

Recommendation of learning Pain website for pain physicians in clinical practice

Shaun-Ting Yeh^{1#}, Chiu-Yin Lee MD.^{2#}, Wei-Han Chou MD.^{3*}

Abstract

Background: Pain had been identified as a major health issue due to its high prevalence and management of these patients is one of the most important concerns of medical professionals. In the era of information, making good use of online resources have been showing increasing importance in taking care of patients and staying updated. However, barriers to internet usage still exist, including time, searching skills, and confusing information. For those medical professionals who assess the internet, many were showed to rely on general websites rather than readily accessible relevant information resources. A summary of relevant online resources is needed to promote and improve professional data searching in the field of pain.

Aims: To present reliable online resources in the field of pain for medical professionals.

Methods: Five senior anesthesiologists (all working in academic medical centers) with the certification of pain specialist recommend the websites.

Results: 9 relevant websites in the field of pain are highlighted: World Institute of Pain(WIP), International Association for the Study of Pain(IASP), PainCast, The Trigger Point & Referred Pain Guide, IMAIOS e-Anatomy, Pain Medicine News, New York School of Regional Anesthesia(NYSORA), GlobalRPh- Opioid analgesic converter, Advancing the Science of Ultrasound-Guided Regional Anesthesia and Pain Medicine(USRA).

Discussion: The limitation of this special report makes checking updated papers and guidelines still needed while drawing online information for clinical usage to avoid violation of the principle of evidence-based-medicine.

Conclusion: These websites provide ambient online resources allowing users to improve their knowledge, daily clinical practice, career planning, and interconnections with professionals worldwide.

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Key Words:

Pain physician; Web resource; Internet usage; Pain.

¹ Department of Medicine, College of Medicine, National Cheng Kung University, Taiwan

² Department of Anesthesiology, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Taiwan

³ Department of Anesthesiology, National Taiwan University Hospital, College of Medicine, National Taiwan University, Taiwan

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Equal contribution to this article.

*Corresponding author: Wei-Han Chou MD, Department of Anesthesiology, National Taiwan University Hospital, National Taiwan University, Taiwan

Tel: +886-2-23123456 ext 62158;

E-mail: brokenarrowchou@yahoo.com.tw

***I*ntroduction**

Over the past years, pain has become a health issue gaining increasing attention. It has been estimated to affect more the half of the general population [1]. For those with chronic pain, the prevalence has been reported to range from 11.2% to 51.3% worldwide [1~4]. Management of these patients is a main issue for medical professionals.

In seeking for better management in order to provide more evidence-based and comprehensive care for patients, medical professionals have been searching for accesses of updated information, including the internet. It has been reported that the percentage of physicians using the internet for clinical reasons has rapidly surged from 15% in 1996 [8] to 74% in 2015 [6].

Being up-dated, convenience, and effectiveness have been reported to be motivations of physicians' professional internet use [5], whereas taking primary care of patients and continuing professional development have been shown to be the reasons for doctors and nurses seeking online evidence alike [9]. However, the time of knowledge explosion, the amount of information just a click away may be limitless, but the time and energy we have to absorb and evaluate it are not. Online resources that can summarize and present the knowledge in more concentrated ways are thus embraced by more and more medical professionals. Also, the increasing popularity of ultrasound-guided procedures has made image and videos more preferable than texts alone.

However, barriers to internet users have also been reported, including time, cost, inadequate searching skills, and most importantly, too much or confusing information, and being unable to find or have restricted access to feasible information [10,11,12]. Frequent reliance on a general search engine, social media, and general health website instead of the professional

medical database had been reported [13]. The lack of readily access to relevant online resources and the uneven quality of material found among the huge number of available options remain a hinder to the improvement of medical service.

When variables of online medical information searching were considered, the credibility of the source was ranked to be the most important one, followed by quick and 24-hour access, and ease of searching [11].

In presence of the high prevalence of pain, the need to offer better management of these patients, frequent reliance on online resources and the barriers to readily access to reliable resources, there is an urgent need to popularize relevant online medical resource, particularly in the field of pain. The goal of this article is to summarize the reliable websites with various information that are readily accessed and useful in providing care of patients and professional development alike. Five senior anesthesiologists (Chih-Peng Lin, Feng-Sheng Lin, Wen-Ying Lin, Shih-Hong Chen, and Wei-Han Chou, all working in academic medical centers) with the certification of pain specialist recommend the following websites:

Websites of international membership organization:

1. WIP (World Institute of Pain):

<http://wip.agoria.co.uk/>

Most valuable:

- A. Information of academic annual meetings, hands-on workshops, and examinations for certification of both fluoroscopy (Fellow of International Pain Practice, FIPP, since 2001) and ultrasound (Certified Interventional Pain Sonologist, CIPS, since 2014) assisted intervention.
- B. Online WIP Interventional Pain Procedure Video

Library (For sale. After the registration of FIPP examination, you can get granted limited-time access to view)

C. Pain Practice journal online access, including all past issues, for all members.

Background:

The World Institute of Pain (WIP) was established in 1993 by Phulchand Prithvi Raj, Serdar Erdine, Ricardo Ruiz Lopez, and Gabor B. Racz. It is an international membership organization, the only one holds the certification of both fluoroscopy and ultrasound-assisted interventional Pain Medicine / Management (IPM). One is Fellow of International Pain Practice (FIPP) certification and the other one is Certified Interventional Pain Sonologist (CIPS) certification, with total number reaches 1,172 and 140(update of April 2019), representing more than 60 and 20 countries respectively.

Characteristics:

WIP distribute quality education program, hands-on workshops, and mentoring initiatives for the benefit of all pain physician and patients they serve.

The hallmarks of the society of WIP are their certification programs: Fellow of Interventional Pain Practice (FIPP) and Certified Interventional Pain Sonologist (CIPS). It is the leader in internationally recognized, advanced certifications for pain physicians. Twenty-six WIP Sections have been established throughout the world where WIP's FIPP membership is strongest. To foster open communication with its international members, it organizes World Congresses periodically. It has published its official journal Pain Practice since 2001, providing updated advance information for pain management. In addition to a quarterly magazine, Pain Pathways, and the World Institute of Pain Newsletter are published for patients and their caregivers.

Navigation:

When one clicks on the WIP link (wip.agoria.co.uk), it brings to the Home Page of the WIP site. Home and other main categories such as “About WIP”, “Events”, “FIPP/CIPS”, “EPP Award”, “Media”, “Membership” and “WIP Sections” are listed in the menu bar horizontally. You can click on the categories or the dropdown arrow by its side to open and close the sub-categories under the heading.

A “User Login” button is found at the top right corner of the Home Page. When one clicks on the button, the user will be directed to “I have a User Profile” section for login and a “Contact Us” section for email communication to WIP management.

If one clicks on the Search WIP Web Site at the top left corner of the Home page, a Search function is enabled where one can enter the search criteria in the web site. There is also a Special Interest Forum at the left side where you can click on the graphic or link to view the various current forum topics. In addition, a listing of future Events/dates is displayed at the left bottom corner of the Home page for easy access.

2. IASP (International Association for the Study of Pain): <https://www.iasp-pain.org/>

Most valuable:

- A. More than 20 special interest groups for members to join to discuss highly specific issues in-depth and collaborate with others worldwide.
- B. Information of meetings, graduate opportunities, grants, and fellowships available without registration
- C. A listing of pain-related academic journals and other publications relevant to research, treatment, education and clinical practice, including the full text of IASP scientific journals available for IASP members.

Background:

IASP was founded in 1973 under the leadership of Dr. John J. Bonica (1917-1994), and its secretariat is now located in Washington, DC. The association is governed by an international Council composed of officers and councilors elected by the membership. IASP has more than 7,000 members in 133 countries, 90 national chapters, and 20 Special Interest Groups (SIGs). Its members can join to network and collaborate with others in their specific field of research or practice. IASP also publishes scientific journals: PAIN, PAIN Reports, and PAIN: Clinical Updates.

Characteristics:

The users can read some guidelines and get learning resources in the subpages of “Education”. Under the “Meetings”, there are lots of worldwide meeting information, which pain physicians can easily find and arrange their schedules to join these academic meeting and workshop. If users want to keep updates of pain or get new books online, “Publications & News” provides news and bookstore. Of course, you can get the full text of IASP scientific journals if register as a member.

Navigation:

The users can find the logo “Login” in the upper right-hand corner of any page on the IASP website. After joining as an IASP member, the user can have full accessibility to read official journals of IASP online, receive substantial discounts on all printed books in the IASP Bookstore, network with and learn from their peers, and find a job or list a job via online career center. There are 20 Special Interest Groups (SIGs) until now, which is important for clinicians and researchers with specific interests to discuss highly specific issues in depth. Membership in SIGs is open only to members of IASP, which needs extra fee only US\$20 a year per SIG.

Other sections such as education and meetings also provide a lot of useful information about continuing

education programs in pain, even nonmembers can update IASP’s guidelines, distance learning programs, and Web-based training. IASP meetings attract basic scientists, clinicians, dentists, nurses, pharmacists, physicians, physical therapists, psychologists, professors, and researchers, which help members and the public learn about new developments and advances in pain research and pain management.

Websites of techniques in interventional Pain Management

1. NYSORA (New York School of Regional Anesthesia):

<https://www.nysora.com>

Most valuable:

- A. A wide range of educational materials of regional anesthesia, especially on image-guided procedures, are presented.
- B. Information of workshops, camps, and symposiums held by NYSORA
- C. Article and news of updated clinical technique as well as practicing guides are free for every user.

Background:

As from NYSORA’s Mission statement, the organization is aimed to promote the practice of Regional Anesthesia, Pain Management, and Perioperative Medicine through timely dissemination of new information using far-reaching and innovative educational resources.

Characteristics:

NYSORA provides the gold standard in scientific advisories and guidelines related to anesthesia, analgesia, and acute and chronic pain. NYSORA promotes the welfare of its members with free-of-charge far-reaching educational resources that help them keep abreast of cutting-edge technologies and advances in Regional Anesthesia, Pain Management, and Perioperative

Medicine, including a well-maintained website and newsletter, annual symposium led by world-renowned practitioners, updated textbooks and videos, training outreach and scholarship offerings.

NYSORA provides education programs and workshops to health care providers in a broad range of didactic topics and hands-on workshops. It also engages professional medical societies and organizations in its educational activities. At present, NYSORA's website is read globally by 20,000 readers a week.

NYSORA also provides research services to investigators and the pharmacological/medical devices manufacturing industry through its extensive network of research professionals and clinical research units in the United States and in the European Union.

Navigation:

You can access the secured link of NYSORA Continuing Medical Education website, the horizontal Menu Bar consists of "Home", "Foundation", "Techniques", "Indications", "Educational Tools", "About", "Events", "Contact" and the magnifying glass for the search function. One can view the sub-headings by highlighting and clicking the relevant sub-category in question.

Main topics like "Foundation", "Techniques", "Indications", "Educational Tools", "Patients with Special Considerations", "Events", and "News" are also represented graphically in the Home Page. One can access the write up on these topics by clicking the respective graphic or heading.

2. USRA (Advancing the Science of Ultrasound-Guided Regional Anesthesia and Pain Medicine):

<http://www.usra.ca/index.php>

Most valuable:

- A. Popular neuraxial blockades and peripheral nerve blocks for regional anesthesia and interventional

pain management are both well presented.

- B. Each technique is presented as detailed step-by-step instructions, sonograms labeled with anatomical structures, and demonstrating videos.
- C. All information is free and available to everyone. No registration needed.

Background:

Although ultrasound-guided nerve blocks were first described in 1978, the use and interest in this regional anesthesia only grew with the advent of advanced ultrasound technology in 1990.

Characteristics:

Among the imaging technologies, ultrasound is recognized as the most practical imaging tool for regional anesthesia as it is real-time imaging, portable, relatively easy to learn, moderately priced, and does not pose any radiation risk. The materials on this website describe both the techniques for single shot and continuous nerve blocks. The technique is described in an easy step-by-step manner and is accompanied by a list of selected references. The goal is to impart a greater understanding of ultrasound imaging for regional anesthesia to anesthesia practitioners and pain management clinicians.

Navigation:

When you click on the link <http://www.usra.ca/index.php>, you will be directed to a page in the Ultrasound for Regional Anesthesia website.

You can navigate to different topics on this page by clicking the forward or backward arrow of the topic graphics. The highlighted topic is expanded in view in the mainframe. You can click on the "See More" button in the picture to access more detail information about the topic.

There is also a "News" section where a listing of links will direct you to different news on workshops and practice guides. The last section is "Video" where

you can view different parts illustrations on ultrasound-guided/assisted nerve block

3. PainCast:

<https://www.paincast.com/landing/>

Most valuable:

- A. Maintained by autonomous pain experts worldwide. every registered member can provide this website with his/her own podcasts, robust and interactive.
- C. Articles from journals as well as videos, and podcasts of expert opinions and clinical advices available for members.
- B. Lists of books recommended, news, and forum allowing free discussions presented.

Background:

This website is maintained by many experts worldwide, every registered member can discuss and provide their own podcasts of pain topics. Many of the advisory board and expert educators have certification of FIPP (Fellow of Interventional Pain Practice), CIPS (Certified Interventional Pain Sonologist), and other academic degrees, etc. These experts will share their own opinions and experience of various pain topics on an irregular basis.

Characteristics:

It is the website with functions of interactivity and autonomous study. The registered members can learn from reading articles and news, watching videos, listening to podcasts, and directly discussing with participants in forums. Under a personal account, the members can bookmark their favorite articles and videos.

Navigation:

Registration is the first step if someone wants to explore the website. After filling out personal information and submit, the Paincast team will verify members' registration information to guarantee that all of

them are practicing pain physicians. Then the qualified member will receive a confirmation email which informs about the account has been activated.

After logging in, links of main subpage show on the navigation bar at the top. "Videos" includes pain topics of experts' talk, live procedures, lectures of clinical advice and expert opinions, commercial products of intervention. "Podcasts" lists audios from physicians talking about a variety of pain topics. The registered members can also host their own podcasts. «Articles» let the members search for interested topics from all major journal publications and white papers. «Books» recommends around fifty books with introduction and the links to purchase. «News» provides the latest news about pain from the most credible sources. «Forums» makes possible to discuss various pain topics with experts and other participants.

It's worth to mention that there is a block of main documents all pain management events, seminars, and speaking engagements.

4. The Trigger Point & Referred Pain Guide:

<http://www.triggerpoints.net/>

Most valuable:

- A. Graphical illustrations of myofascial pain and trigger points adapted from a book called "Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual, Volumes 1 and 2".
- B. Users can select contents based on body regions, individual muscles, or symptoms.
- C. No registration needed.

Background:

The website focus on myofascial pain and trigger points. Most of the information and images were adapted from "Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual, Volumes 1 and 2" with permission. If the readers want more information

or advanced advice, they can send a message directly on the contact page or visit MyoRehab (<http://myorehab.com/>).

Characteristics:

The readers can explore the trigger point & referred pain on a body map, which divided to symptom areas: upper back, shoulder, and arm; torso; lower torso; leg, ankle & foot; hip, thigh & knee; head and neck; forearm & hand. They also can check the possible trigger points by clicking on selected muscles and symptoms.

Navigation:

It is a free website without the necessity of registration. Links of main subpage show on the navigation bar at the top, including body map, muscles, symptoms, and general info of this website. On all diagrams, the symbol “X” (no matter black or white one) represent the trigger points. The red shaded area is the referred pain caused by the trigger point, and the darker red means more people experienced pain in that area. The readers can get a correlation of the trigger points and primary & secondary symptoms.

Websites of anatomy, pharmacology, and news associated with pain management

1. IMAIOS e-Anatomy:

<https://www.imaios.com/en/e-Anatomy>

Most valuable:

- A. Ambient CT and MRI images with anatomical parts on each slice of the image highlighted with labels.
- B. Easy to operate, simply scroll to view continuous cuts of images.
- C. Detailed anatomical structures listed on the side of the page, just click to view individual descriptions.

Background:

IMAIOS is an innovative company in the medical imaging and e-learning field, which founded by medical

doctors and radiologists, Dr. Denis HOA and Dr. Antoine Micheau since 2008. They develop websites and mobile software to provide new tools to help healthcare professionals in their daily practice. The users can find several websites and applications about anatomy, imaging, and exam preparations.

Characteristics:

e-Anatomy is one of the most popular products about interactive atlas of human anatomy. It provides a complete reference of human anatomy, which available on the web, iPad, iPhone, and Android devices. After registration and paying online, the users can explore over 13,000 images with CT, MRI and PET image series in axial, coronal and sagittal slices, as well as x-rays and angiography images, dissections, anatomy diagrams, and illustrations. These medical images feature detailed legends with over 375,000 legend items available in 9 languages.

Navigation:

e-Anatomy separate the human anatomy into 4 zones: head and neck; thorax, abdomen, pelvis; limbs; spine. The users can browse some regions without registration. For use of the premium modules and the advanced functions, registration and buying subscription packages is necessary. Besides individual learning, the users can contact IMAIOS to receive more information on Group and Institutional subscriptions to give students full access to e-Anatomy. The Group and Institutional subscription packages can help teachers to develop learning projects.

2. Pain Medicine News:

<https://www.painmedicineneeds.com/>

Most valuable:

- A. Providing medical news relevant to different fields of pain, including political and public health issues
- B. News in various forms, including online articles,

multi-media, E-mail, and printable white papers.

C. Free registration, which is required to read the full text.

Background:

Pain Medicine News is the most popular pain publication in the United States. It is mailed to pain treating clinicians and nurse practitioners periodically throughout the year. It also covers any major scientific meetings related to topics relevant to practicing providers. In addition, it provides electronic communication to readers via website, e-Newsletters, and multimedia.

Characteristics:

Pain Medicine News is a news publication for the practicing physicians appealing in the diagnosis, treatment, and management of pain. It gives extensive coverage of major scientific meetings affecting Pain Medicine. Its articles feature topics relevant to practicing providers, in-depth clinical reviews, practice management articles, medical education, as well as a full line of digital media, including the PainMedicineNews.com website, e-Newsletters, and video/audio multimedia content.

There are Tweets by [@painmednews](#) section on their website which gives doctors and pain management practitioners a forum for open discussion on pain medicine news. At the same time provides updated information on organizations such as Food and Drug Administration (FDA), pharmacy companies and the Centers for Disease Control and Prevention (CDC) on health policies/trends and news.

Navigation:

When one clicks on the secured link of the website, you will land on the homepage of the Pain Medicine News website. At the top right corner of the home page, a user can register or log in.

The main categories are organized under headings

in the menu bar horizontally. If there is more than one sub-category under a heading, there will be a dropdown arrow by the side of the heading. You can rest your cursor on the heading with a dropdown arrow to view the sub-categories. You can open the sub-category page by resting the cursor on the sub-category and click.

The main news sections are arranged on the Home page with highlights and graphics. When you click on the heading of a news section, it will be expanded in view on the home page. These news sessions can also be accessed by clicking on the heading “Sections” in the menu bar. At the end of the home page, there are a listing of links to the Pain Medicine News, e-Newsletter, Social Media and the McMahon websites.

3. Opioid analgesic converter:

<http://www.globalrph.com/narcoticonv.htm>

Most valuable:

- A. A user-friendly easy tool for calculation of opioids equivalent dose.
- B. Nine narcotic analgesics and their route of administration are readily interconvertible.
- C. Descriptions, indications, dosage, and route of administration of multiple anesthetics, analgesics, sedatives, and muscle relaxants are available.

Background:

As clinicians often prescribe different types of opioids through various route of administration, an opioid analgesic converter is needed to clearly assess the equivalent dose.

Characteristics:

This opioid analgesic converter is part of a website called GlobalRPh. The opioids convertible included codeine, fentanyl, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, and tramadol. The route of administration interconvertible included intravenous, intramuscular, subcutaneous,

and oral. Also, if a user wants to look up for more information, in the section of “analgesics, muscle spasms, palliative care, and pain”, descriptions, indications, dosage, and route of administration of multiple anesthetics, analgesics, sedatives, and muscle relaxants are available.

Navigation:

Simply select the analgesic that you want to convert from, that you want to convert to, and type in a value of incomplete cross-tolerance to obtain the result.

Discussion:

Here 9 websites are presented, each of them serving different needs in clinical practice, including gaining internationally recognized certifications, information of academic gathering, guidelines, clinical review, expert opinions, basic medical knowledge, and joining informal peer network in various specific fields. These resources come in various forms, articles, images, videos, podcasts, news, and interactive discussions included. Here we also summarized and compared the characteristics of these websites in the form below to make it clear at a glance for users. As the internet popularizes and online resources flourish, learning has become easier and more available than ever. These websites provide ambient online resources allowing users to improve their knowledge, daily clinical practice, career planning, and interconnections with professionals worldwide.

(Table 1) Summary and comparison of 9 websites

	Free	More information for member	Medical knowledge	Interventional technique	Information of conference	Forum in website
WIP	Yes	Yes	Yes	Yes	Yes	No
IASP	No	Yes	Yes	No	Yes	Yes
NYSORA	Yes	No	Yes	Yes	Yes	Yes
USRA	Yes	No	No	Yes	Yes	No
PainCast	Yes	Yes	Yes	Yes	Yes	Yes
The Trigger Point	Yes	No	Yes	No	No	No

IMAIOS	No	Yes	Yes	No	No	No
PainMedicineNews	Yes	Yes	Yes	No	Yes	Yes
WIP	Yes	Yes	Yes	Yes	Yes	No

Limitations:

All the pain specialists, the recommenders, work in medical centers, so professionals work in other medical institutes may find these websites not fitting their clinical needs. Many of these websites requires registration, some information and resources are not available to non-members. Also, frequently checking updated papers and guidelines is still needed when drawing information from websites and using it in clinical settings to avoid errors of online resources and to maintain the principle of evidence-based medicine.

Conclusion: These websites provide ambient online resources allowing users to improve their knowledge, daily clinical practice, career planning, and interconnections with professionals worldwide.

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Some websites were recommended by Chih-Peng Lin, Feng-Sheng Lin, Wen-Ying Lin, and Shih-Hong Chen. The first three doctors are attending physicians in the department of anesthesiology in National Taiwan University Hospital, and Dr. Chen now serves in the department of anesthesiology, Taipei Tzu Chi Hospital. The curriculum vitae of these five honorable doctors are enclosed in the appendix.

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在臨床實務中為疼痛醫師學習疼痛的建議網站

葉軒廷¹，李昭然²，周韋翰³

研究背景：近年來疼痛的高盛行率使它成為一個重要的健康議題，這類病人的處理已經成為醫療專業人員主要的顧慮之一。在這個資訊的時代，在病人照護以及最新資訊的獲得上，妥善運用網路的重要性逐漸增加。然而使用網路查詢專業領域資料的阻礙依舊存在，包括時間、搜尋技巧、以及網路上過多令人困惑的資訊。許多使用網路的醫療專業人員常依賴一般性的非專業網站，而不是可靠的資訊來源。因此，為了促進以及提升疼痛領域專業知識搜尋的質與量，一個總結並呈獻可靠網路資源的文章便有其必要性。

目標：將疼痛領域的可靠網路資源呈現給醫療專業人員。

方法：總結並摘要了由五位在醫學中心工作，具有疼痛專科的資深麻醉科醫師推薦的網路資源。

結果：本文呈獻了九個疼痛領域的網站：World Institute of Pain(WIP), International Association for the Study of Pain(IASP), PainCast, The Trigger Point & Referred Pain Guide, IMAIOS e-Anatomy, Pain Medicine News, New York School of Regional Anesthesia(NYSORA), GlobalRPh- Opioid analgesic converter, Advancing the Science of Ultrasound-Guided Regional Anesthesia and Pain Medicine(USRA).

討論：基於本文的研究限制，在將網路資源用於臨床醫療照護時仍需與最新的研究和指南相對照，以避免違反實證醫學的原則。

結論：這些網站提供了豐富的線上資源，讓使用者能夠精進自身的知識以及臨床照護品質，並與世界各地的專業人員交流。

關鍵字：疼痛科醫師，網路資源，網路使用，疼痛

¹ 國立成功大學醫學系

² 國立成功大學附設醫院麻醉部

³ 國立台灣大學附設醫院麻醉部

責任作者：周韋翰

單位：國立台灣大學附設醫院麻醉部

電話：+886-2-23123456 ext 62158

E-mail: brokenarrowchou@yahoo.com.tw