for diagnosing hepatitis, cirrhosis and hepatocellular carcinoma were published (Fig.3). By 1964, a number of other reports had been published in the Chinese literature. The papers in 1963 by Drs. Zhou Yongchang and Wang Xinfang published their achievements on A and M-mode studies of foetal cardiac pulsations, respectively. In 1964, Dr. Wang Xinfang also pioneered prototype echocardiographic equipment synchronised to electrocardiographic and phonocardiography signals. In the same year, his group published important works which clarified the mechanisms of various valvular echo patterns.

![The USE OF PULSED ULTRASOUND IN CLINICAL DIAGNOSIS](image)

**Fig.3** The front page of the report on the *Use of pulsed Ultrasound in clinical diagnosis*, which appeared in the English edition of the Chinese Medical Journal in 1962 from the Shanghai Ultrasound Research Group led by Dr. Shih An.

The earliest B-mode scanner was built in the 1960s at the Zhong Shan Hospital, Shanghai Medical University. Subsequently, 200 cases of pathologies, including liver tumours, ovarian cysts, uterine fibroids, molar pregnancies, and aortic aneurysms, were reported. Similar studies were carried out in Beijing and Wuhan (Fig.4) at about the same time. These were reported in the National Conferences in 1961 and 1962. B-mode scanners were produced at an Aerial and Radar supplies factory in Wuhan.

![B-mode scanning gantry used in Wuhan,1960s](image)

**Fig.4** B-mode scanning gantry used in Wuhan, 1960s

Doppler ultrasound was also used as early as 1961 in Shanghai. That year, the Third People’s Hospital
in Shanghai started using continuous wave Doppler to study cardiac valves. In 1962, the Zhong Shan Hospital reported Doppler findings in arteritis, phlebitis, aneurysm and stenosis, and M-mode diagnosis of mitral valvular stenosis was also reported (Fig.5-6). By 1966, doppler investigations were extended to pregnancy in the study of foetal cardiac pulsations and in 1970, continuous foetal heart monitoring was used during delivery.

Fig.5 M-mode tracings as reported in the study in 1964

Fig.6 The front page of the article *the application of ultrasound in pregnancy – the study of the fetal heart* published in the Chinese Journal of Obstetrics and Gynecology in 1964 by Dr Wang Xinfang. The paper described the study of fetal cardiac motion in 140 patients using M-mode ultrasound and is probably the first of such reports in the world literature.

Investigations into real-time equipment also started as early as 1974 at the Central Military Hospital in Beijing, where a prototype mechanical apparatus was fabricated. The following year, they produced the first 20-crystal linear array in China, which was used to study pregnancy and the female pelvis. By 1979, the group produced a mechanical sector scanner and, in 1980, a phased-array sector scanner for cardiac investigations for clinical practice. It was not until 1974 that another book on medical ultrasound, *Ultrasonic Diagnosis*, was published. This book contained information on A-, B-, and M-modes, Doppler,
and an introduction to real-time ultrasound.

**Development of ultrasound in medicine in China with CSUM**

Unlike most academic organisations worldwide, CSUM is not a solo association. Instead, it is a society under the Chinese Medical Association (CMA), an umbrella government-supported NPO. CMA’s history can be traced back to the 1910s when wars caused devastation everywhere in China. Influenced by the Revolution of 1911, Dr. Wu Lien-teh, a sanitarian, and Dr. Fuching Yen, an educator, initiated and contacted over 30 Chinese physicians to establish the Chinese Medical Association in Shanghai in February 1915 (Fig. 7).

The Chinese Medical Association’s manifesto clearly stated its objectives: to strengthen camaraderie among medical professionals, respect medical ethics and authority, popularise medical science and hygiene, and establish connections with medical communities in China and abroad. In November of the same year, the Chinese Medical Journal was launched. Today, CMA is the largest GONOG in China, with over 700,000 health-professional members, and enjoys a high reputation for promoting the development of medicine. Currently, it has 90 sub-societies.

![Fig. 7 The first ‘family photo’ of CMA was taken in 1915 after the establishment ceremony.](image)

The development of ultrasound in medicine is also unique in China. Unlike many other countries, ultrasound in medicine is an independent speciality and department, where the examination and penitential treatment intimately come up with diagnosis by ultrasound physicians. In October 1961, the Ultrasound Diagnostics Group was established within the Physiotherapy Society. After years of continuous development and growth, the Chinese Society of Ultrasound in Medicine (CSUM) was officially established in February 1986 with the Chinese Medical Association’s (CMA) official approval. Over the past decades, the members of CSUM have forged ahead with an enterprising spirit, passed this spirit down from generation to generation, and exerted their utmost effort to attract worldwide attention and achieve remarkable accomplishments.

*Healthy China 2030*, the national policy, advocates the early detection, diagnosis, and treatment of diseases, should benefit the ultrasound market. Ultrasound equipment features flexibility in various clinical settings (Fig. 8) and is less expensive and more portable than other imaging modalities. Ultrasound can be used in traditional and non-traditional categories and point-of-care areas, including
cardiology, OB/GYN, radiology, gastroenterology, internal medicine, urology, surgery, anaesthesia, critical care, emergency medicine, and primary care.

With this in mind, CSUM has prioritised its five key tasks: (1) organisational management, (2) academic conference affairs, (3) continuing education, (4) external exchanges, and (5) writing of guidelines and general scientific articles. The connotation of these tasks is to lead teams, guide academic development, establish grassroots, and uphold discipline. The essence is to build a backbone team of ultrasound medicine professionals with excellent medical skills, a good academic reputation, and a group of elite Chinese professionals leading the development of ultrasound medicine in Asia.

CSUM organises a national academic conference and a youth forum every year (Fig. 9-10), serving as comprehensive conferences for various ultrasound specialities, and renowned experts at home and abroad are invited to give keynote speeches each time. Advancing in development and developing in advancement, the society has become a professional academic society with modernised disciplines, scientific management and international development. It has become a core strength in promoting the development of ultrasound in medicine in China.
The official journal of CSUM, *the Chinese Journal of Ultrasonography*, was founded in 1992, supervised by the China Association for Science and Technology and sponsored by the CMA. This journal has been indexed in the Chinese Science Citation Database, the Guide to the Core Journals of China, the Scientific
and Technological Periodicals for Statistics in China (Key Magazine of China Technology), the Scopus Database, the World Journal Clout Index (WJCI) of Scientific and Technological Periodicals (2021), etc. It has also been included as one of the first batches of high-quality scientific and technological journals in China and the 5th China Excellent Scientific and Technological Journals. It is dedicated to reflecting the progress of ultrasound medicine in China, promoting academic exchanges in ultrasound medicine both at home and abroad, and serving the discipline development of ultrasound medicine in China. It includes columns such as standards and guidelines, clinical research, primary research, experimental research, technical corners, case reports, reviews, and commentaries. It strictly adheres to the peer review system, and the contents published are scientific, instructive, and practical.

CSUM actively promotes cooperation with international and regional organisations, including WFUMB, AFSUMB, EUROSON, and ISUOG. In particular, CSUM weighs collaboration regarding continuing medical education (CME) and continuing professional development (CPD). These collaborations (Fig. 11) have aligned ultrasound medicine in China with international standards and provided medical education resources to grassroots hospitals and economically underdeveloped areas. Activities such as educational exchanges, technical support, and popular science promotion to improve the overall level of ultrasound medicine in underdeveloped regions in the hope of narrowing down the medical disparities.

Fig. 11 The first CoE China Taskforce training class, March 2024.