

第四節 | 醫療資訊化，完成建置電子病歷

為了縮短城鄉差距，應用資通訊科技克服地域障礙，建構偏鄉數位資訊醫療照護網為一項主要策略，其概念架構如下（圖25）：

改善頻寬

為使完整的醫療照護能深入偏鄉部落，衛生福利部推動「行動門診」送醫療到部落、以及建置人性化的母語語音掛號系統，提供居民便利醫療服務，縮小城鄉醫療資源差距。

完善偏鄉頻寬線路的分布

到2013年度為止，已陸續完成建置新竹縣等十五縣、五十五家衛生所的醫療資訊系統、以及三百一十九個巡迴醫療點，除了有效節省人力之外，更提昇偏遠部落的醫療品質。目前，巡迴醫療點及網路線路共計有三百五十六條線路；根據規畫，從2014到2017年，將繼續增加建構二十個巡迴醫療點，網路線路將擴增至三百七十六條。

目前偏鄉醫療網頻寬未達4M者，有七十五條線路，4~8M者有兩百條線路，未達12M者有五十條線路，12M以上者有三十一條線路。2014至2017年將全面提昇及改善頻寬，衛生所的頻寬都要達12M以上（目前仍有四十六家未達12M以上），而衛生室及其他巡迴醫療點，以達8M以上或以光纖佈線為原則。

2017年全面提昇頻寬至12M

為了提昇巡迴醫療點的網路頻寬品質，每年會定期檢視及檢討，針對

Section 4 | Digitizing Medical Information and Completing the Transition to Electronic Medical Records (EMRs)

The MOHW is applying information communication technology to overcome geographical barriers and to reduce the urban-rural gap in medical care. The construction of rural medical care networks is one of the main priorities of our digital information framework.

Improving Bandwidth

In order to provide comprehensive health care for rural tribes, the MOHW is providing mobile clinics to tribal areas and has built medical appointment systems in the native languages to provide residents with convenient and user-friendly medical services, as part of our strategy for mitigating the urban-rural medical resource gap.

Building Better Internet Bandwidth Distribution in Rural Areas

A total of 55 health centers and 319 mobile clinics located in 15 counties have completed digitizing their medical information systems. This has improved the quality of medical care and reduced the need for medical manpower. Between 2014 and 2017, the plan is to construct 20 more mobile clinics and will increase the number of Internet cable lines to 376.

Currently there are 75 cable lines that have a bandwidth of less than 4MB, 200 cable lines with a bandwidth between 4MB and 8MB, and 50 cable lines with almost 12 MB in mountainous and offshore areas. Only 31 cable lines have a bandwidth over 12MB. The MOHW plans to upgrade overall bandwidth, ensuring all health centers have bandwidth above 12MB (currently 46 centers are not up to standard). Health stations and other mobile medical clinics will be equipped with bandwidth above 8MB.

Enhance Overall Bandwidth to 12M in 2017

We monitor and annually examine the performance of the network at mobile

ADSL網路不穩定的巡迴醫療點，已協請國家通訊傳播委員會（NCC）及中華電信協助改善。此外，依據調查，2015年度偏鄉巡迴醫療點頻寬需求建設點，共有一百一十六條線路頻寬網路不足，亦協請NCC及中華電信優先處理，其中，九十五條線路可升級到12M/4M以上，二十一條線路列入2015年度的基礎建設（圖26、27、28、29）。

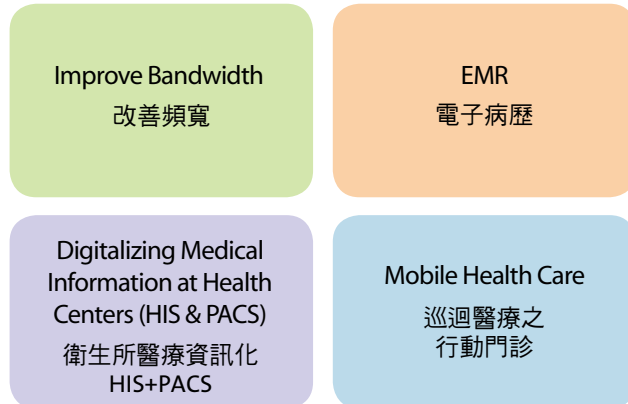
clinic base in order to enhance the quality of the bandwidth. The MOHW has asked the National Communications Commission (NCC) and Chunghwa Telecom to help improve the ADSL network stability at mobile clinic locations. An ongoing investigation to be completed in 2015 identified the ADSL points required for mobile clinic locations in rural areas.. The investigation indicated a total of 116 cable lines had insufficient bandwidth. The NCC and Chunghwa Telecom were notified directly to assist in rectifying the situation. As a result, 95 cable lines will be upgraded to over 12M/4M. Twenty-one cable lines have been included in the 2015 infrastructure (Figures 26, 27, 28, 29).

25 | 建構偏鄉數位資訊醫療照護網概念架構

Structural concepts for the construction of networks for health care in remote and offshore areas

Health Care + Technology → Equity

Four Main Projects 四大項目



- 26 遠距醫療-藉由網路多點視訊連線。
Audio-visual telemedicine consultation through multiple internet line connections
- 27 無線環境。
Wireless environment
- 28 運用網路基礎建設推動電子病歷。
Promoting EMR through internet infrastructure
- 29 i-Tribe啟用活動。
The i-Tribe kick-off event

建置HIS和PACS

衛生所建置共用醫療資訊系統（Health Information System,簡稱HIS），採行分年分階段，以提昇偏遠地區醫療服務品質。截至2013年底，已完成建置五十五家衛生所，其中，山地三十家，離島十八家，平地七家（圖30、32）。

衛生所醫療影像傳輸系統（Picture Archiving Communication System, PACS）（圖31、32），共有三十二家建置完成，包括山地二十三家、離島九家，並與衛生福利部醫院連線。



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30 行動化HIS調閱。
Access to mobile HIS readings



31

31 行動化PACS調閱。
Access to mobile PACS readings

Improving Medical Information with HIS and PACS

MOHW has established a shared Health Information System (HIS) for health centers that is being phased in in stages over the years that will enhance the quality of medical services in rural areas. As of the end of 2013, 55 health centers have already completed implementation: 30 centers in mountainous areas, 18 centers in offshore regions and 7 centers on the plain (Figures 30, 32).

MOHW plans to build the medical image transmission system known as Picture Archiving Communication System (PACS) in 32 health centers, including 23 mountain centers and 9 offshore centers (Figures 31, 32).

The Effectiveness of Digitizing Medical Information

Such system links with the MOHW's hospitals help provide qualified and timely diagnosis for residents of rural townships. Since 2011, 19 health centers in mountainous and offshore areas have diagnosed patients by sending images to MOHW hospitals for analysis. By December 2013, a total of 7,347 patients have received diagnoses through the system. Thus the Mountainous and Aboriginal Township Telemedicine Project brings better health care to tribal communities. Through digitized information shared online, the quality of medical services in rural areas is no different from that in urban areas. The rural population is able to get the benefits of shared medical resources, enriching the quality of medical care and protecting the health of the population.

Before the implantation of this medical imaging and transmission system, a patient in a mountainous area spent around NTD1,900 (USD 65) every time to travel to an urban hospital for treatment. HIS has benefitted 400,000 aboriginal and offshore residents in the nation, saving NTD760 million (USD 25 million) in costs, including the cost of transportation and not being able to work. The PACS has benefitted 7,000 people, saving NTD13 million (USD 450,000) in transportation and costs from not being able to work. An estimation of overall savings related to tele-medicine is around NTD 770 million (USD 26 million).

遠距醫療資訊化的成效

為了讓偏鄉地區民眾享有與本島相同的判讀品質及即時服務，自2011年起，山地離島十九家衛生所已由衛生福利部醫院提供影像支援判讀；到2013年十二月底為止，共支援判讀七千三百四十七件。

推動山地原住民鄉的遠距醫療門診服務計畫，使得完整的醫療照護能深入部落社區，透過網路將大型醫院的醫療服務品質帶入偏鄉，可以讓當地居民共享都會地區的醫療資源，落實醫療品質，守護偏鄉居民的健康。

再從鄉民接受服務面來看，未建置醫療影像傳輸系統前，需要親自到大醫院就醫，如果以前往都市就醫來算，所需交通相關費用約為一千九百元；2013年全國原住民及離島民眾使用HIS的效益約四十萬人次，估計節省民眾鄉外就醫的交通及無法工作等費用，約為七億六千萬元；而使用PACS的效益約為七千人次，估計節省民眾鄉外就醫交通及無法工作等費用，約為一千三百萬元；加起來，2013年在鄉外就醫費用上，大約就節省了七億七千萬元。

32 | HIS及PACS系統建置分布情形

The establishment and distribution of HIS and PACS systems



建置電子病歷網

為提昇山地、離島等偏遠地區的醫療資訊服務品質，衛生福利部規劃四十八家偏鄉地區衛生所，加入推動電子病歷的行列，並發展雲端架構。

2013年十月至2014年四月，陸續完成建置新北市烏來區等四十八家偏鄉衛生所的電子病歷交換系統，其中十家衛生所為電子病歷製作系統。預計於2015年全國五百家醫院、兩萬家診所，都會建置完成，我國將成為全球電子病歷網領先國家。

48偏鄉優先享用雲端服務

四十八家偏鄉衛生所的電子病歷調閱功能，已於2013年年底完成建置；居民在國內已實施電子病歷互通的醫療院所就醫後，都可透過雲端傳回居住所在地的衛生所（圖33、圖34），民眾不須再大老遠就醫看報告，既省事，又省錢。



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33 34 桃園縣復興鄉衛生所巡迴醫療點。

The mobile medical services station at Fu-Hsing County's health center in Taoyuan County

Establishing Electronic Medical Records Network

The MOHW has identified and plans to upgrade medical information service quality in 48 remote areas, so that these areas can have electronic medical records and develop a cloud-computing framework. From October 2013 to April 2014, 48 health centers, including Wulai District Health Center of New Taipei City, are scheduled to complete implementation of an electronic records exchange system. Ten of 48 health centers have set up all functions of the electronic medical records management system. The Ministry is expecting to complete the electronic medical record networks in 500 hospitals and 20,000 clinics by the end of 2015. Taiwan will be a global leader in national electronic medical record networks.

Cloud-computing Service as a Priority in 48 Remote and Offshore Areas

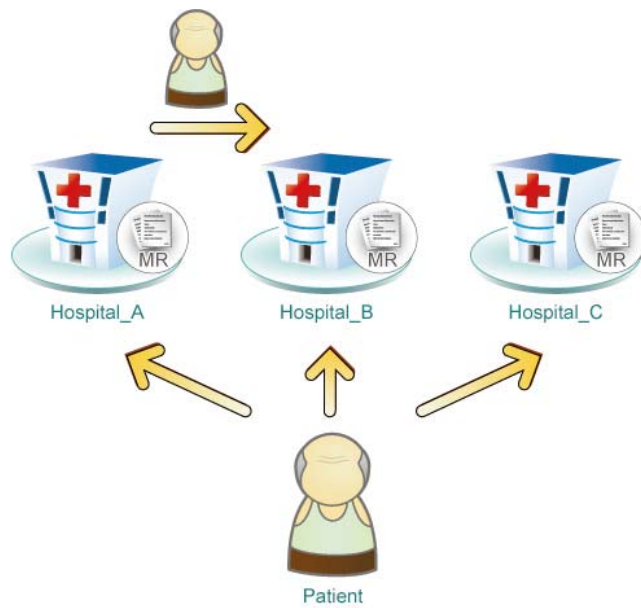
By the end of 2013, it was possible to retrieve electronic medical records in 48 remote health centers. The patients' medical records from any medical facility in the country can be accessed at the local health center through the network (Figures 33, 34). People can thus access medical information and reports at the local health center, closer to home, which saves time and money. As a result, transportation time is saved and the cost of medical referrals and traditional film processing for medical purposes such as X-rays is reduced. The network has allowed people in remote and offshore areas to enjoy the same quality of medical services as in a major hospital.

Figures 35-A to C (as next page) explain the development of traditional medical records to EMR.

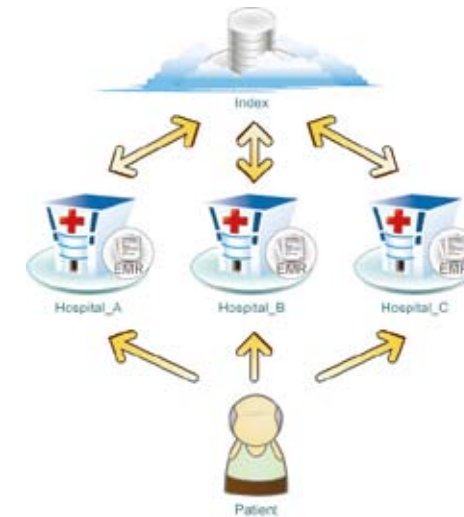
啟用電子病歷網之後，可以達到的成效包括：減少鄉外就醫舟車勞頓的時間與費用，節省轉診掛號及傳統洗片醫材等費用，偏鄉民眾可以同享醫院級的醫療品質。

以下圖說明傳統病歷至電子病歷的發展階段(圖35-A、35-B、35-C)：

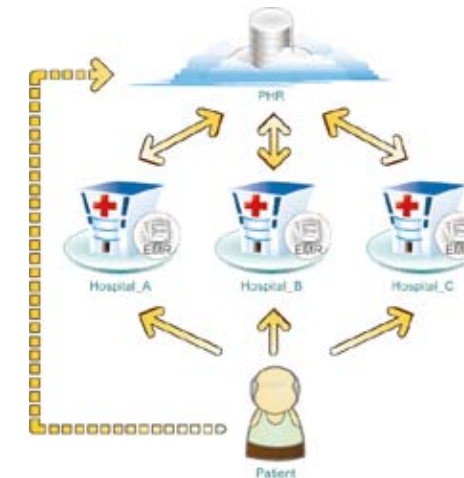
35-A | 病患到不同醫院看診需自行攜帶其他醫院的紙本病歷或病歷摘要
Patients bring a summary of medical records on paper at different hospitals



35-B | 病患前往A醫院看診，可到雲端經由索引系統取得其他醫院看診的病歷資料
When patients go to hospital A for treatment, their medical history at previous hospitals can be located through an index in the cloud



35-C | 個人健康資料均存於雲端，病患到醫院看診時即可由雲端取得個人的醫院歷資料
Individuals' health records are saved in the cloud and hospitals treating them can download complete medical records there



巡迴醫療的行動門診

原住民族地區因地處偏遠，民眾就醫不便，因此需要藉助巡迴醫療方式，提供醫療服務。

以往，衛生所醫護人員於巡迴醫療時，必須出動兩輛車，一輛攜帶部分紙本病歷，另一輛載運醫護人員，看完診後回到衛生所，再以人工輸入方式，將紙本病歷的資料登載入電腦。在部落巡迴醫療時，如果民眾臨時來看診，又碰巧未攜帶個人的紙本病歷，將會無法掌握整體病史，即時判斷病情，造成諸多不便。

HIS為優質的巡迴醫療打好基礎

為了解決這類問題，2006年選定苗栗縣泰安鄉衛生所，為建置共用醫療資訊系統（簡稱HIS）的試辦地區，提供「行動門診」送醫療到部落、以及全國首創的泰雅語音掛號系統等便捷服務，使得受到地域阻隔的偏遠部落，初步獲得等同於都市地區的醫療服務，以改善原本缺乏的醫療可近性。衛生所方面，除了不用多開一輛巡迴車攜帶紙本病歷之外，到部落執行醫療服務時，也可以隨時提供民眾看診服務（圖36、37）。

此外，即時的健保IC卡驗證，也能檢視繳納健保費情形，若有欠繳，便可即時轉介鄉公所健保專員，提供健保分期付款等相關便民措施，以避免民眾健保鎖卡。

由此可見，在山地離島地區的衛生所，建置與衛生福利部醫院相同版本的共用醫療資訊平台（HIS），是為電子病歷網打好基礎，也讓山地離

Mobile Clinics for Health Care

Aboriginal areas are often remote, making access to medical services inconvenient; by way of mobile clinics, the residents of these areas can receive better and more accessible medical care. In the past, health centers had to dispatch two vehicles when they performed mobile medical services, one vehicle to carry all the medical records on paper, and the other vehicle to transport medical personnel. When the vehicles returned from their rounds, all new records had to be entered manually. Sometimes the patients came without an appointment and their medical record was not in the vehicle. Examination without the medical history of the patient could affect the timeliness and accuracy of the diagnosis.

HIS Lays a Solid Foundation for Electronic Medical Records

In 2006, the health center in Taian Township of Miaoli County Was the pilot center for the implementation of the HIS system. The health center offered mobile clinics with digitized medical information to provide health care to the indigenous tribes. The first tayal voice registration system has been created, which is important for providing accessible and qualified health care to remote tribes. The physicians no longer need to carry paper medical records in a separate vehicle for mobile medical clinics (Figures 36, 37).

Real-time authentication with the NHI smart card can allow access to information on unpaid health insurance premiums. Based on that information, the NHI is able to provide assistive measures for rural residents. This approach can help people avoid having their NHI card locked for medical services. The same medical information system in the cloud platform has been installed in MOHW hospitals and health centers in mountainous and offshore areas. This lays a solid infrastructure for electronic medical records so that the people in mountainous and offshore areas receive the same comprehensive quality of medical care.



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36 行動門診。
Mobile clinic



37

37 行動藥局。
Mobile pharmacy

島地區民眾與都會民眾一樣，享有完備的醫療照護品質，進而提高當地民眾的健康水準。

偏鄉交通不便使得居民就醫權利深受影響，之前，即使有行動門診醫療，現場也多半缺乏完整的診療設備。然而，從2014年度起，透過雲端就可以調閱患者的病歷與醫療影像資料，醫師看診時有了重要支柱，而且，居民也能節省每趟下山看診拿藥的相關費用約兩千元。

考量偏鄉交通不便，除了醫護人力外，如何將醫療檢驗儀器行動化，帶到偏鄉，也是巡迴醫療努力的方向。衛生福利部於2011年補助苗栗縣泰安鄉衛生所（圖38）及臺東縣金鋒鄉衛生所，購置肝病篩檢多功能行動醫療車各一輛；2011年補助臺東縣海端鄉衛生所，購置牙科行動醫療車一輛；2013年核定補助臺東縣蘭嶼鄉衛生所，建置多功能行動醫療車一輛，而巡迴醫療的服務項目也因而增加。

In the past, mobile clinics had limited medical equipment. But now, mobile clinics are able to retrieve patients' complete medical records through the online records and medical imaging systems. These have become essential support systems for physicians doing consultation in mountainous and offshore areas. The online system has helped reduce the need to travel to urban areas for medical services for mountainous and rural townships. An estimated NTD 2000 (USD70) per trip is saved for the locals.

Because of inconvenient transportation, carrying mobile medical equipment to tribal areas is another challenge. In 2011, the MOHW allocated funding to health centers in Taian Township, Miaoli County (Figure 38) and Jin Feng township, Taitung County for acquisition of multifunctional medical vehicles for liver function examination. In the same year, with MOHW funding, the health center in Haiduan Township of Taitung County obtained a mobile vehicle for dental examination and treatment, and the health center in Lanyu Township in Taitung County was granted the purchase of a mobile multi-functional medical vehicle to upgrade existing mobile medical service equipment.



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38 苗栗縣泰安鄉衛生所行動醫療車。
Mobile medical vehicle from Taian Township's health center in Miaoli County

第五節 | 健保IDS計畫及巡迴醫療

所謂IDS (Integrated Delivery System)，係指「由責任醫院統籌，派遣人力及資源到偏鄉離島」。

巡迴醫療的精神是「醫師動，病人不動」。

IDS及巡迴醫療點深入偏鄉319處

山地離島地區由於交通不便、人口稀少且分散，無法吸引醫師前往開業，因此醫療資源普遍不足。

全民健康保險開辦後，為維護山地離島地區保險對象的就醫權益，並提昇當地醫療服務品質，衛生福利部中央健康保險署積極推動山地離島地區的醫療服務改善措施，解決該地區有健保無醫療的困境，並自1999年十一月起，推動「全民健康保險山地離島地區醫療給付效益提昇計畫 (Integrated Delivery System, 以下簡稱IDS)」(圖39)，將大醫院較充足的醫療人力及資源送到山地離島地區，提供門診、急診定點及巡迴醫療照護、專科醫療支援等服務，並朝「醫師動，病人不動」方向持續努力，積極強化在地化醫療。

迄今，IDS及衛生所之巡迴醫療點已深入離島及偏遠部落，達三百一十九處，不僅強化山地離島地區醫療服務的可近性，並且提昇了醫療服務品質(圖40)。

Section 5 | Implementing Mobile Health Care and The National Health Insurance Integrated Delivery System

The spirit of mobile health care is to move the physicians, not the patients;

In this spirit, Integrated Delivery Service (IDS) refers to coordinating and dispatching manpower and resources to remote and offshore areas by responsible hospital(s).

The National Health Insurance IDS and Mobile Health Care Have Reached 319 Remote Areas

To promote improved medical services in mountainous and offshore islands and to solve the dilemma posed by the absence of NHI-covered health care available in these regions, the National Health Insurance Administration (NHIA) started to promote the Integrated Delivery System (IDS) in November 1999 (Figure 39). The NHIA not only relocated healthcare professionals and resources from large hospitals to specific locations in order to provide outpatient services, emergency care and mobile health care in remote and offshore areas, but also continues to work toward the goal of moving the physicians, not the patients, as the strategy for improving health care quality locally. To date, the IDS plan and the mobile health care offered by health centers have reached 319 locations in outlying islands and remote tribes, increasing the accessibility of medical services in these areas (Figure 40).

圖39 | Integrated Delivery System (IDS) 計畫運作模式

Figure 39 | The operating model of the Integrated Delivery System (IDS) plan

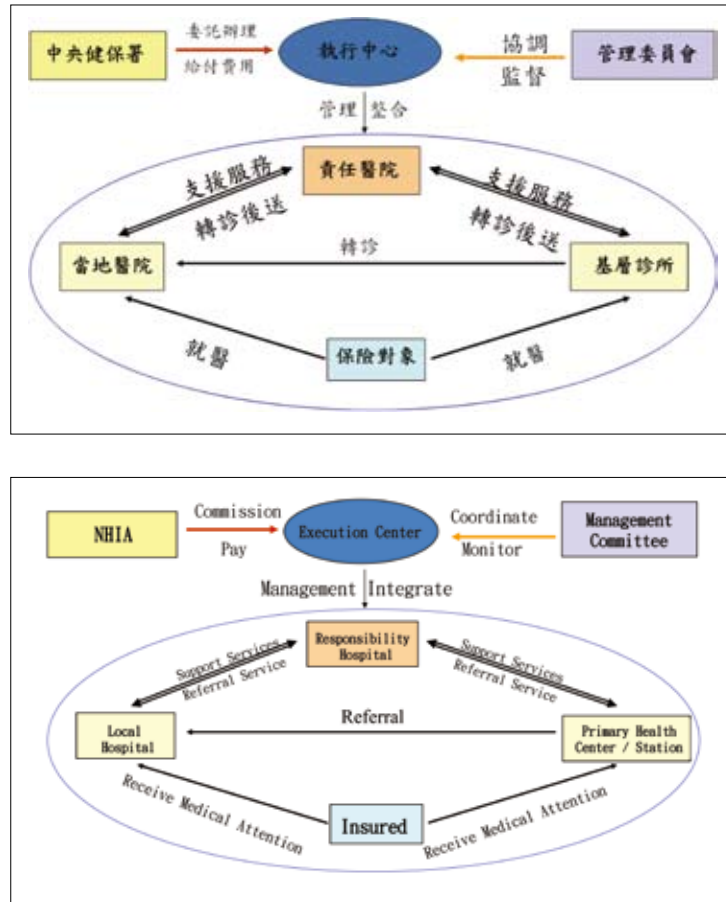


圖40 | IDS計畫實施之鄉鎮區分布

Figure 40 | Distribution of townships implementing the IDS plan



四十八個山地離島地區（自2013年十一月起新增東沙島、南沙島，總計五十個），包括：三十個山地鄉（含蘭嶼）十八個離島鄉（自2013年十一月起新增東沙島、南沙島，計二十個）

48 remote and offshore areas (starting in November 2013, Dongsha Island and Nansha Island have been added to the list to make a total of 50 areas), including: 30 mountainous townships (including Lanyu), 18 outlying island townships (started in November 2013, Dongsha island and Nansha island were added to the list, bringing the total to 20 areas)

擴大健保IDS計畫

最初，「全民健康保險山地離島地區醫療給付效益提昇計畫」納入施行的全國山地離島偏鄉有四十八個，由二十五家承作醫院與偏鄉當地院所合作。到了2013年十一月，IDS計畫擴大施行的區域，增列高雄市東沙島和南沙島，納入IDS計畫公告範圍，由國軍高雄總醫院承作。

因此，現行IDS計畫施行的山地離島地區有五十個，承作醫院則有二十六家，包含七家醫學中心、十四家區域醫院、五家地區醫院，總計有四十三萬餘人（其戶籍設於山地離島地區民眾）受到這項計畫的醫療照護。

就醫便利 民眾滿意

根據2012年資料統計，實施IDS計畫之後，山地離島鄉居民實際發生的醫療費用為三十四億七千七百萬元。此外，IDS額外投入經費三億八千七百萬元，用以支付每月額外財務支出，包括：提供一千九百零二專科診次、定點門診、二十四小時急診、夜間門診、夜間待診（晚上九點到次日早上八點）、專科診療（如眼科、婦產科、牙科、復健科、精神科、洗腎醫療、放射科等）、提供所需聘用的醫事服務人員、巡迴服務、慢性病照護、居家照護、疾病篩檢、預防保健及轉診後送服務等；並且因實施地區、承作單位、當地民眾不同的醫療需求及天災緊急事件等，各地IDS計畫所提供服務亦有不同特色及服務內容。

以設籍於山地離島且在保的民眾就醫資料歸戶分析，2012年度山地離島

Expansion of the National Health Insurance IDS plan

Due to poor transportation in sparsely populated remote and offshore areas, medical practitioners are less attracted to work in these regions. Consequently, healthcare resources in these areas are usually very limited. Since the establishment of the National Health Insurance (NHI) system, the NHIA of the Ministry of Health and Welfare has implemented various initiatives to protect rural residents' interests, promote local health care quality and solve the problem of inaccessibility of health care in these areas. In addition, the NHIA began to promote the IDS in November 1999 and has relocated healthcare professionals and resources from large hospitals to specific locations in remote and offshore areas to increase the accessibility of health care and improve the quality of medical services (Figures 41,42,43,44,45).

The original 48 participating remote and offshore areas have now all been integrated into the NHI IDS plan, and local medical institutions in these regions are thereby cooperating with 25 participating hospitals under the program. Furthermore, the areas in which the IDS plan has been implemented have extended further since November 2013; now Dongsha Island as well as Nansha Island of Kaohsiung City are included in the announced areas, with Kaohsiung Armed Forces General Hospital as the responsible hospital in this region. Currently, a total of 50 remote and offshore areas and 26 participating medical institutions (including 7 medical centers, 14 metropolitan hospitals and 5 district hospitals) have signed up for the program. More than 430,000 registered local residents in these areas can now benefit from the health care provided through the IDS plan.

IDS Has Indeed Improved Access to Health Care

According to the statistics based on information obtained in 2012, since the implementation of the IDS plan, actual annually medical expenses incurred by the rural residents in remote and offshore areas amounted to NTD3.477 billion (USD 116 million). Moreover, the IDS plan invested an additional NTD387 million



41

41 醫療院所前往山地離島提供醫療服務的路程。
The trip to remote locations for providing medical services

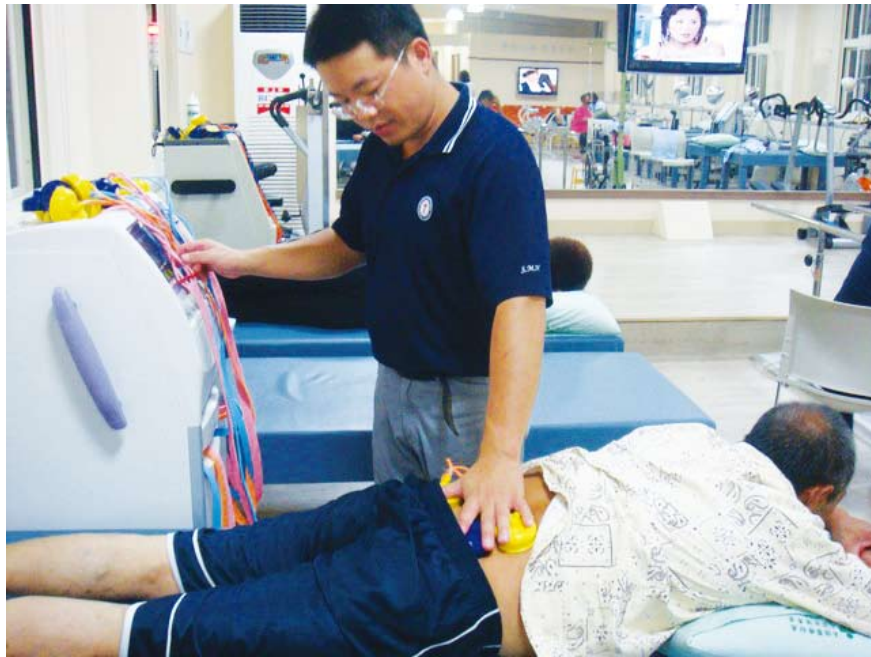
地區民眾，平均每人全年門診就醫（西醫）次數，為十五點零八次，平均門診就醫點數為一萬四千一百三十三點，高於同年度全國民眾西醫平均就醫次數的十二點五五次、以及就醫點數的一萬三千四百四十三點，足見IDS計畫的實施已確實提高當地民眾的就醫可近性。（圖41、42、43、44、45）

(USD 12.9 million) in these regions, providing a total of 1,902 specialty physicians visits per month, outpatient visits at specific locations, 24-hour emergency service, evening outpatient clinics, night shift physicians (from 9 PM to 8:00 AM), specialist clinics (e.g. ophthalmology, obstetrics and gynecology, dentistry, rehabilitation, psychiatry, dialysis and radiology, etc.). This money has also been allocated to provide extra financial incentives for hiring necessary healthcare professionals, mobile health care services, chronic illness care, at home nursing care, disease screening, preventive care and evacuation services after referral. Most importantly, the features and services offered by each IDS plan vary according to the areas of implementation, cooperating units, differing medical needs of the local residents and emergencies or natural disasters.

42 臺中市和平區梨山衛生所醫師及護理人員接生情形。
Midwifery at Taichung City, Hoping District



42



43

43 宜蘭縣大同鄉四季復健站提供民眾復健服務情形。
Rehabilitation services at Datung Township Rehabilitation Station, Yilan County

此外，在實施IDS的鄉鎮，2012年度民眾對IDS計畫的平均滿意度達到九成五，其中南投縣仁愛鄉的滿意度高達百分之百，有十個以上地區的滿意度為九成九，如宜蘭縣大同鄉及南澳鄉、南投縣信義鄉、嘉義縣阿里山鄉、高雄市那瑪夏區及茂林區、屏東縣三地門鄉、春日鄉、獅子鄉、泰武鄉等地。

Based on the analysis of individual medical records from insured people who are registered as residents in the remote and offshore areas, the average number of outpatient visits per person in 2012 was 15.08 per year and the average number of outpatient visit points was 14,133 in the remote and offshore areas—both figures are higher than the national averages (12.55 visits per patient for western medicine per year and 13,443 points per person). These figures demonstrate that implementation of the IDS plan has indeed improved access to health care in the remote populations.

Additionally, the average level of satisfaction with services among people who live in the townships covered under the IDS plan in 2012 was 95%; Renai Township of Nantou County had a satisfaction rate of 100%. Similarly, people living in Datong Township and Nanao Township of Yilan County, Xinyi Township of Nantou County, Alishan Township of Chiayi County, Namasia area and Maolin area of Kaohsiung City, Sandimen Township, Chunrih Township, Shihzhih Township and Taiwu Township of Pingtung County also reported a satisfaction rate of 99%.



44

45

44 45 高雄市茂林區巡迴醫療。
Mobile health care in Maolin District, Kaohsiung City

第六節 | 健保及公務預算保障醫療資源不足地區

保障醫療資源不足地區之醫療費用

為強化山地離島偏鄉及健保醫療資源不足地區的民眾在地醫療，減少就醫奔波之苦，自2012年五月起，辦理「全民健康保險醫療資源不足地區之醫療服務提升計畫」，每年編列五到八億元；對於山地離島地區或偏遠地區主要急性醫療照護功能的社區醫院，強化提供二十四小時急診、或內科、外科、婦產科、小兒科四大科的門、住診醫療服務者，給予點值一點一元的保障，使其具備提供較佳醫療的能力，每家醫院最高一年可補助一千五百萬元。

2014年全年預算八億元

2014年度，新增符合「緊急醫療資源不足地區急救責任醫院」的區域級醫院參加這項計畫，補助其經急診檢傷分類第一級、第二級的當次住院的前十天（含），點值保障每點一元，全年每家醫院可補助最高五百萬元。

2012年有五十家參加，自2013年迄今，已有七十四家參加；民眾對於服務的滿意度，亦達八成四以上。衛生福利部中央健康保險署已於2014年，將預算由一年六億七千萬元增為八億元，以期能持續落實推動偏鄉社區醫院的穩健經營，落實在地醫療。

提供健保急診費用加成及點值保障

為了確保山地離島偏鄉及其鄰近醫院提供急診與醫療的能力，以維護民

Section 6 | Providing Adequate Funding for Areas Lacking Accessible Health Care Resources Through NHI and Other Government Agencies

Providing Funding by NHI and Government Budgets for Areas Lacking Accessible Health Care Resources

To improve local health care services in remote and offshore areas and to reduce travel back and forth, the MOHW began implementing the Health Care Service Improvement Plan for Areas Lacking Accessible NHI Healthcare Resources in May 2012. This program allocates NTD 500 to 800 million (USD 16.7 to 26.7million) per year to community hospitals serving acute-care functions in remote and offshore areas. It provides incentives for healthcare providers to offer 24-hour emergency services or internal medicine, surgery, obstetrics/gynecology and pediatrics services. Healthcare providers are given points for offering these services, so as to ensure these hospitals have the means to provide better health care; one point is worth NTD 1, and the maximum amount of annual subsidy paid to each hospital is NTD 15 million (USD 500,000).

Increasing the Budget to NTD 800 Million (USD 26.7million) in 2014

In 2014, more metropolitan hospitals qualifying as Hospitals Responsible for Providing Emergency Care in Areas Lacking Accessible Healthcare Resources are being added to the program. The incentives provided for these hospitals are calculated based on the emergency triage scale. For Level 1 and Level 2 emergencies, points accumulating from up to 10 days prior to hospitalization (inclusive) are calculated, with each point worth NTD 1, and the maximum amount of annual subsidy for each hospital set at NTD 5 million (USD 0.17 million).

Fifty hospitals participated in the program providing emergency care for remote areas in 2012 and a total of 74 have signed up for the program since 2013. The public satisfaction level with the services provided exceeds 84%. The National Health Insurance Administration of the Ministry of Health and Welfare has increased its budget from NTD 670 million (USD 22.3million) to NTD 800 million (USD 26.7million) in 2014, with the intention of consistently promoting operational

眾就醫的可近性，除了保障醫療資源不足地區醫療費用外，並公告2013年「緊急醫療資源不足地區急救責任醫院」，共計四十二家，其急診診察費予以加成三到五成，並對急診案件給予點值一點一元的保障，鼓勵醫療資源不足地區的醫院，投入急診醫療業務，並加強醫院的急診品質。

鼓勵牙醫提供醫療服務

積極推動「全民健康保險牙醫門診總額醫療資源不足地區改善方案」，鼓勵牙醫師前往醫療資源不足地區及山地離島，提供牙醫醫療服務，以均衡牙醫醫療資源，並提供一個有效、積極、安全的醫療體系，期使全體保險對象獲得適當的牙醫醫療服務。

2013年，對於牙醫醫療資源不足地區，執業服務計畫中，共有三十七家牙醫診所於三十七個醫療資源不足鄉鎮執業；巡迴服務計畫中，共有十八個醫療團（含兩百九十一家院所），前往一百二十六個醫療資源不足鄉鎮，提供巡迴醫療服務，以改善城鄉差距，保障民眾的就醫權益與口腔健康。

鼓勵中醫師參與

持續推動「全民健康保險中醫門診總額醫療資源不足地區改善方案」，鼓勵中醫師前往醫療資源不足地區，提供中醫的醫療服務，以均衡中醫的醫療資源分布，使全體保險對象獲得適當的中醫醫療照護。

在中醫醫療資源不足的地區，2013年獎勵開業服務，共有兩家中醫診所前往兩個鄉鎮開業；巡迴服務計畫中，共有九十三家院所前往七十九個鄉鎮，提供巡迴醫療服務。

stability of rural community hospitals and improving local health care.

Incentives for Investing in Emergency Care Services

The program provides additional diagnosis fees and protection for NHI-covered emergency care. To protect the emergency and other health care provided by hospitals in remote and offshore areas and to ensure rural people's access to medical care, institutions listed among Hospitals Responsible for Providing Emergency Care in Areas Lacking Accessible Healthcare Resources in 2013 are announced to the public by NHIA, in addition to securing the medical expenses of areas lacking accessible healthcare resources. A total of 42 hospitals received an additional 30-50% diagnosis fee as an incentive, along with point value protection for emergency cases, with one point worth NTD 1. These financial incentives will encourage hospitals in remote areas to invest in emergency care services and will improve the quality of emergency care they provide.

Encouraging Dentists to Join the Program

Our goal is that all insured people should be able to access appropriate dental care. To this end, the MOHW has actively promoted a Plan for Increasing the Total Number of NHI Dental Clinics in Areas Lacking Accessible Healthcare Resources. This program encourages dentists to practice in areas lacking easily accessible dental care, such as mountainous areas and outlying islands, in order to better balance the availability of these resources and to provide an effective, positive and safe health care system.

In the areas with insufficient healthcare resources in 2013, 37 dentists started practice in 37 townships previously lacking accessible dental care resources. Eighteen medical groups (291 medical institutions) provided mobile dental care services in 126 townships lacking accessible healthcare resources under the Practice Service Project with the aim of ameliorating the urban-rural gap and to protect the public's interest in health care and oral health.

鼓勵西醫下鄉

推動「西醫醫療資源不足地區改善方案」，由西醫基層診所及地區級以上醫院，前往醫療資源不足地區，提供醫療保健服務，以確保偏遠地區民眾的就醫權益。

在西醫醫療資源不足的地區，2013年獎勵開業，共有四家診所前往三個鄉鎮，提供開業服務；巡迴服務計畫中，則有一百七十七家醫療院所，前往一百一十八個鄉鎮巡迴，其中，基層診所有一百三十五家前往八十七個鄉鎮，醫院則有四十二家巡迴三十一個鄉鎮。（圖46、47、48）

強化緊急醫療處理能力

針對全時或特殊時段，包括夜間、假日或觀光旅遊旺季，為強化醫療資源不足地區的緊急醫療服務，自2006年起，每年預算約一億六千萬元，獎勵在地醫院以彼此合作支援方式，提供當地民眾與遊客緊急醫療服務，分別以設立「夜間及假日救護站」、「觀光地區急診醫療站」、以及「提升緊急醫療資源不足地區醫院急診能力」等三種模式辦理。

透過獎勵，緊急醫療資源不足地區可充實其醫療設備、醫事人力，提供二十四小時不中斷的照護服務，約提供每診次二十人次的緊急醫療服務，每月提供九百診次的急診醫療服務，可服務急診病患約一萬八千人次，進而提升偏遠地區緊急醫療品質、以及落實在地醫療的醫療網目標。

Encouraging Chinese Medicine Clinics to Join the Program

The MOHW continues to promote The Plan for Increasing the Total Number of NHI Traditional Chinese Medicine (TCM) Clinics in Areas Lacking Accessible Healthcare Resources. The program encourages TCM practitioners to practice traditional Chinese medicine in areas with insufficient healthcare resources and attempts to balance the uneven distribution of Traditional Chinese Medical resources, so that all insured people can get access to appropriate traditional Chinese medical care.

For areas with insufficient healthcare resources in 2013, a total of two traditional Chinese Medicine clinics started their practice in two different townships previously lacking accessible healthcare resources. Under the Mobile Health Care Project, 93 medical institutions provided mobile health care services in 79 townships that were lacking accessible healthcare resources.

Encouraging Western Medicine Clinics to Join the Program

The MOHW also promotes its Plan for Increasing the Total Number of Western Medicine Clinics in Areas Lacking Accessible Healthcare Resources. This program encourages municipal hospitals and Western Medicine clinics to provide services in areas with insufficient resources so as to ensure rural residents' interests in accessible medical care. A total of four clinics were awarded funds and started practice in three townships previously lacking accessible healthcare resources. Mobile health services were provided in 118 townships lacking accessible healthcare resources by 177 Western medical institutions (Western medicine clinics: 135 clinics and 87 townships; hospitals: 42 hospitals and 31 townships) (Figures 46, 47, 48).

Strengthening Medical Resources in Areas That Are Inadequate

With the goal of strengthening emergency medical resources in areas where existing institutions are inadequate to meet the high demand during regular hours or special periods (e.g., night time, and peak season for tourism), the government has awarded funding of up to NTD 160 million (USD 5.3million) annually since 2006. The fund rewards hospitals for cooperating and supporting each other to provide locals and visitors with emergency medical services in remote areas. To obtain



46

46 47 48 醫院提供偏遠地區巡迴服務。
Hospitals provide mobile health care in remote and offshore areas



47



48

these funds, hospitals can operate in three modes, known as "night and holiday ambulance station," "sightseeing area emergency station," and "upgraded EMS responsibility in remote areas."

Through this fund, facilities with inadequate emergency medical resources, especially insufficient medical equipment and medical personnel, were nonetheless able to provide

24-hour uninterrupted medical care in tourist and sightseeing areas, as well as in other areas where medical resources are scarce. These cooperative efforts provide about 20 more emergency examinations and medical services each time, with as many as 900 cooperating to provide emergency medical services a month. Such collaborative emergency services examine about 18,000 patients, with the effect of upgrading emergency medical quality. The medical network is thus able to reach its goal of providing emergency services in remote areas.

特殊急重症照護中心的成立及運作

偏遠地區醫療資源相對匱乏，且醫事人員羅致困難，缺乏特定科別專科醫師，無法及時處理急重症病人，影響民眾就醫權益。為了充實偏遠地區醫療資源，提昇醫療服務品質，補助醫院發展在地化的急重症醫療照護服務模式，加強偏遠地區醫療照護的可近性，讓民眾能在地即時獲得適當品質的醫療照護。

自2010至2012年，每年約編列經費二億五千萬元，共獎勵苗栗、新竹、南投、雲林、屏東、臺東、澎湖、金門、連江等九個緊急醫療資源不足地區的十七家醫院，發展成立外傷、急診、心血管、腦中風、周產期、兒童重症等二十四個特殊急重症照護中心，補助上開醫院聘任專科醫師、以及購置急重症照護設備，提供在地化的特殊照護服務，其中已有二十一個中心通過衛生福利部的認證。

到2014年二月為止，經由衛生福利部採行各項有效措施，全國急救責任醫院能力已見提昇；這點可由全國各級緊急醫療之分布改變證實，包括：重度級急救責任醫院由二十七家增為三十一家、中度級由七十六家增為八十四家、一般級則由八十八家減為七十九家。其中，位處離島的澎湖、金門，都已經具備中度級急救責任醫院，而連江縣也以此為目標；地處偏遠的花東三縣市，則是除了臺東縣有中度級急救責任醫院外，宜蘭和花蓮也都已經有重度級急救責任醫院。（圖49）

綜合以上，針對醫療資源不足地區，經由採行保障醫療資源不足地區醫療費用、特殊急重症照護中心之成立及運作、提昇全國急救責任醫院能力，已完成全國偏鄉離島醫療網建置。（圖50）

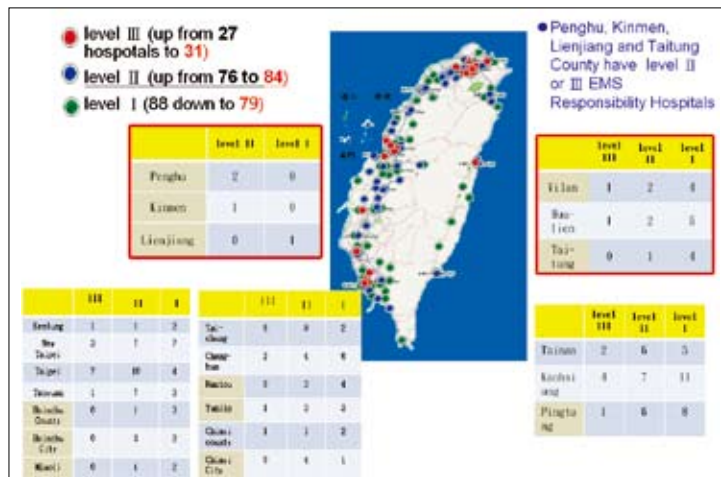
Establishment and Operation of Specific Emergency Critical Care Centers

Medical resources in remote and offshore areas are relatively inadequate compared to those in urban areas. Such areas also suffer from difficulty recruiting and retaining medical personnel, especially in particular specialties. The impact of inadequate medical resources includes inability to treat patients with severe conditions, consequently impairing the local residents' right to adequate medical care. In order to enhance the medical resources in remote areas and upgrade the quality of medical service, the MOHW makes grants available to hospitals in these regions to develop a medical care service model for emergency and critical patients, with the goal of providing timely emergency medical care.

From 2010 to 2012, the government allocated incentives of approximately NTD 250 million (USD8.3 million) annually to 17 hospitals with inadequate medical resources in nine counties (Miaoli, Hsinchu, Nantou, Yunlin, Pingtung, Taitung, Penghu, Kinmen, and Lianjiang). These hospitals established 24 specified Emergency Intensive Care Centers to provide appropriate care for trauma, emergencies, cardiovascular events, stroke, perinatal health, and children with severe illness. The funding enabled the hospitals to invite specialty physicians for providing medical services, and to acquire the medical equipment to localize specified services. Of these specified Emergency Critical Care Centers, 21 have been certified by the MOHW.

In February 2014, the capabilities of National Emergency Responsibility Hospitals have been improved through the implementation of effective measures by the MOHW. This can be seen in the distribution of emergency responsibility levels across the country, including the increase of hospitals designated as Advanced Emergency Responsibility Hospitals from 27 to 31, Intermediate Emergency Responsibility Hospitals from 76 to 84, and General Emergency Responsibility Hospitals from 88 to 79. There are Intermediate Emergency Responsibility Hospitals in Penghu and Kinmen, and the hospital in Lienchiang county is working towards this goal. There are Advanced Emergency Responsibility Hospitals in Hualien and

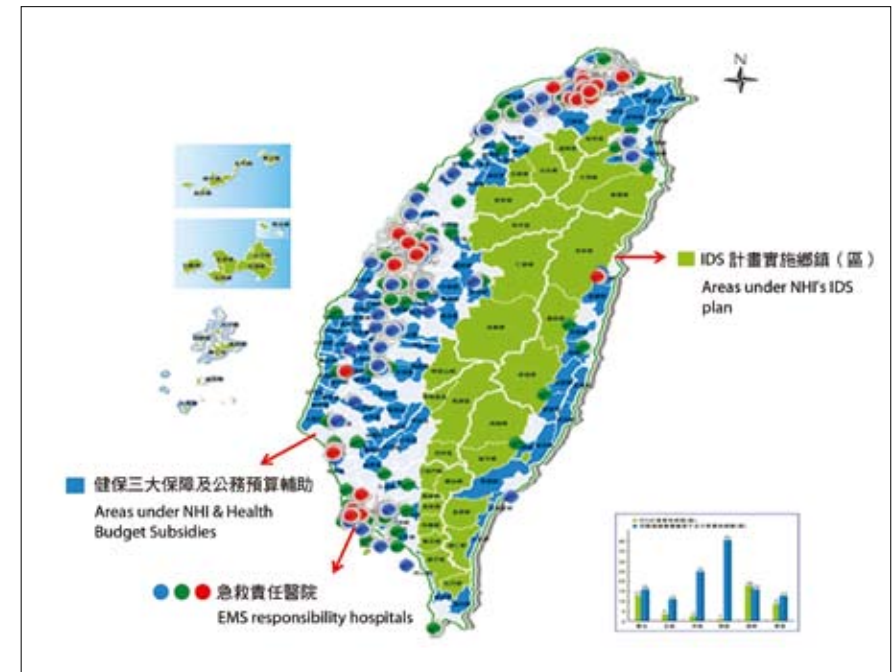
49 | 全臺各級緊急醫療分布
National Distribution of Emergency Medical Network



Yilan county, with the exception of Taitung which has an Intermediate Emergency Responsibility Hospital (Figure 49).

Through the guarantee provided by NHI and government budgets, and the establishment of specified Emergency Intensive Care Centers, a national medical care network has been established in remote and offshore areas (Figure 50).

50 | 完成全國偏鄉離島醫療網建置
Completed healthcare network for the nation's remote and offshore areas



推動特殊需求者 牙科醫療服務獎勵計畫醫院

2014年通過為特殊需求者牙科醫療服務獎勵計畫醫院（圖51），名單如下：

- 金門縣：金門醫院
- 連江縣：連江縣立醫院
- 臺東縣：臺東馬偕醫院
- 屏東縣：屏東基督教醫院、安泰醫院
- 花蓮縣：門諾醫院、慈濟醫院
- 雲林縣：臺大雲林分院
- 南投縣：竹山秀傳醫院
- 苗栗縣：為恭紀念醫院

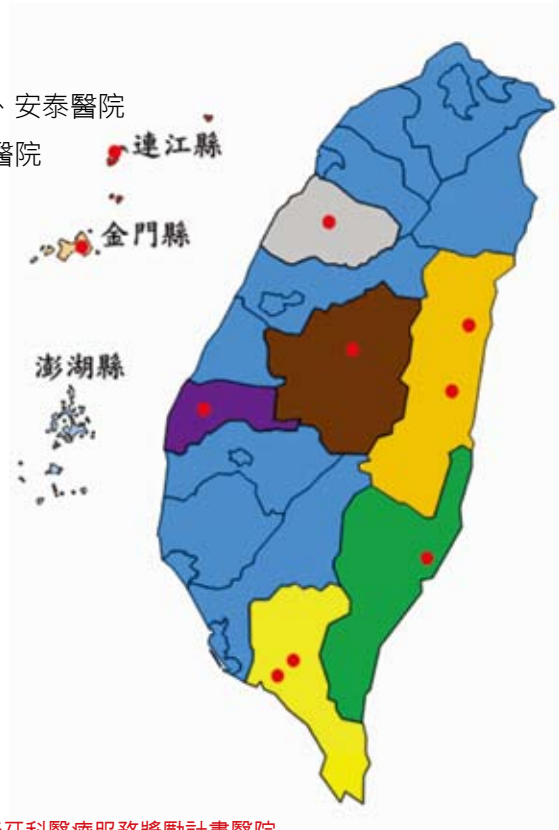


圖51 | 2014年通過為特殊需求者牙科醫療服務獎勵計畫醫院
Figure 51 | Hospitals providing dental treatment for special needs through the rewards scheme, 2014

Rewards Scheme for Promoting Hospitals Providing Dental Treatment in Places with Special Need

List of hospitals participating in the Special Need for Dental Treatment Reward Scheme in 2014 (Figure 51):

- Kinmen County : KinMen Hospital
- Lienchiang County : Lienchiang County Hospital
- Taitung County : McKay Memorial Hospital Taitung Branch
- Pingtung County : Pingtung Christian Hospital, Antai Tian-Sheng Memorial Hospital
- Hualien County : Mennonite Christian Hospital, Hualien Tzu Chi Medical Center
- Yunlin County : National Taiwan University Hospital Yunlin Branch
- Nantou County : Chu Shang Show Chwan Hospital
- Miaoli County : Wei Gong Memorial Hospital

第七節 | 育才留人培育計畫

透過「原住民及離島地區醫事人員養成計畫」、「偏鄉護理200菁英計畫」及「缺醫村」醫療資源改善計畫，培育在地化的醫事人才，才能落實醫療在地化，強化山地離島偏鄉的醫療服務品質。

培育在地養成公費生制度

我國於1969年開始進行原住民及離島地區醫事人員培育政策；從2007年起，更增加培育人數，由每年平均培育十名醫師增加至二十七名。到2013年為止，培育了八百四十二名各類醫事人才，其中已培育畢業六百二十七名，包括醫師二百七十名、牙醫師五十名、護理人員二百二十九名、其他醫事人員七十八名。

此外，原住民及離島地區醫事人員養成第三期計畫（2012~2016年），再培育二百零六名養成公費生，其中醫學系預計招生員額一百一十四名。

七成公費醫師留任偏鄉服務

依據「原住民及離島地區醫事人員養成計畫公費生服務管理要點」規定，養成計畫畢業生於畢業後，依其就讀學系須進行一到三年不等的訓練，並於完成訓練取得醫事人員證書後，得申請分發服務。

若為原住民籍養成公費生，其服務範圍為三十個山地鄉及二十五個平地原住民鄉；分發服務依序為原住民地區的衛生所、位於原住民地區的衛生福利部所屬的醫院、衛生福利部所屬的非教學醫院、衛生福利部公告

Section 7 | Establishing a Talent Training and Retention Program

With plans as "Talent Training and Retention Program"; "Nursing Elite 200 Plan for Remote Areas" and "Send Physicians to Mountain Villages Lacking Medical Services"; we have cultivated local medical talents to ensure health care quality in remote and offshore areas of Taiwan.

Government Scholarships for Fostering Local Medical Talent

Since 1969, the government has been providing medical training scholarships for aborigines and residents from remote areas. The policy has produced an increase in physicians by an annual average of between 10 and 27 since 2007. A total of 842 scholarships were offered in various specialties, of which 627 have graduated, including 270 physicians, 50 dentists, 229 nurses, and 78 other medical personnel. Furthermore, stage 3 of the Talent Training and Retention Program (2012 to 2016) will cultivate 206 more scholarship recipients who are aborigines or residents of remote areas. A total of 114 out of the 206 scholarships will be offered to medical students. These recipients are expected to follow the terms set out by the government scholarship management service.

70% of Scholarship Recipients Retained in Remote Areas to Serve as Physicians

The scholarship program states that the recipients must receive training in their studied specialty for 1 to 3 years. Upon graduation, when the training is complete and the recipient has been awarded a practicing certificate, the recipient will be assigned to a work place. If the scholarship recipient is of aboriginal descent, he or she will be assigned to one of 55 aboriginal townships, including 30 mountainous townships and 25 townships on the plain. Service assignments are in the following order of precedence: health centers located in the aboriginal regions, MOHW's hospitals in aboriginal regions, MOHW's non-teaching hospitals, and hospitals in remote areas allocated and approved by the MOHW. Recipients who are residents of offshore areas are to return to their hometown for service.

的偏遠地區醫院、並經專案核准。若為離島籍養成公費生，則需返回該戶籍所在地服務。

實施多年來，畢業後公費生均分發返鄉服務，有七成公費醫師服務期滿仍留任偏鄉服務。目前，山地鄉衛生所的醫師編制有六十位，其中養成公費生五十名，占八成三的比率；離島鄉衛生所的醫師編制三十一名，其中公費生十四名，占四成五的比率。

目前仍有一百七十名在地養成醫學生於學校培育中。根據統計，截至2013學年度，在校學生計有二百一十五名，其中醫學系一百七十名、牙醫系十七名、其他醫事學系二十八名（圖52、53）。

自2014至2016年預計再培育一百二十六名，其中醫學系預計招生七十二名，藉由持續培育在地化醫事人才，落實醫療在地化，強化山地離島地區的醫療服務品質。



52

52 2013學年度原住民及離島地區醫事人員養成計畫招生記者會。
2013 Scholarship for aborigines and offshore residents, press conference



53

53 2013學年度原住民及離島地區醫事人員養成計畫招生記者會。
2013 Scholarship for aborigines and offshore residents, press conference

After years of scholarship awards, 70 percent of physicians who were recipients have stayed in the town of their assignment in remote or offshore areas. Currently, 60 physicians are registered in health centers in mountainous townships, with 50 of these former scholarship recipients (83%); a total of 31 physicians are registered in health centers on offshore islands, of which 14 were scholarship recipients (45%).

The talent training and retention program has focused on training local people. Currently there are 170 medical students from remote and offshore areas. There are currently 215 students receiving scholarships, and 170 of these students are medical students, 17 are dental students and 28 are paramedical students (Figure 52, 53). The government estimates another 126 medical and paramedical students, including at least 72 medical students, will be rewarded a scholarship in the years from 2014 to 2016. Through these measures, the quality of medical care is on the rise in remote and offshore areas of Taiwan.

推動偏鄉護理菁英公費生制度

為解決偏鄉地區護理人力不足問題、強化偏鄉地區醫療資源，以提昇照護品質及縮短城鄉差距，總統於2013年四月二十六日「總統與護理團體座談會」上，承諾推動「偏鄉護理200菁英計畫」，預計四年培育二百名護理公費生。

這項計畫預計招生期程為2015至2018學年度，共計四年，養成期程為2015年九月一日至2022年六月三十日止，計七學年整。

偏鄉範圍除了原住民及離島地區，並包括衛生福利部指定偏遠、離島地區醫院、支援山地或離島地區醫院、全民健康保險總額醫療資源不足地區，且分發地點以醫院為原則，預計三十家醫院符合接受分發服務的資格。

此外，因應偏鄉範圍擴大，為了讓更多學生願意加入護理領域，這項計畫培育一般生身分的公費生於偏鄉醫院服務，並搭配已經施行的「原住民及離島地區醫事人員養成計畫」，培訓具原住民及離島地區資格身分的公費生，於原住民及離島鄉的衛生所等醫療院所服務，以期適時解決護理人力不足問題。

Nursing Elite 200 Plan for Remote Areas

In order to improve the quality of care, reduce the urban-rural resource gap and strengthen medical resources in remote areas, President Ma unveiled a "Nursing Elite 200 Plan for Remote Areas" during a Presidential Forum with nursing groups. This program is expected to train 200 nurses through government scholarships over four years in order to resolve the nursing shortage in remote and offshore areas.

Scheduled admissions process is for the 2015 to 2018 academic years, a total of 4 years, and the plan will commence on September 1, 2015, expiring on June 30, 2022, after a period of seven academic years. An estimated 30 hospitals will be eligible to be assigned. The qualifying hospitals are located in remote townships, including hospitals in aboriginal and offshore areas, hospitals in remote areas designated by MOHW, hospitals supporting facilities in mountainous or offshore areas, and hospitals in the areas with insufficient medical resources as recognized by NHIA. In order to recruit more students into the field of nursing, the government scholarship program is available to all domestic students who will be assigned to serve in qualified rural hospitals. This program, coupled with scholarships for aboriginal students and for those who residing in offshore townships should provide a solution to the shortage of nurses in remote areas.

山地鄉「缺醫村」醫療資源改善計畫

為了落實醫療在地化，包括解決缺醫村民眾的醫療需求問題，2012年全面調查三十個山地鄉，顯示轄內有二百一十六個村（里），緊急就醫（醫院）所需交通車程時間，平均為五十七分鐘，前往距離最近的醫療機構就醫，所需交通車程時間平均為二十七分鐘，而衛生所及IDS醫院到各村（里）巡迴醫療服務，每月總巡診次平均為十二診次；但仍有一百五十四個村里部落沒有設置醫療機構。

根據這項調查結果，分布在七縣（市）十三鄉（區）的二十七個村（里），符合缺醫村的定義，考量的因素包括：距離最近的醫療機構車程達二十分鐘以上、每月巡迴醫療服務總診次低於八診次、以及每萬人口醫師數及村里人口數等。

為解決缺醫村問題，試辦了多項新措施，鼓勵更多醫師投入缺醫村的醫療服務，諸如：以個人或群體醫療型態，常駐新開業或開診；鼓勵醫護人力，包括具有我國醫師證書的醫師返國服務，進入缺醫村。服務內容則涵蓋醫療門診、居家照護及保健服務，提供居民全人的醫療保健服務；遭逢天然災害風災期間，他們也將成為偏鄉緊急醫療支援的重要醫護人力。

舉例來說，2014年上半年選定南投縣仁愛鄉翠華村、以及高雄市桃源區拉芙蘭里，分別由埔基醫療財團法人埔里基督教醫院和高雄醫學大學附設中和紀念醫院，以群醫模式進駐，投入缺醫村的醫療服務工作。

Plan to Send Physicians to Mountain Villages Lacking Medical Services

Localizing health care requires solving the problem of deficient medical services in mountainous townships. In 2012, a full survey was conducted in 30 mountainous regions. Within these regions, a total of 216 villages were found that faced an average of 57 minutes by car to get to an emergency medical facility. Even villages with the closest hospitals, reaching one took an average of 27 minutes of travel time. Health centers and Integrated Delivery System hospitals organize 12 rounds of medical tours on average each month, but there are still 154 villages without established medical institutions. Considering that 13 villages may be located in seven different counties, getting to the nearest medical institution takes more than 20 minutes by car. With mobile medical tours coming by less than eight times per month, the number of physicians per million population and factors such as the number of people in the village is what defines Medical Service Deficiency Villages.

To address the issue of medical services deficiency in villages, some of these villages have been selected for a pilot project to resolve medical services shortages in remote villages and towns. This project subsidizes individual practitioners or medical groups to open permanent clinics or provide medical services more frequently. Furthermore, Taiwan government encourages medical personnel, including physicians returning from overseas who hold a Taiwanese medical practice certificate to serve in these villages. Services include medical clinics and integrated care to provide comprehensive health care to local residents. When natural disasters strike, the clinics become an important part of the emergency support plan.

In the first half of 2014, Cuihua Village in Nantou County and Lafulan village in Taoyuan district, Kaohsiung City were claimed by Puli Christian Hospital and Kaohsiung Medical University Chung-Ho Memorial Hospital to receive permanent support services by sharing of the medical care duties on a roster so as to inspire more physicians to serve in Medical Service Deficiency Villages.

延攬五大科旅外醫師返鄉服務

為強化國內偏鄉的醫療服務品質，延攬旅外專科醫師返鄉服務也是政策之一；試辦計畫於2012年十月三十日公告，截至2014年五月，已經有十六名醫師返鄉服務。

這項試辦計畫鼓勵旅居美、加、日、澳、紐、英、法或德等國家的專科醫師，返鄉投入偏遠地區的醫療服務工作，資格是必須具有我國的內、外、婦、兒及急診醫學科的醫師證書，希望藉此能夠填補偏遠地區醫師人力與五大科人力之不足。

Recruiting Foreign Physicians to Return to Taiwan

The MOHW encourages physicians from the USA, Canada, Japan, Australia, New Zealand, the UK, France, and Germany who hold a Taiwanese Physician Practice Certificate to serve in the five main medical specialties (emergency, internal medicine, surgical, pediatrics, obstetrics and gynecology). The physicians will be working in remote areas to help reduce the gaps in medical resource distribution. The program began on October 30, 2012 targeting Taiwanese physicians who are overseas, and by May 2014 a total of 16 physicians have returned to serve.

第八節 | 陸海空緊急醫療後送

為確保空中緊急醫療後送的時效性，採取「醫師動，病人不動」及「醫療不中斷」的原則，推動以強化在地醫療為主、空中轉診為輔的政策，若符合「救護直昇機管理辦法」的空中救護適應症者，立即派遣。

亞洲最成功案例

為提供偏鄉離島地區民眾緊急就醫的必要協助，衛生福利部的前身衛生署，於2002年建置「空中救護審核機制」，同時成立「全國空中緊急醫療救護諮詢中心」（2013年改制為衛生福利部空中轉診審核中心）；並依據「緊急醫療救護法」及「救護直昇機管理辦法」，制定「衛生福利部空中轉診審核中心離島地區緊急空中後送案件標準作業流程」。

24小時視訊醫療諮詢及空中後送

據此，衛生福利部審核中心全天候二十四小時提供緊急醫療諮詢、空中轉診必要性評估、協調航空器及海巡署船艦調度，有效建立空中轉診審核制度、以及提昇空中轉診醫療品質成效（圖54、55、56、57）。

衛生福利部委託的民間航空公司，執行空中轉診時，若有航空器不足的趟次或時間，得依「內政部空中勤務總隊航空器申請暨派遣作業規定」，申請支援空中緊急醫療後送服務。目前，空中救護機資源包括：空勤總隊（二十八架螺旋槳直昇機）、空軍海鷗部隊（包含六架救護專用機）、民間航空資源（含直昇機一架）。

空中轉診機制的成效

以2012至2013年為例，2012年全年後送二百七十七案，其中民間三十四

Section 8 | Expanding the Land, Sea and Air Emergency Medical Transport

The Most Successful Air Emergency Medical Transport in Asia

With the aim of providing rural and offshore residents emergency medical assistance, the MOHW established the National Aeromedical Approval Center (NAAC) for Medical Emergencies Consultation in 2001.

This includes 24-hour video telemedicine consultations and transport by helicopter and aircraft.

The Emergency Medical Aid Act and Medical Evacuation Management Approach set the scope for the Ministry of Health and Welfare's NAAC Standard Operating Procedures. The NAAC provides 24-hour real time medical emergency consultation, assesses the need for referrals and arranges for emergency medical evacuations by air or sea. This is an effective system for air transport and drastically decreases unnecessary flights. The requirement of approval by the NAAC raises the quality of medical air referrals (Figures 54, 55, 56, 57).

The timeliness of air referrals is ensured by relying on the principles of "moving doctors and not the patient" and "uninterrupted medical care." Air transport is a supplemental strategy to help achieve the main goal of promoting and strengthening localized medical care. If the conditions merit, an air ambulance will be immediately dispatched. The MOHW has delegated some responsibilities to civil aviation. If the aircraft is unavailable due to trip duration or longer timeframes, the Center has authority to send out the Air Corps air ambulances by request to the Ministry of the Interior. Currently, available air ambulances include 28 helicopters from the Air Corps, six dedicated air ambulances from Air Force Seagull, and one helicopter from civil aviation.

The Effectiveness of NAAC

There were a total of 277 air referral cases in 2012 (34 cases transported by civil aviation, 233 cases by the Air Corps, and ten cases by the Ministry of National



54 衛生福利部空中轉診審核中心以遠距視訊即時協助離島偏遠地區緊急醫療轉送。

MOHW National Aeromedical Approval Center (NAAC) in action

55 空勤支援偏鄉緊急傷病患後送。

Air Corps carrying out a mission

56 國軍C130支援後送。

Air Force C130 carrying out a mission



55



56

案、空勤二百三十三案、國防部十案；2013年全年後送二百四十案，其中民間六十三案、空勤一百七十一案、國防部六案。2013年較2012年減少三十七人次轉診後送，下降幅度為百分之十三點三六，顯示離島地區各項醫療在地化的措施已發揮作用，醫療照護品質獲得有效提昇。（圖58）。

「空中轉診機制」於2002年成立，迄今已經十一年，分析其成效，已達到保障病人安全、節省公帑、受到國際專業肯定、並且革新H1N1重症病患轉送策略。

保障病人安全

依據2006年美國飛行安全委員會及約翰霍普金斯大學貝克教授的研究報告指出，美國因空中緊急醫療救護造成空難（含機毀人亡），每年平

Defense). In 2013, a total of 240 cases were referred by air, including 63 civil transport cases, 171 Air Corps cases, and six Ministry of National Defense cases.

A drop of 37 referral cases (13.36%) demonstrates improvement of medical care in remote areas (Figure 58).

The "NAAC" has been established for 11 years, and analysis of the effectiveness includes protection of patient safety, cost savings and improving international recognition.

Protecting Patient Safety

According to research by the U.S. Flight Safety Committee and Professor Baker of Johns Hopkins University, the annual average number of accidents (including

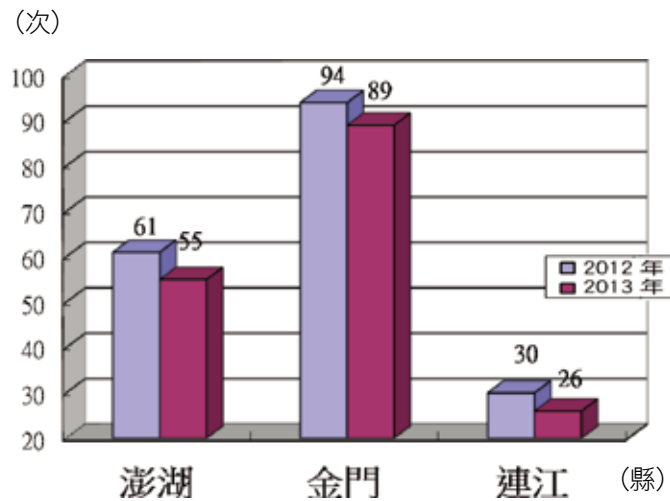


57

57 衛生福利部雙和醫院屋頂直昇機停機坪接受離島空中轉送實況。

Air Ambulance arrives at the rooftop of Taipei Medical University, Shuang Ho Hospital

58 | 三離島(澎湖、金門及連江) 2012和2013年空中轉診數比較
Comparison of air referrals for three offshore islands (2012-2013)

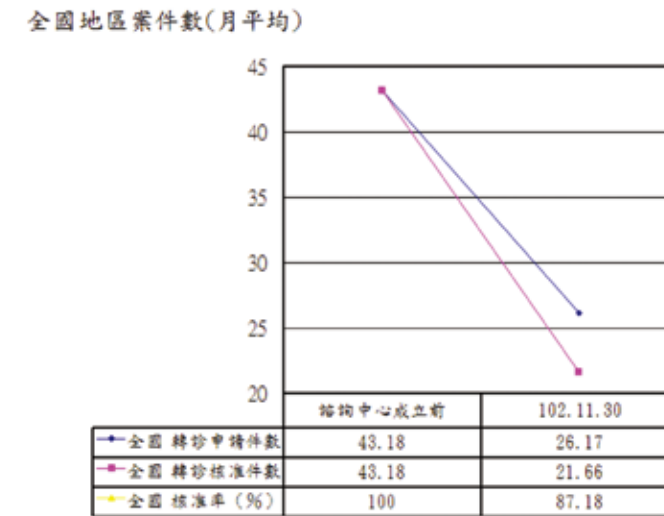


均為八點二件。衛生福利部「空中轉診機制」執行十一年兩個月，完成三千三百三十次空中轉診，持續秉持醫療專業並兼顧病人之安全舒適，妥為核處。

節省公帑

在成立空中轉診審核中心（2002年十月一日）以前，全國離島偏遠地區每月平均空中轉診航次，為四十三點一八次；成立十一年又兩個月後，每月平均航次降至二十一點六六次（圖59）。由此顯示，衛生福利部空中轉診審核中心充分發揮守門員的功能，不僅減少不必要的空中轉診，經由遠距視訊系統，還能協助改善離島偏遠地區缺乏急重症專科醫師的

59 | 空中轉診審核中心成立前後案件數月平均比較圖
Monthly comparison before and after the establishment of NAAC



crashes) during emergency medical air transportation is 8.2 cases. The MOHW has carried out 3,330 emergency air transports in the eleven years and two months since its establishment. There has been no flight crashes or patient safety issues occurring, and we continue to keep medical professionalism and patient safety a top priority.

Cost Savings from the NAAC

Before the establishment of the NAAC (Oct. 1, 2002) there was an average of 43.18 monthly flights; after its establishment, over eleven years and two months, the average number of monthly flights dropped to 21.66 (Figure 59). This change demonstrates that the MOHW's NAAC effectively played a gatekeeper role, not only reducing unnecessary flights, but also enabling visual consultations through video telemedicine, which assists in providing specialist care for remote areas. Together with the NHI's IDS plan, these services upgrade the medical capacity of remote areas.

人力困境，並配合衛生福利部在離島偏遠地區推動的健保IDS計畫，提昇地方醫療能力。

國際專業肯定

世界各國都有離島偏遠地區，但極少國家能夠做到無須付費、又具有每天二十四小時全年無休空中轉送的能力與制度，因此我國這項政策受到世界各國的肯定，其中，與空中轉診相關的研究論文，有多篇被刊登於國外知名的學術期刊。（圖60、表11）

革新傳染病H1N1重症病患轉送策略

SARS在臺灣爆發期間，曾奪走七十三條寶貴人命，並造成超過十五萬名民眾遭到隔離。如何有效的控制感染擴散，是阻止其散佈最有效的方法，這項經驗也應用於H1N1流感防疫。

60 發表與空中轉診相關國際學術論文。
Papers related to EAMS in academic journals



60

International Recognition

Almost every nation in the world has remote and rural areas, but very few countries have the ability to offer 24-hour, year-round medical consultations online and are equipped with Emergency Air Medical Services (EAMS), especially providing them free of charge.

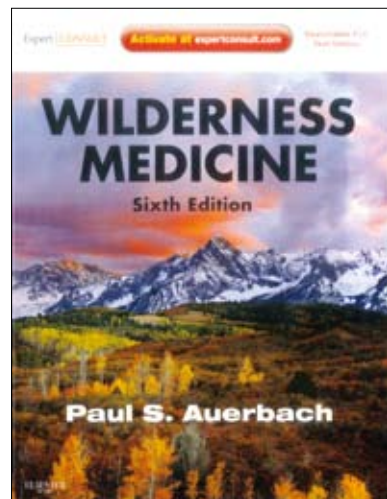
Such service has gained international recognition for our system, with multiple EAMS-related research papers being published in well-known academic journals (Figure 60, Table 11).

Severe H1N1: Innovation of Patient Transfer Policies for Infectious Diseases

SARS took 73 lives during its outbreak in Taiwan and left more than 150,000 people quarantined. Prevention is the most effective way to control the spread of this infectious disease. The same was true during the outbreak of H1N1 flu. Taiwan's government has been actively promoting a national telemedicine plan for the past two years. This includes telemedicine models for home care, community care, and hospitals. The hospitalization telemedicine model can also be applied to nursing homes, and homes of patients in quarantine. The three models applied simultaneously allowed the most appropriate situation for each patient, so when McKay Memorial Hospital's Taitung Branch reported a severe case of H1N1, the recommendation was given to use these models developed under SARS with the approach of "moving resources, and not patients." Transport helicopters were used to bring in a specialist from National Taiwan University Hospital and ECMO equipment as quickly as possible. This approach was successful for caring for the patient and preventing the spread of the flu. Past experience with transferring SARS and open pulmonary tuberculosis patients requiring respiratory isolation also applies to H1N1 flu patients. A single medical quarantine unit can provide complete medical care as well as protect the safety of others. This successful method was described in the 《British Medical Journal》 articles "Quarantine and transportation of patients using a telemedicine system for patients with A/ H1N1 infection" in 2009, and "Infection control for patients with Middle East Respiratory Syndrome Coronavirus (MERS-CoV)" in 2013. The innovative strategy for managing infectious diseases and our transfer system was published as a standard procedure in the latest international textbook 《Wilderness Medicine (2012 edition)》 (Fig 61).

過去兩年，政府積極推動全國醫療視訊計畫，包括居家照護模式、社區照護模式及住院模式；其中，住院模式使用於護理之家及居家隔離的病患。我們將三者合一的方式，對於患者最為適當；因此，建議臺東馬偕醫院遭受H1N1感染的重症病患，採取「病人不動，資源動」的方式，以直升機將臺大專科主治醫師及葉克膜設備，快速運送到臺東馬偕醫院，成功達到重症病患照護、並防止感染擴散。

我國以往轉送需要呼吸隔離的SARS及開放性肺結核病患的經驗，同樣也適用於H1N1流感病患；單一醫療隔離單位可提供完整醫療照護及全民安全保障。這個觀念也成功刊登於英國醫學期刊《Quarantine and transportation of patients using a telemedicine system for patients with A/H1N1 infection (BMJ, 2009, UK)》。此外，創新處理傳染病人轉送機制及策略，亦已刊登於國際最新版《教科書標準作業指引(2012年)》。(圖61)



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61 國際最新版(2012年)教科書Wilderness Medicine。International Edition of Wilderness Medicine(2012)

表11 | 發表與空中轉診相關國外期刊論文表

Table 11 | Published papers on air referrals in Taiwan

Year 年	Published Papers 國外期刊論文
2006	Tsai SH, Chen WL, Yang CM, Lu LH, Chiang MF, Chi LJ, Chiu WT. Emergency air medical services for head injury patients. Surg Neurol 66 (S2):32-36, 2006.
	Tsai MD, Chiu WT, Lin JW, Chen CF, Huang SJ, Chang CK, Chen WL, Tsai SH. Current experiences in the use of the severe head injury guidelines in Taiwan. Surg Neurol 66 (S2):3-7, 2006
2007	Tsai SH, Kraus J, Wu HR, Chen WL, Chiang MF, Lu LH, Chang CE, Chiu WT: The effectiveness of video-telemedicine for screening of patients requesting emergency air medical transport (EAMT) J Trauma 62(2):504-11, 2007
	Tsai SH, Chen WL, Chiu WT. International aeromedical evacuation. N Eng J Med 356:1685-7, 2007
2009	Chen WL, Lin YM, Ma HP, Chiu WT, Tsai SH. Predominance of neurologic diseases in international aeromedical transportation. Surgical Neurology. 72 S2:47-52:49, 2009
	Chiu WT, Hsu MH, Chen WL, Tsai SH. Quarantine and transportation of patients using a telemedicine system for patients with A/H1N1 infection. British Medical Journal. 22 May, 2009
2012	Pai YC, Ma HP, Chiu WT, Tsai SH, Choi WM. Effectiveness of Recruiting Specialist Physicians for Critical Elderly Patients in Remote Islands. International Journal of Gerontology. 6(2012)80-83.
2013	Ma HP, Chen WL, Wu CH, Chiu WT, Tsai SH. Transport of invalids by air. Aging and Patient Safety in Air Medical Transport. British Medical Journal. March. 20, 2013
	Chen WL, Ma HP, Chiu WT, Tsai SH. Prehospital management of head injury patients in emergency air medical transport (EAMT). British Medical Journal. Apr. 22, 2013

補助自行前往本島就醫

至於病情穩定者，依據「山地離島地區嚴重或緊急傷病患就醫交通費補助要點」規定，可以自行搭機（船）就醫，得申請補助；如為六十五歲以上或十二歲以下的病患，除病患本身得申請補助外，陪同者中一人亦得申請補助，由衛生福利部補助所需就醫交通費二分之一。此外，經由空中轉診緊急送往臺灣本島就醫者，其陪同醫護人員的交通費，亦得申請補助。

2013年的補助經費及人次，分別是二千五百三十五萬七千元及二萬八千二百一十四人次。

Subsidizing Cost of Travel to Main Island for Medical Treatment

According to the protocol for serious or emergency injuries in mountainous area and offshore districts, patients whose condition is stable enough to travel by plane or boat may apply for a subsidy for transportation. Patients over the age of 65 or under 12 years of age can apply for transportation grants for the patient and one other accompanying person. The grant offered by the MOHW will cover half of the transportation cost. The transportation subsidy covered a total of NTD 25.4 million (USD 847,000) in travel costs for 28,214 patients. Patients who receive air emergency medical transportation, which includes the transportation of family, may also apply for grants.