出國報告

（出國類別：其他）

參加 2016 年世界動物衛生組織（OIE）「犬狂犬病國際標準後續研討會」出國報告

FOLLOW UP WORKSHOP ON RELEVANT INTERNATIONAL STANDARDS FOR DOG RABIES

服務機關：行政院農業委員會動植物防疫檢疫局
姓名職稱：蔡政達科長
派赴國家：泰國
出國期間：105 年 5 月 16 至 20 日
報告日期：105 年 8 月 19 日

摘要

本次會由世界動物衛生組織 OIE 亞太區代表（OIE RR AP）結合東南亞次區域代表（OIE SRR SEA）共同舉辦之狂犬病研討會，就亞太與東南亞地區狂犬病狀況、獸醫服務體系在撲滅狂犬病扮演之角色、狂犬病疫苗、診斷、監測、動物福利及維持狂犬病非疫區等議題進行交流，目的是提供對狂犬病疫情趨勢和世界動物衛生組織有關狂犬病國際標準的知識和方法有充份理解。今年的研討會將集中在各國家動物狂犬病疫情狀況的更新與有關消滅犬媒介人狂犬病的國際標準方面的進展，包括：（一）狂犬病的國際標準；（二）狂犬病的診斷；（三）狂犬病的監測；（四）狂犬病疫苗與疫苗接種;（五）流浪狗的族群管理。此外，研討會亦將促進尋求與國際標準一致性和實施狂犬病相關的措施，提供從源頭上解決此一致命的人畜共通傳染病的國家經驗、挑戰和成果交流的平台。該研討會也將與去年 2015 年 12 月在瑞士日內瓦舉行的全球狂犬病會議相呼應，特別是由各國動物衛生部門的支持下，於本次會議期間推出消滅犬媒介人狂犬病的全球性框架及討論區域行動可能的執行要點。本次研討會旨在：1.提供關於在亞太地區的動物狂犬病最新情況；2.遵守消滅犬媒介人狂犬病的國際標準與狀態更新；3.討論與消滅犬媒介人狂犬病國際標準相符合的成功案例，以及當前面臨的障礙與優先需求；4.提供彌補有關消滅犬媒介人狂犬病國際標準確定缺口的建議；5.討論消滅狂犬病的全球框架和來自全球狂犬病會議確定的其他成果，以促進與支持這些區域的行動。

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壹、緣起及目的

本次會由世界動物衛生組織 OIE 亞太區代表（OIE RR AP）結合東南亞次區域代表（OIE SRR SEA）共同舉辦之狂犬病研討會，就亞太與東南亞地區狂犬病狀況、獸醫服務體系在撲滅狂犬病扮演之角色、狂犬病疫苗、診斷、監測、動物福利及維持狂犬病非疫區等議題進行交流，目的是提供對狂犬病疫情趨勢和世界動物衛生組織有關狂犬病國際標準的知識和方法有充份理解。今年的研討會將集中在各國家動物狂犬病疫情狀況的更新與有關消滅犬媒介人狂犬病的國際標準方面的進展，包括：（一）狂犬病的國際標準；（二）狂犬病的診斷；（三）狂犬病的監測；（四）狂犬病疫苗與疫苗接種;（五）流浪狗的族群管理。此外，研討會亦將促進尋求與國際標準一致性和實施狂犬病相關的措施，提供從源頭上解決此一致命的人畜共通傳染病的國家經驗、挑戰和成果交流的平台。該研討會也將與去年 2015 年 12 月在瑞士日內瓦舉行的全球狂犬病會議相呼應，特別是由各國動物衛生部門的支持下，於本次會議期間推出消滅犬媒介人狂犬病的全球性框架及討論區域行動可能的執行要點。本次研討會旨在：1.提供關於在亞太地區的動物狂犬病最新情況；2.遵守消滅犬媒介人狂犬病的國際標準與狀態更新；3.討論與消滅犬媒介人狂犬病國際標準相符合的成功案例，以及當前面臨的障礙與優先需求；4.提供彌補有關消滅犬媒介人狂犬病國際標準確定缺口的建議；5.討論消滅狂犬病的全球框架和來自全球狂犬病會議確定的其他成果，以促進與支持這些區域的行動。

貳、行程及會議議程

（一） 出國行程表：

日期	地點	活動內容
105.5.16	臺北出發	去程
105.5.17	泰國曼谷	開幕式及參加研討會
105.5.18	泰國曼谷	參加研討會
105.5.19	泰國曼谷	參加研討會
105.5.20	返回臺北	返程

二、研討會議程表

105 年 5 月 17 日（第 1 天）

開幕式

08:30 - 09:00 註冊

09:00 - 10:00 開幕致詞

首先由世界動物衛生組織亞太區代表 Hirofumi Kugita 博士及泰國獸醫服務局局長 Prapas Pinyocheep 博士為開幕式致歡迎詞。隨後，參與者自我介紹及團體合影。

10:00 - 10:30 茶歇

單元一：簡介

10:30 - 10:40 本次研討會之介紹--Ronello Abila 博士

10:40 - 11:00 世界動物衛生組織（OIE）與 OIE 之國際標準-- Gardner Murray 博士

11:00 - 11:20 2014 年南亞和東亞研討會之結論-- Yooni Oh 博士

11:20 - 11:40 2014 年在東南亞舉辦之狂犬病研討會之結論--Mary Joy N. Gordoncillo 博士

11:40 - 12:00 綜合討論

12:00 - 13:30 午餐

單元二：亞太地區的狂犬病疫情現況

13:30 - 14:00 展示各國海報

14:00 - 15:00 亞太地區的狂犬病疫情現況與進展-- Yooni Oh 及 Mary Joy N. Gordoncillo 二位博士

15:00 - 15:30 茶敘

單元三：國家獸醫服務在消滅狂犬病的作用

15:30 - 16:00 有關獸醫服務體系之國際標準的概述與更新-- Ronello Abila 博士

16:00 - 17:00 狂犬病獸醫服務體系之小組討論與結論-- Mary Joy N. Gordoncillo 博士

19:00 - 世界動物衛生組織主辦的晚宴

105 年 5 月 18 日（第 2 天）

單元四：狂犬病疫苗與疫苗接種

08:30 - 09:00 關於狂犬病疫苗和疫苗銀行的最低標準--Dr Yooni Oh 博士

09:00 - 10:00 狂犬病疫苗之小組討論與結論-- Mary Joy N. Gordoncillo 博士

10:00 - 10:30 茶敘

單元五：狂犬病診斷的國際標準

10:30 - 11:00 OIE Manuals 未詳述之狂犬病診斷標準--Changchun Tu 博士（涂長春博士）

11:00 - 12:00 狂犬病診斷之小組討論與結論-- Yooni Oh 博士

12:00 - 01:30 午餐

單元六：狂犬病監測

13:30 - 14:00 狂犬病監測的國際標準--Ronello Abila 博士

14:00 - 15:00 狂犬病監測小組討論與結論--Mary Joy N. Gordoncillo 博士

15:00 - 15:30 茶敘

單元七：消滅狂犬病政策下的動物福利

15:30 - 16:00 在消滅狂犬病相關的指導原則與標準下的動物福利--Gardner Murray 博士

16:00 - 17:00 動物福利小組討論與結論-- Yooni Oh 博士

單元八：實現與維持消滅狂犬病的工作

08:30 - 09:00 應對感染狂犬病的國際標準--Hirofumi Kugita 博士

09:00 - 10:00 動物福利小組討論與結論--Yooni Oh 博士

10:00 - 10:30 茶敘

單元九：夥伴論壇

10:30 - 10:40 全球狂犬病控制聯盟（GARC）

10:40 - 10:50 糧農組織（FAO）亞太區域辦事處

10:50 - 11:00 世界動物保護協會

11:00 - 11:10 澳大利亞對外事務與貿易部（DFAT）

11:10 - 11:20 日本信託基金（JTF）

11:20 - 11:30 南亞區域合作聯盟（SAARC）秘書處

11:30 - 12:00 綜合討論

12:00 - 01:30 午餐

單元十：消除犬媒介狂犬病之全球框架

13:30 - 14:00 總結與成果-- Mary Joy N. Gordoncillo 博士

14:00 - 15:00 小組討論 Yooni Oh 博士

15:00 - 15:30 茶敘

單元十一：研討會結論與建議

15:30 - 16:00 總結和結論

16:00 - 16:30 閉幕式

叁、會議內容

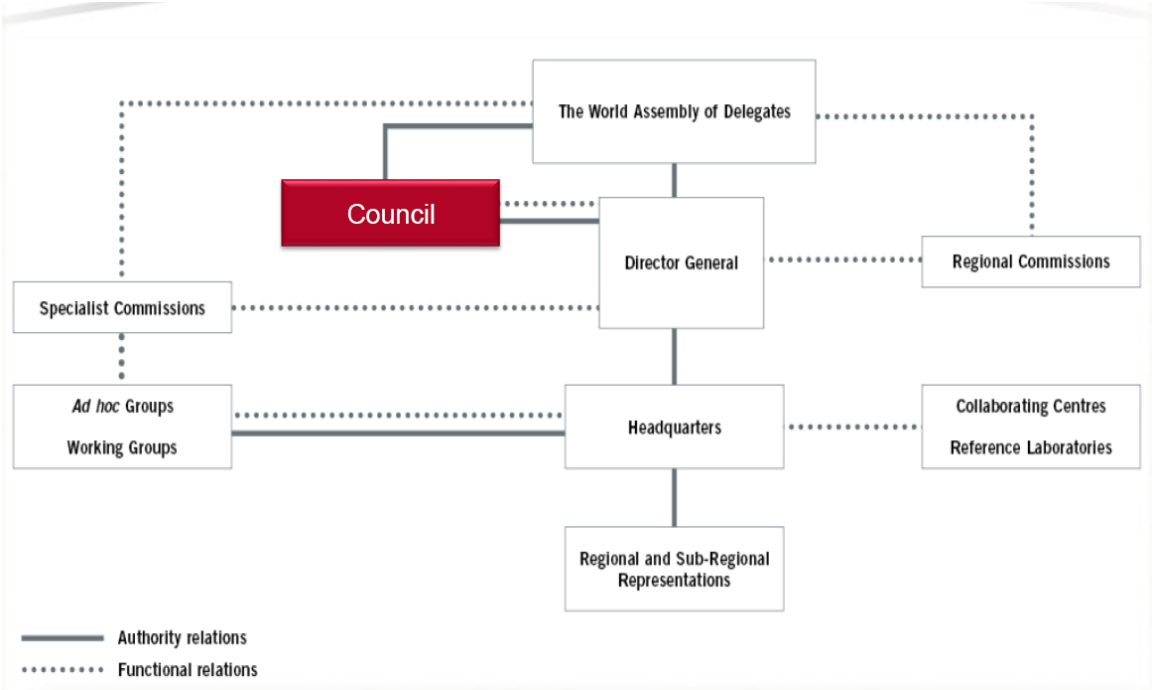
單元一：簡介

（一）本次研討會之介紹

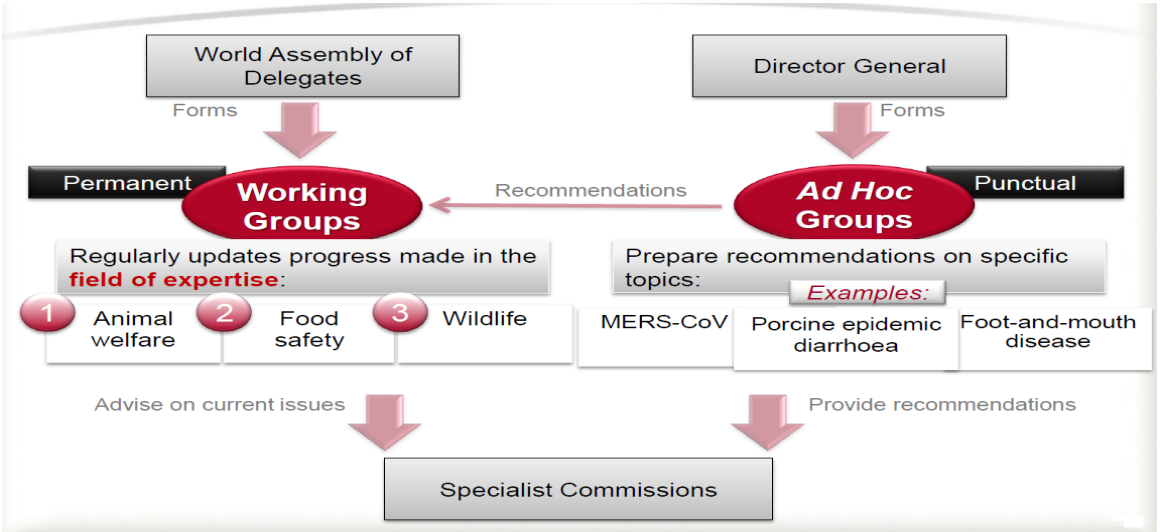
本議題由Dr Ronello Abila介紹本次會議目的（一）提供亞太地區動物狂犬病的最新疫情概況；（二）更新消滅犬媒介狂犬病之國際標準；（三）討論與消滅犬媒介狂犬病有關的國際標準，以獲得好的實際案例，以及清楚瞭解當前的障礙與優先需求；（四）探尋目前在消滅犬媒介之狂犬病方面最需補足的缺口，並提供建議，以建立完善的國際標準；（五）討論消滅狂犬病與其他狂犬病國際會議結論的全球性框架，以促進及支持各區域的行動。會議分1.開幕儀式，2.簡介，3.狂犬病在亞太地區的疫情趨勢，4.獸醫服務體系在消滅狂犬病的角色，5.狂犬病疫苗與疫苗接種，6.狂犬病診斷，7. 狂犬病監控，8.動物福利及消滅狂犬病，9.實現及維持狂犬病清淨狀態，10.夥伴論壇，11.建立消除犬媒介狂犬病的全球性框架，12.結論與未來規劃等12個單元進行。

（二）世界動物衛生組織（OIE）與 OIE 之國際標準

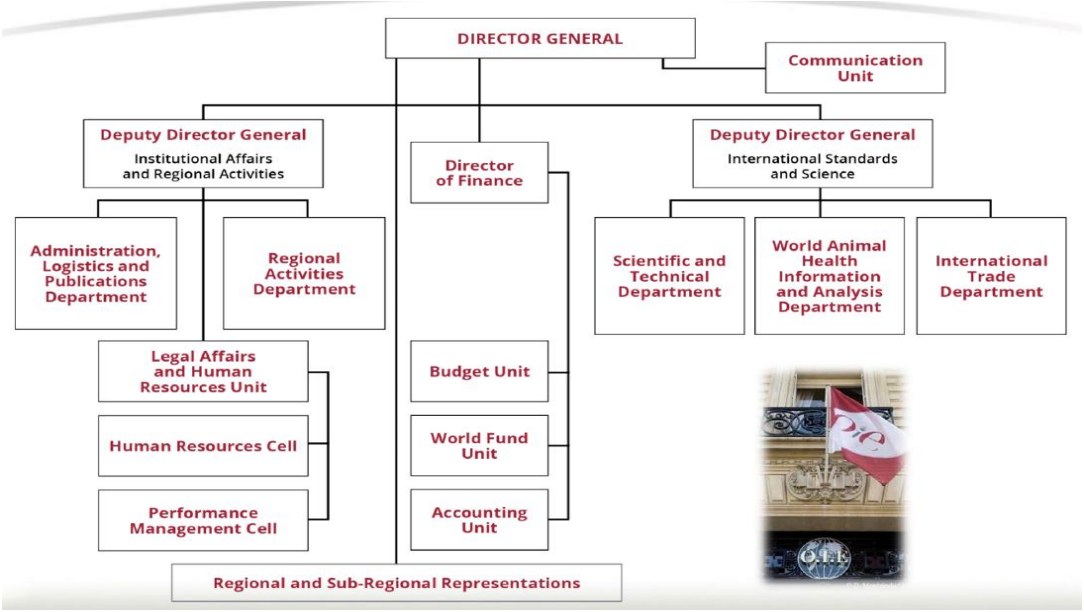
本議題由Dr Gardner Murray介紹OIE於1924年創立為各國政府間的一個聯合組織（其組織架構如下圖示），目的在防止全球性的動物疾病傳播，其成立之宗旨在促進全球性動物健康與福利，主要的四大主軸在：（一）制定包括對動物及動物產品之國際貿易與WTO規定的國際標準；（二）促進世界動物疾病疫情（包括人畜共通傳染病）



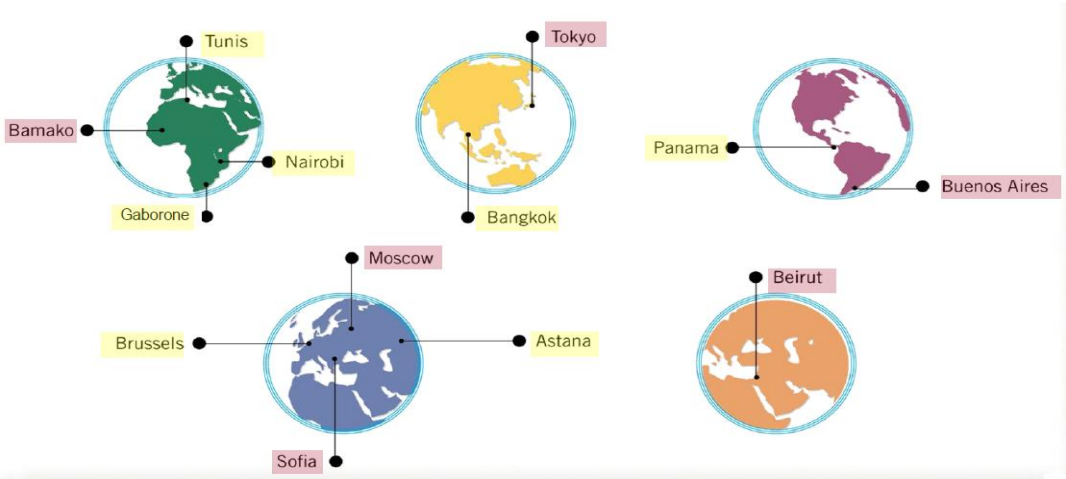
的透明度；（三）蒐集和獸醫科學相關之信息與傳播，並建立動物疫病預防與控制方法之專門知識；（四）促進各國間之聯結，以強化全球動物疫病的防控能力。OIE成員國目前有180個國家，每個國家均設置一位常任代表（Delegate）及8位OIE國家聯絡點（Focal Points）負責包括動物疫情通報、動物生產和食品安全、動物福利、水生動物、通訊、實驗室、獸醫產品及野生動物等相關議題之聯繫討論。OIE每年舉行一次會員代表年會（General Sessions），該會員代表大會（World Assembly of Delegates）為OIE治理結構之最高權力機構。而其下分別設有若干機構，其中評議會（Council）由OIE會員代表推選產生，任期3年，其代表世界會員代表大會，主要功能為（一）審查世界代表大會主席所編寫與提交給各會員國之前之技術與行政文件；（二）批准世界動物衛生組織的臨時預算並監督其執行情況；（三）為世界會員代表大會各年會之總代表。並分別於美洲、非洲、歐洲、中東及亞洲、遠東和大洋洲等5大區域設置區域委員會（Regional Commissions），各分別由4位OIE代表組成，任期3年，每2年召開1次區域性會議，相關決議或建議將提送會員代表大會批准後實施，每年世界年會期間，亦召開一次會議。專家委員會（Specialist Commissions）由OIE代表推選產生，任期3年，主要功能在（一）流行病學及科學議題的研究，譬如動物疫病的預防及控制方法；（二）開發、更新及代表提出代表大會採用之國際準則；（三）研究會員所提出的科學與技術問題(不包括貿易問題)。目前OIE設有陸生動物衛生標準委員會(Code Commission)、科學委員會(Scientific Commission)、水生動物衛生標準委員會(Aquatic Commission)及生物標準委員會（Laboratories Commission）等專家委員會，另由參考中心(Reference Centres)之國際知名專家籌組特設組(Ad hoc Groups)及工作組(Working Groups），其分別角色如下圖。



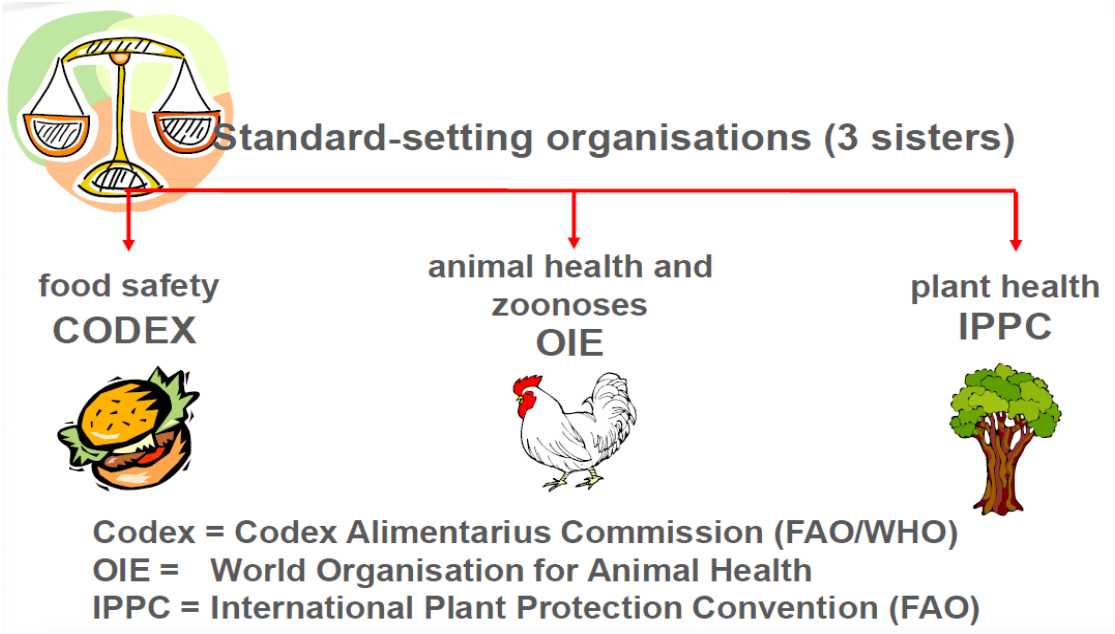
OIE參考實驗室為動物疾病專家中心，其主要負責（一）制定與執行及驗證診斷測試；（二）存儲及分發參考試劑；（三）協助其他成員實驗室進行實驗室水平測試；（四）協調技術與科學之研究；（五）協助會員籌設檢驗實驗室並實施會員技術與科學之培訓。目前OIE參考實驗室有252個分布於39國家，負責118種動物疫病鑑定工作。OIE亦在26個國家籌設49個合作中心（Collaborating Centres）負責46項議題。OIE總部組織架構如下圖，其新任OIE主席於2015年5月由世界會員代表大會各代表推舉Dr Monique ELOIT擔任，為首位女性主席，任期6年（2016-2020），其任務在執行第6期（2016-2020）之6年策略計畫。



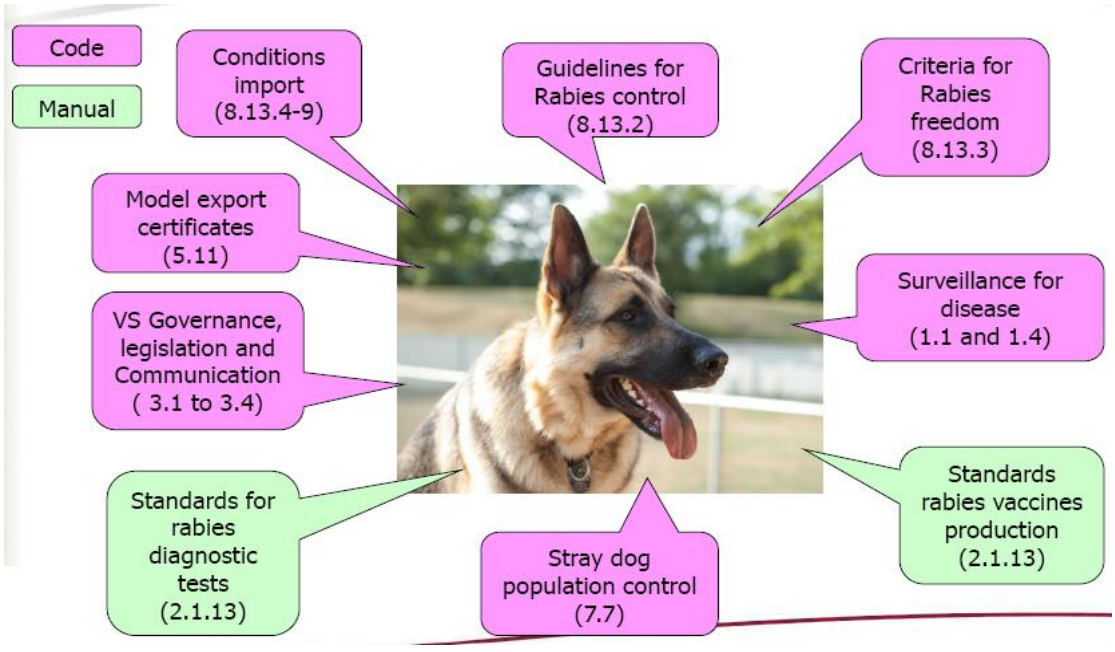
OIE 另設有 6 個區域（RR）及 7 個次區域（SRR）代表處（分佈如下圖），根據 OIE 主席的直接領導與各區域委員會密切合作。



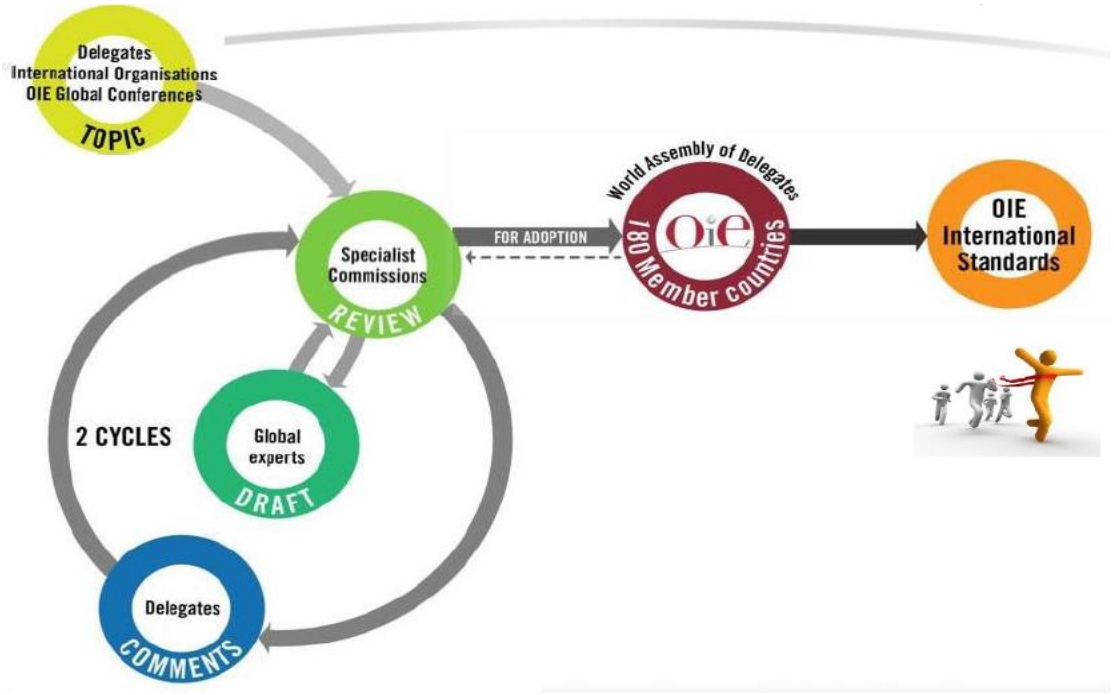
在動物及動物產品之國際貿易標準方面，係根據世界貿易組織（WTO）所協定實施人類與動植物衛生措施之應用（SPS 協定），其間之關係如下圖。



OIE的國際標準，係由OIE制定與發布，包括動物及動物產品之衛生標準（OIE衛生法典-OIE Codes）及診斷測試與疫苗規範（OIE生物標準手冊- OIE Manuals），其中與狂犬病有關之標準，在 Codes 的章節部分有（1.1及1.4）、（3.1至3.4）、（5.11）、（7.7）、（8.13.2-9）等章節，而在 Manuals 的章節部分則有（2.1.13）一節，如下所示。



而該等國際標準之制定，係經包括議題產生（Topic）、初評（Review）、擬訂草案（Draft）、2 次複審（Comments）及提交世界會員代表大會核定等步驟後，才完成最後制定工作（如下圖示）。



除上述標準外，OIE 尚有其他定期或隨時公布的訊息，如 Bulletin、Scientific & Technical Review、World Animal Health 及 OIE 相關網頁 www.oie.int 及 www.rr-asia.oie.int 等，如下圖示。

（三）2014 年南亞和東亞研討會結論

本議題由Dr Yooni Oh介紹OIE於2014年8月結合日本信託基金（JTF）之亞洲人畜共通傳染病控制計畫在日本東京-橫濱共同辦理「狂犬病區域培訓」研討會，參與者有我國、韓國、蒙古、孟加拉、不丹、印度、尼泊爾、巴基斯坦及斯里蘭卡等9個國家的國家實驗室專家代表參加，該研討會之目的在於（一）清楚瞭解OIE在狂犬病的標準規範；（二）建立狂犬病診斷試驗所需技術；（三）瞭解參與本次會議之國家在狂犬病方面的控制方案；（四）加強實驗室網絡與彼此間信息交流機會；（五）狂犬病診斷實務培訓，包括FAT、FAVN及RT-PCR檢測方法等之實務操作；（六）在狂犬病診斷、疫苗及狂犬病控制現狀與未來發展方面的信息共享，包括立法、犬隻疫苗免疫情形與成本、國家執行狂犬病預防注射之量能、流浪犬數量控制方法，以及狂犬病之監測與診斷。

本次研討會的結論為（一）獲得更多有關狂犬病的知識、診斷及疫苗免疫等，有助於OIE建立更完整的狂犬病標準；（二）獲得參與國在狂犬病控制、診斷與疫情現況方面的訊息及關鍵問題；（三）確實根據OIE陸生手冊的標準方法實際操作狂犬病診斷，以取得實務經驗與做法；（四）一致認為會議的報告是根據各國意見、結論、調查及訓練所提供數據所建置之基準檔案；（五）一致認為此基準檔案將呈現參與國間的差距及議題的形成，在各參與國在狂犬病監測及控制方案的評估方面提供基準信息，是一個可提升各國防疫水平的工具；（六）藉由此研討會讓各參與國在家畜及野生動物的狂犬病監督與報告方面之作法，能不斷提升；（七）一致認為各國應採用OIE陸生手冊中描述的實驗室檢測方法來進行狂犬病的確診工作；（八）強調應鼓勵多辦理實驗室訓練，以強化參與國實驗室的診斷能力；（九）建議印度班加羅爾的南部地區疫病診斷實驗室（SRDDL）持續申請成為OIE的狂犬病參考實驗室的目標；（十）重申應建立一個實驗室網絡，以提升彼此檢驗能力及分享狂犬病相關技術信息與資源的重要性；（十一）在“One Health”的理念下，強調各國應不斷提升改善狂犬病控制計畫的執行方式，並由OIE促請公共衛生部門共同參與區域性的狂犬病審查會議；（十二）對於日本農林水產省（MAFF）及動物檢疫所（AQS）提供此次區域性培訓機會，表示感謝。

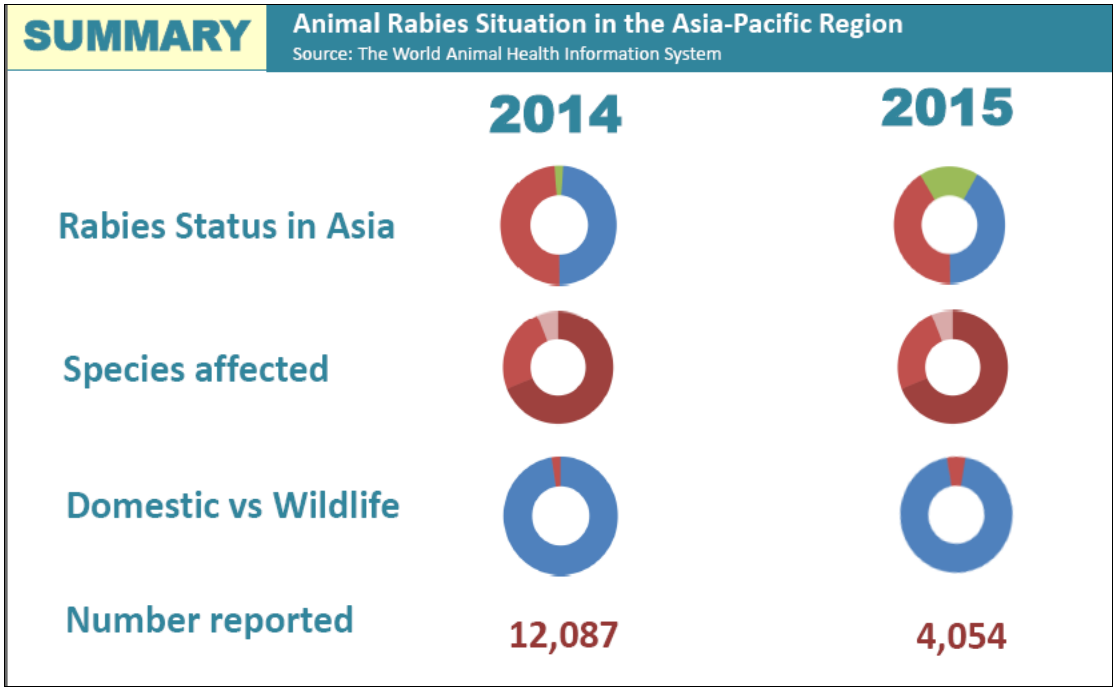
（四）2014 年在東南亞舉辦之狂犬病研討會結論

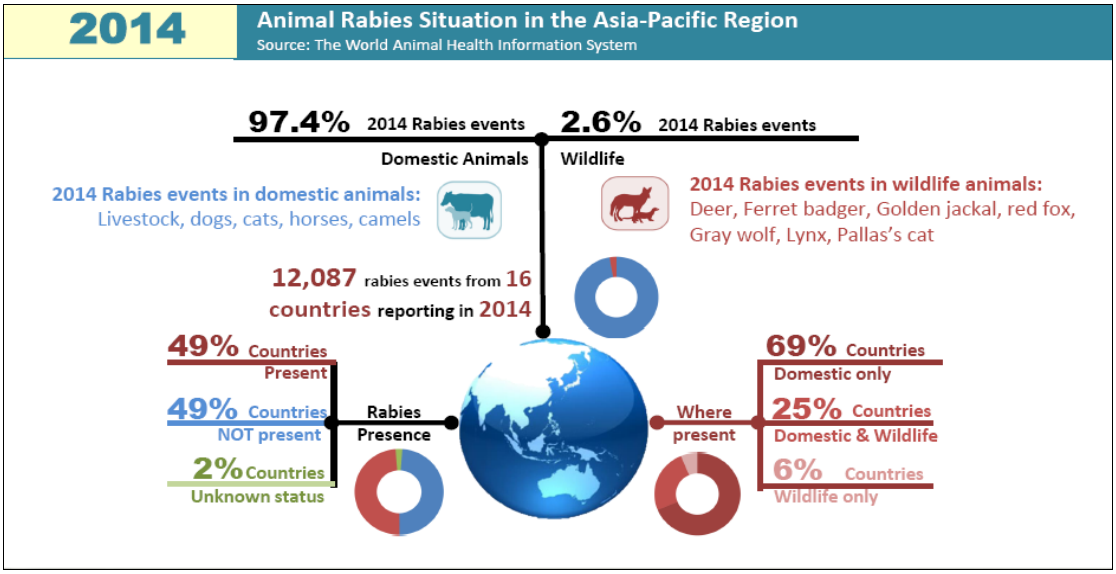
本議題由Dr Mary Joy N. Gordoncillo介紹OIE東南亞次區域代表（OIE SRR SEA）是一個擁有10個成員國（包括文萊、柬埔寨、印尼、寮國、馬來西亞、緬甸、菲律賓、新加

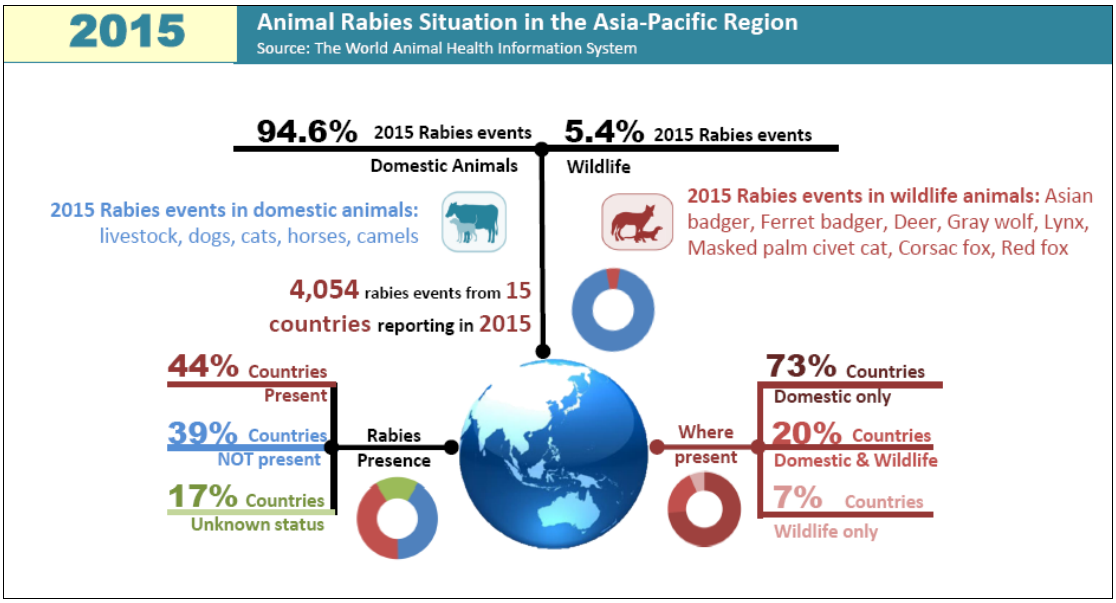
坡、泰國及越南）的區域組織，於2014年6月在泰國清邁舉辦東南亞區狂犬病研討會，研討會主要目的在了解會員國的狂犬病狀態（包括，措施的實施的嚴謹度、疫情的控制進展、執行量能與資源的異），以及是否符合國際標準的一致性（包括，是否一致推動區域目標的實現、是否為宣稱清除狂犬病做準備，以及確保計畫施行的品質）。經調查10個會員國中，將狂犬病列為應通報疾病的國家有9個，過去2年有進行監測的有5個，據早期偵測機制的有5個，無發生本土狂犬病病案的有3個，無境外移入狂犬病案例的有3個，當疫病發生時有調查程序的有6個，有施行疫病調查的有7個，在流浪管理方面有官方計畫支持的有6個、有國內疫情通報程序的有4個，有施行預防與控制的有7個，有施行疫苗注射的有7個，以及有施行犬隻寵物登記的國家有3個。

單元二：亞太地區的狂犬病疫情現況

本議題分別由 Dr Mary Joy Gordoncillo 及 Dr Yooni Oh 二位專家介紹狂犬病仍在亞洲特定地區持續發生，而發生之案例仍然是家畜多於野生動物，倘與2014年相比2015年有較少病例的報告，但該地區的傳播風險仍然持續存在，相關調查分析如下圖表所示。因此有必要繼續關注，包括疫情趨勢、狂犬病風險評估與管理、流行病學變化之監測、確定相關防疫措施的影響，以及監控全球2030年消除犬媒介狂犬病的進度。







單元三：國家獸醫服務在消滅狂犬病的作用

（一）有關獸醫服務體系之國際標準的概述與更新

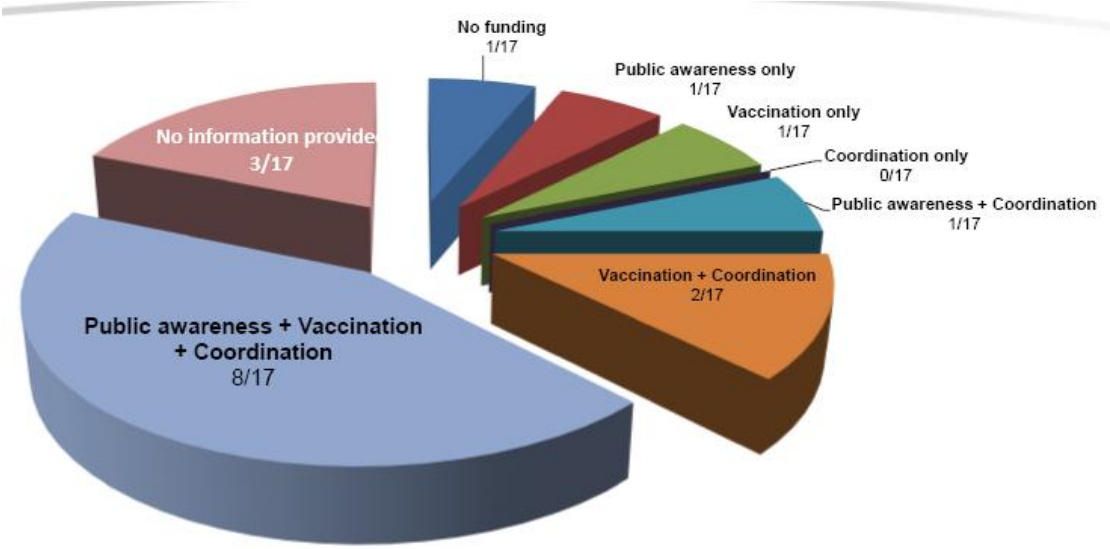
本議題由 Dr Ronello Abila 介紹OIE Codes 章節（3.1-3.2）、（3.3）及（3.4）分別介紹獸醫服務體系（PVS；Performance of Veterinary Services）的標準、通訊及立法。各國無論其國家的政治、經濟和社會形勢為何，獸醫服務應符合這些基本原則，遵守這些基本原則的成員國其獸醫服務才能獲得其他成員國的信任與認證。獸醫服務品質的基本原則（Code 3.1.2），包括：（一）專業判斷：獸醫服務人員應具備相關資質、科學知識與經驗，以致有能力做出正確的專業判斷；（二）獨立：應確保獸醫服務人員不受任何商業、金融、階級、政治或其他壓力而影響其判斷或決定；（三）公正：獸醫服務應該是公正的，特別是所有受影響的活動的各方都期待他們的服務合理和非歧視

的條件下交付的權利；（四）完整性：獸醫服務應保證他們的每一個工作人員的工作均須一貫且高度誠信，任何欺詐、腐敗或篡改等情事都應有稽核及糾正機制；（五）客觀性：獸醫服務應始終採取客觀，透明和非歧視的方式進行；（六）獸醫立法：提供所有關鍵活動的法律框架，是支持良好獸醫服務的前提；（七）建構組織：可以透過適當的立法手段、充足的財政資源及有效組織，以確立其職權認證；（八）品質政策：獸醫服務應該獲得明確定義與政策目標，並應確保該政策在各組織層級的實施與維繫；（九）程序與標準：獸醫服務應制定適當的程序與標準；（十）訊息傳達、投訴和申訴：在獸醫主關單位應回應其他成員國或其他獸醫主管部門的合法請求；（十一）文件檔案：獸醫服務應有適用而可靠與及時更新的文件檔案系統；（十二）自我評價：獸醫服務應定期的自我評價是否符合成效及達成目標；（十三）聯繫與傳播：獸醫服務應具有效可涵蓋所有活動的行政與技術之內、外部傳達系統；（十四）人力與財力資源：主管當局應確保有足夠資源及有效地執行上述活動。

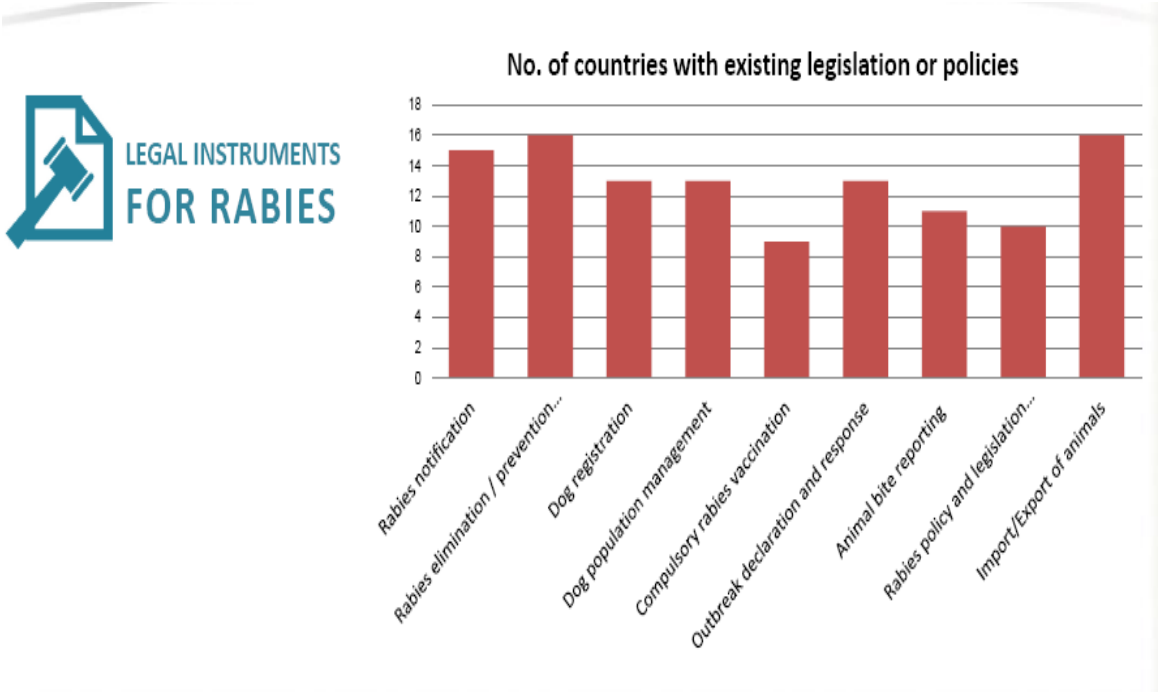
（二）狂犬病獸醫服務體系小組討論與結論

本議題由Dr Mary Joy N. Gordoncillo介紹參與本次會議會員國中，大部分國家有一個單一的機構負責動物狂犬病防疫管理工作，而有幾個國家有多個機構參與，需要進一步協調，但仍有少數國家沒有監測和診斷機制。在獸醫服務的程序和標準方面，有10國家有狂犬病風險分析，11個國家有消毒作為，14個國家具有診斷能力，12個國家有緊急應變機制，14個國家對狂犬病犬隻施行人道處理，15個國家有狂犬病防控計畫，15個國家有獸醫師負責狂犬病認證工作，16個國家有狂犬病的監測措施，16個國家有施行邊境管制，以及10個國家有防控分區機制，如下圖示。

在國家年度預算方面，調查17個國家的挹注狀況有8個國家在民眾教育宣導、疫苗注射及跨部會合作均有預算支持，其餘國家則各有不同，如下圖示。



另在法規、國家型計畫、委員會運作及訊息的傳遞與聯繫方面，各與會國家目前的現況如下圖表所示。



Rabies National Plans

15 NATIONAL RABIES PLANS

BA| BH | CA | HK | IN | JP | LA | MA | MY | PH | PRC | SK | TH | CT | VN

Name of National Plan	Country
"National Strategy for elimination of rabies in Bangladesh"	Bangladesh
Name not identified	Bhutan
"National Strategy for Rabies Control and Elimination 2015-2020"	Cambodia
"Rabies Contingency Plan"	Hongkong
"Masterplan/Roadmap for rabies elimination 2020"	Indonesia
Name not identified	Japan
"Strategic plan for prevention and control of rabies in Lao PDR (2016-2020)"	Laos
"National Rabies Control Program"	Malaysia
"National Rabies Control Plan"	Myanmar, draft
"National Rabies Control and Prevention Committee Medium-Term Plan 2011-2016"	Philippines
Plan for animal rabies prevention and control"	PR China, draft
"National Strategic Framework "	Sri Lanka
"Long-Term Strategy of rabies control"	Chinese Taipei
"National Strategic Plan for rabies elimination by 2020"	Thailand
"National Rabies Prevention and Control Program"	Vietnam

10 NATIONAL RABIES COMMITTEES

BA| HK | IN | MA | PH | ROK | SK | TH | CT

Name of National Plan	Country
National Steering Committee for Rabies Elimination	Bangladesh
Zoonoses Technical Working Group (ZTWG)	Cambodia
Scientific Committee on Emerging and Zoonotic Diseases	Hongkong
Rabies Coordination team	Indonesia
Inter-Ministerial Committee for Control of Zoonotic Dis's	Japan
National Rabies Prevention and Control Committee	Philippines
Inter-Ministry Committee for the Control of Zoonotic Dis's	Rep of Korea
National Steering Committee/National Joint Technical Committee	Sri Lanka
Central Epidemiologic Center for Rabies	Chinese Taipei
National Rabies Committee	Thailand

ANIMAL RABIES COMMUNICATION

6 FUNDED COMMUNICATION UNIT FOR RABIES

BA | HK | MY | PRC| ROK | TH

9 NATIONAL RABIES COMMUNICATION STRATEGY

BA | HK | IN | JP | MA | ROK | TH | CT | VN

NATIONAL CAMPAIGN FOR RESPONSIBLE PET OWNERSHIP 9

HK | IN | JP | MA | PH | PNG | ROK | TH | CT

ANNUAL NATIONAL WORLD RABIES DAY CELEBRATION 12

BA | BH | HK | IN | JP | MA | MY | NE | PH | SK | TH | CT

單元四：狂犬病疫苗與疫苗接種

（一）關於狂犬病疫苗和疫苗銀行的最低標準

本議題由Dr Yooni Oh介紹OIE在狂犬病疫苗標準，在於改善動物健康與福利及強化獸醫公共衛生，衛生法典（Codes）即規範動物及其產品貿易之衛生標準、動物疫病監測與防控、食品安全及動物福利等，而使用手冊（Manual）則規範診斷檢測及生物疫苗標準，當依照Codes的規定對於國際間動物移動或其他指定用途需要進一些檢驗時，則該Manual應針對實驗方法提供建議。陸生動物檢驗使用手冊（Terrestrial Manual）在架構上包括10個介紹章節、113個疾病檢驗專章、一般性準則及OIE參考專家與疾病診斷指引等4部分。而在狂犬病疫苗的標準方面，RABV為造成大多數的人狂犬病之病原，但其他麗莎病毒（Lyssa viruses）同樣可引起人類和其他哺乳動物的腦炎，很難區別，目前獲得許可及取得使用執照的狂犬病疫苗，分為腸外方式給予（常用於一般家畜）及口服方式給予（常被用於野生動物）2種，其製造方面有以胚胎蛋或細胞培養方式生產，當採以神經組織培養生產疫苗時，必須被驗證其不會在動物體內持續存在。而在進行遺傳譜系分析方面，血清中和反應只呈現在相同遺傳譜系的病毒間，而不同的遺傳譜系之病毒間，則不會呈現交叉反應。目前在遺傳譜系的分析上，麗莎病毒（Lyssa viruses）可分成 Phylogroup Ⅰ、Ⅱ及Ⅲ等 3個基因群。而目前被運用在狂犬病疫苗的開發上所須進行之攻毒或作為種源之病毒株，大致可分4大類，如下圖所示。

Pasteur strain	Street Alabama Dufferin	Flury strain	Other strain
1882 France from a rabid cow infected by a dog Passages in rabbits and mice then passages in cells at different levels: - Pasteur virus (PV-12) - Kissling (CVS-11) - CVS challenge virus strain (CVS-27) - Pitman-Moore (PM) - RV-97	1935 USA from a dog Primary cells of hamsters & pigs (10 passages) = ERA virus BHK 21 cell line passages: - SAD Vnukovo (USSR Russia) - SAD Vnukovo-32 - SAD Bern (Switzerland) - SAD-B19 - SAG2 - ERA 333	1939 USA from Miss Flury transmitted by a dog 136 passages in 1-day-old chicks 40/50 passages in embryonated eggs: low egg passage (LEP) 220/227 passages in embryonated eggs: high egg passage (HEP)	CTN: China from a dog (1956)

通常狂犬病疫苗的開發過程分3個階段，首先須確立病源特性等基礎認識及背景，之後才能確立研發的方向及方法，最後研發成功後才有後續的授權、使用許可及註冊。而可用於注射方式的疫苗，一般用於家畜，但也可用於野生動物，其種類有重組、基改及不活化疫苗等3種，在使用上係根據製造商的處方推薦，其總體成效可由疫苗接種覆蓋率來推估。以口服方式給予的疫苗，一般用於野生動物，但是否可用於家畜仍有待評估，而其研發之成敗餌料是一個關鍵，另須考量的還有對目標及非目標物種療效與安全性，其種類大致有馴化之減毒疫苗或重組疫苗，至於評估最終成效為何?由於範圍太廣，其實並不容易。在疫苗銀行方面，OIE有建置犬隻狂犬病疫苗銀行，其功能在協助保證：（一）符合國際標準之高品質疫苗；（二）提供各國或捐助資金（如多方捐助之信託基金）直接購買；（三）透過一定經濟規模的採購儲備，可降低每單位疫苗的成本；（四）簡化產品註冊及進口程序相關之延遲及降低其衍生之成本；（五）支援各國際團體之疫苗接種活動；（六）激勵各國推動犬隻注射狂犬病疫苗。同時，過去疫苗銀行也配合過歐盟高致病性新興傳染病防治計畫（EU-HPED），目前該計畫已於2014年12月結束。而此疫苗銀行之機制亦將持續存在，透過個國家或其他捐助者提供基金之方式繼續運行。根據最新通報狂犬病疫苗銀行的進展，全球使用的劑量已超過4百萬劑，如下圖示。

（二）狂犬病疫苗小組討論與結論

本議題由Dr Mary Joy N. Gordoncillo介紹調查包括孟加拉（BD或BA）、不丹（BT或BH）、中國大陸（CN或CH）、香港（HK）、印尼（ID或IN）、日本（JP）、南韓（KR）、柬埔寨（KH或CA）、寮國（LA）、斯里蘭卡（LK或SK）、緬甸（MM或MA）、尼泊爾（NE）、馬來西亞（MA）、菲律賓（PH）、巴布亞紐幾內亞（PG或PNG）、台灣（CT或TW）、泰國（TH）及越南（VN）等18個國家中，有17國家有進口狂犬病疫苗，2016年共進口24,308,502劑，僅日本沒進口狂犬病疫苗，其所需疫苗全數自行生產。而有自行生產疫苗的國家包括中國、日本、孟加拉、印尼、南韓及尼泊爾等6個國家，2016年總生產量為31,536,000劑，其中中國就佔了26,000,000劑（包括活毒疫苗23,000,000劑及不活化疫苗3,000,000劑）。而在生產疫苗的品質保證方面，該6個國家之陳述如下表：

	Description
BD	Field observation of vaccine efficacy among vaccinated animals
CN	-
ID	Quality assessment by Veterinary Drug Assay Laboratory and registered in the MoA
JP	Each lot is subject to several tests to ensure quality; results checked (and/or double checked) by National Veterinary Assay LAboratory
KR	Carry out validation monitoring tests on a regular basis
NE	Rabies vaccination laboratory

而在疫苗的使用方面，上述國家中14個有使用死毒疫苗，使用活毒疫苗有3個（包括中國、孟加拉及韓國，其中韓國活毒疫苗是用在野生動物的免疫方面），另孟加拉也使用載體疫苗，如下表所示。

	Inactivated (Killed)	Live Attenuated	Vector Vaccines		Killed	Live Att	Vector Vx
BD		✓	✓	LK	✓		
BT	✓			MM	✓		
CN	✓	✓		MY	✓		
HK	✓			NE	✓		
ID	✓			PG	✓		
JP	✓			PH	✓		
KH				TW	✓		
KR	✓	✓		TH	✓		
LA	✓			VN	✓		

、而各國在疫苗銀行之建置、免疫計畫與策略、對於犬隻免疫之規範、免疫後之監測機制、犬隻免疫後的標示及疫苗免疫覆蓋情形管控機制等情形如下表顯示：

1.疫苗銀行之建置

	2012	2013	2014	2015	2016		2012	2013	2014	2015	2016
BD		200,000				LK		300,400			
BT		20,000	80,000			MM		200,000		200,000	
CN						MY				50,000	
HK						NE		200,000			
ID		200,000			100,000	PG					
JP						PH		500,000	320,000	300,000	*****
KH				50,000		TW					
KR						TH					
LA	50,000	120,000	120,000			VN	200,000	500,000	172,000		

2.免疫計畫與策略

	V-Plan	Description		V-Plan	Description
BD	✓	Multi-sectoral involvement; short pd	LK	✓	MDV in identified vaccination points
BT	×		MM	✓	Compulsory vax in immune belt;
CN	✓	Spring-Autumn campaign; by province	MY	✓	Pilot MDV in Lewei (Jan-March 2016)
HK	✓	All dogs >5 mos	NE	×	
ID	✓	At least 70%; Emerg vax; At risk area	PG	×	
JP	✓	All dogs annually April to June	PH	✓	70% in shortest time, 3 consec years
KH	✓	?	TW	✓	90% in high risk areas; 70% in others
KR	✓	Annual compulsory (free on reg'd pets)	TH	✓	80% in dogs
LA	×		VN	✓	?

3.對於犬隻免疫之規範

	Description		Description
BD	Not compulsory but practiced routinely (select areas)	LK	Compulsory in the whole country
BT	Not compulsory, practiced routinely (select areas)	MM	Not compulsory, practiced routinely (select areas)
CN	Compulsory in select areas only; Not compulsory but practiced (whole country)	MY	Compulsory in select areas only
HK	Compulsory (whole country)	NE	Not compulsory, practiced routinely (whole country)
ID	Compulsory (select areas only)	PG	Neither compulsory nor routinely practiced routinely
JP	Compulsory (whole country)	PH	Not compulsory, practiced routinely (whole country)
KH	Neither compulsory nor routinely practiced routinely	TW	Compulsory in the whole country
KR	Compulsory (whole country)	TH	Compulsory in the whole country
LA		VN	Not compulsory, practiced routinely (whole country)

4.免疫後之監測機制

	PVM	Description		PVM	Description
BD	×		LK	×	
BT	✓	Proportion count : colored vs uncolored	MM	✓	Collar survey in select villages
CN	✓	Serology (Nat'l rabies surveillance plan)	MY	×	
HK	×		NE	×	
ID	✓	Collar survey	PG	×	
JP	×		PH	✓	Serology; Interview
KH	×		TW	✓	Serology (vet clinicals)
KR	✓	Annual report (occurrence; serology)	TH	✓	Research
LA	-	-	VN	×	

5.犬隻免疫後的標示

	P Id	EN	Co	VC	Be	None	Etc		P Id	EN	Co	VC	Be	None	Etc
BD		✓	✓		✓			LK				✓			
BT			✓	✓				MM				✓	✓		
CN				✓	✓			MY							Dog Tag
HK				✓				NE			✓	✓			
ID				✓			Collar	PG						✓	Dog Tag
JP				✓			Dog tag	PH				✓			
KH								TW				✓	✓		
KR	✓							TH				✓			Dog Tag
LA								VN				✓			

6.疫苗免疫覆蓋情形管控機制

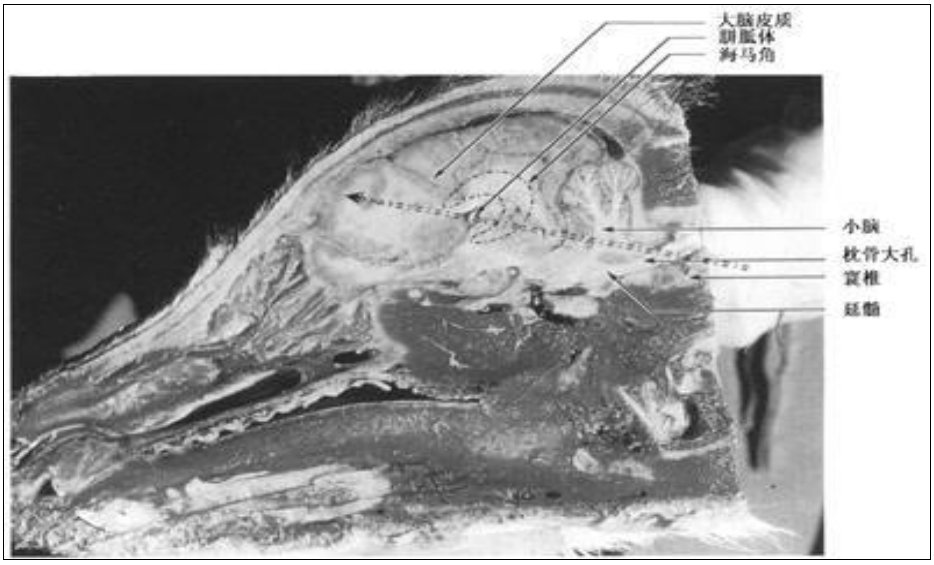
	Rep	Description		Rep	Description
BD	✓	Counting team (local, national)	LK	✓	Review (District, Province --:> National
BT	✓	Monthly Animal Health reports	MM	✓	Daily reporting (paper) → Excel Sheet
CN	✓	Vax results → provincial CADC → CADC	MY	✓	
HK	✓	Centralized database with owner info	NE	×	
ID	✓	In eradication areas; others by SMS	PG	×	
JP	✓	Website	PH	✓	PhilAHIS
KH	×		TW	✓	Online database for follow up management
KR	✓	Real-time monitoring using KAHIS	TH	✓	All reports received → e-operation database
LA	×		VN	×	

單元五：狂犬病診斷的國際標準

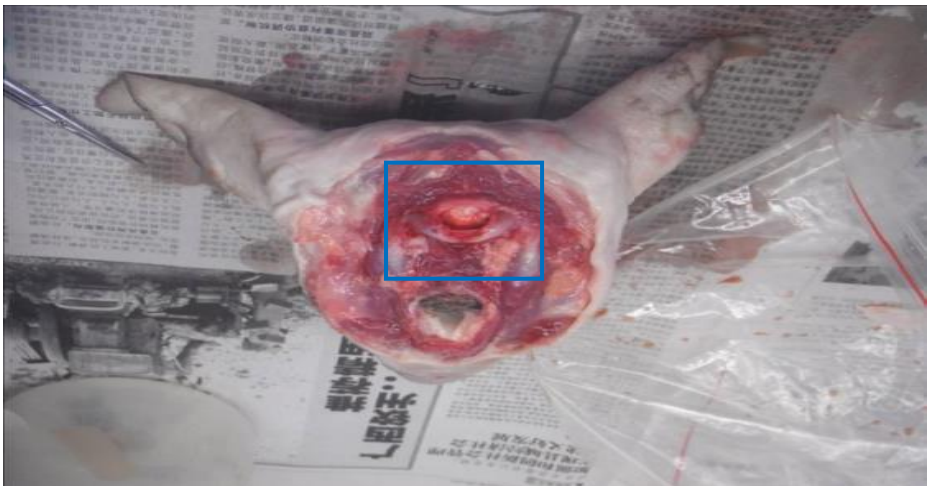
（一）OIE Manuals 未詳述之狂犬病診斷標準

本議題由 Dr Changchun Tu （涂長春博士）介紹，涂長春博士為OIE大陸地區狂犬病參考實驗室主任，介紹重點：強調對於野外操作大型動物之腦組織採樣，或對於進行大量之例行監測，建議可採行其推薦之方式來進行，其優點為方便操作、可省時快速及大量，以及大大可降低使用電鋸鋸開腦殼可能造成狂犬病病毒腦組織碎屑四溢污染之風險。目前該做法已獲WHO及OIE的推薦用於上述用途，其作法係使用一根口徑5cm的吸管由枕骨大孔插向眼球的方向，如此可同時收集從延腦、小腦、海馬、皮質部之腦組織樣品，其採樣描述如下圖示：

1. 枕孔採樣路線

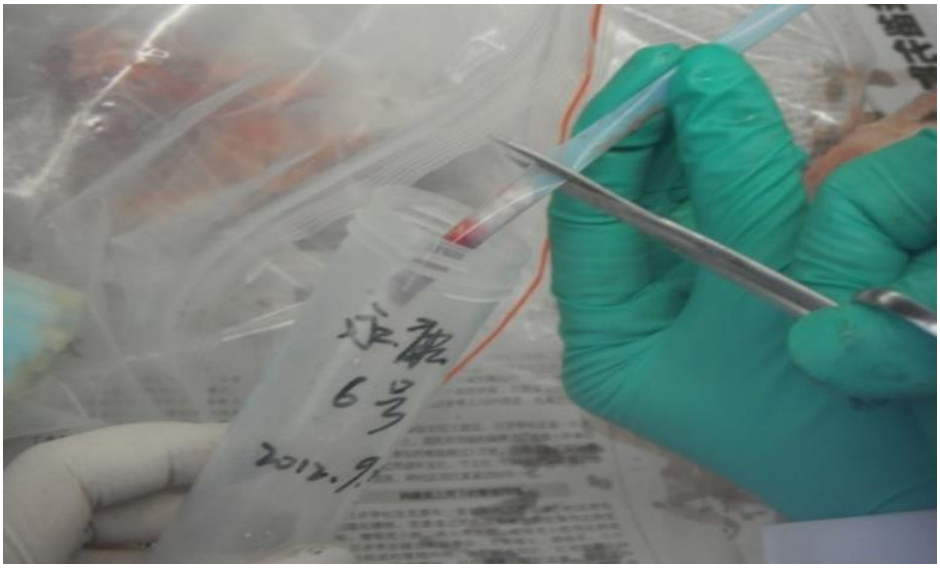


2. 枕骨大孔位置



3.吸管插入枕骨大孔情形

4.以捏子將腦組織及入收集試管中（上）或直接將含有腦組織之吸管部位剪入收集管中（下）。



（二）狂犬病診斷小組討論與結論

本議題由 Dr Dr Yooni Oh介紹各國在從事狂犬病診斷方面，調查東南亞國家聯盟（ASEAN）、南亞區域合作聯盟（SAARC）及東亞及太平洋地區（EA & Pacific）之實驗室數量及使用方法，分述如下：

1. 狂犬病診斷實驗的室數量

- ASEAN

CA	IN	LA	MA	MY	PH	TH	VN
1	25	1	1	3	20	9	5

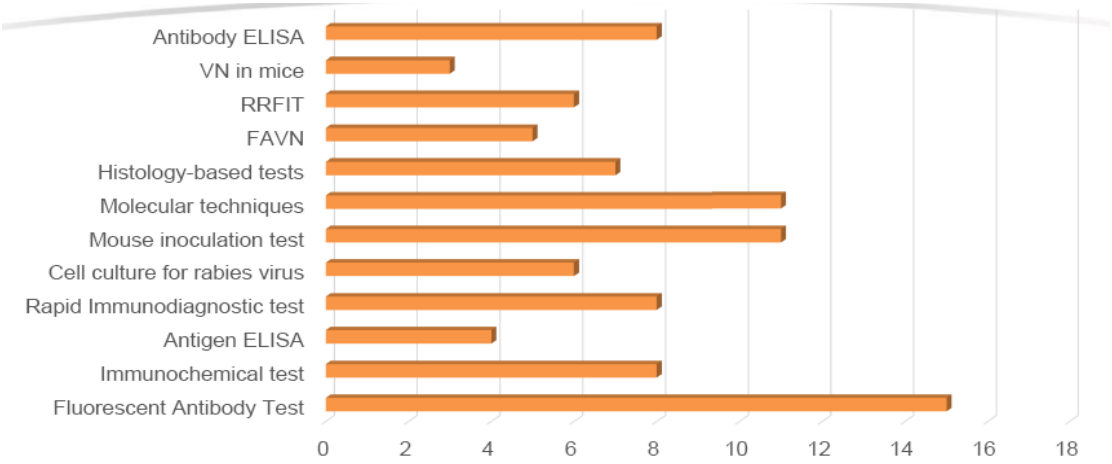
- SAARC

BA	BH	NE	SK
1	8	1	2

- EA & Pacific

CH	HK	JP	KR	PNG	CT
5	1	10	6	1	3

2. 診斷狂犬病所使用方法之調查



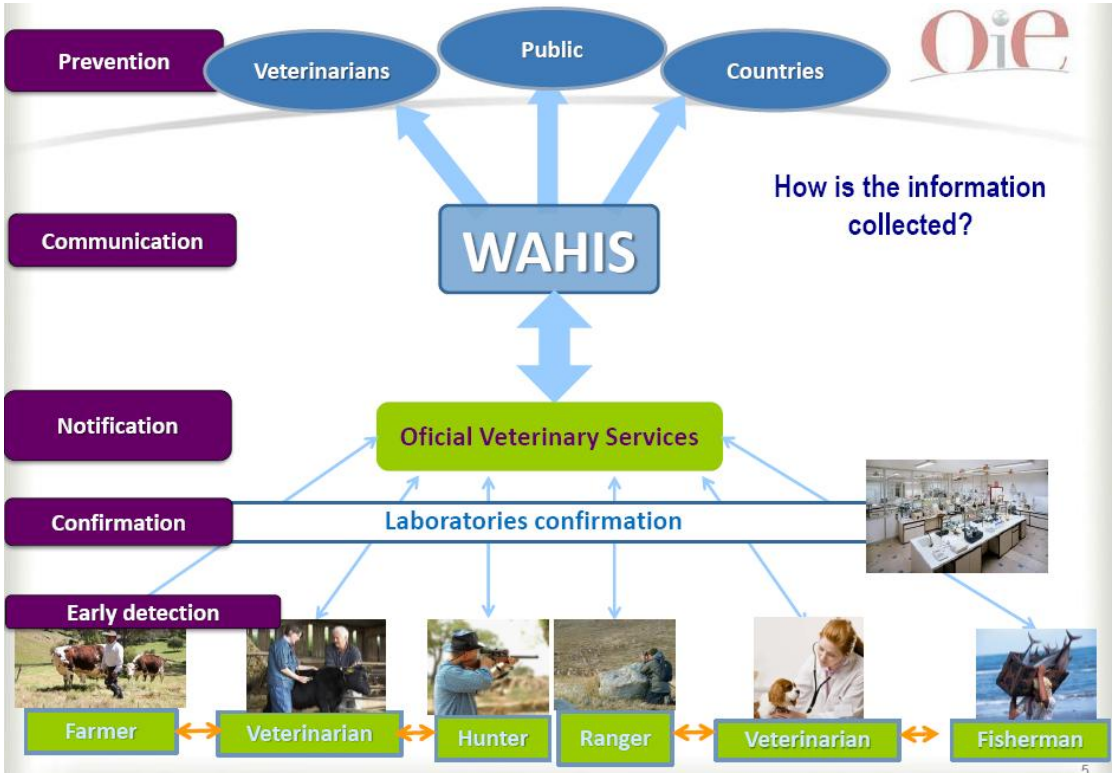
在診斷能力方面，18個國家中有10國家有參與澳洲AAHL或法國ANSES實驗室所辦理實驗室能力水平測試，有10國家有強化狂犬病診斷能力之計畫，以及有9個國家請求OIE地區性（如AAHL、ANSES、APHA、CVRI及QIA等）實驗室的協助。而在動物進出口之血清檢測方面，有8個國家列為檢疫條件，亞洲地區獲得國際認可進行狂犬病血清學檢測之實驗室，表列如下：

Country	Lab detail	Date of approval	Expiry date
Australia	AAHL	20/11/2002	
China	CVRI	01/02/2015	
Japan	AQS	01/08/2011	
	Research institute for animal science	27/01/2005	
Korea RO	QIA	18/07/2007	
	Choong Ang Vaccine Laboratory	09/02/2007	06/10/2015
	Komipharm international	15/08/2014	
	KBNP	15/08/2014	

單元六：狂犬病監測

（一）狂犬病監測的國際標準

本議題由 Dr Ronello Abila介紹OIE之成立宗旨在於促進全球動物健康，而其主要目標則是為確保全球動物疾病（包括人畜共通傳染病）疫情的透明度。 OIE與WHO兩個世界性組織皆有一個全球性的法律框架，以分別收集各國動物與人類疾病疫情及發布全球健康信息。對於獲得同意而決定加入OIE之成員國，其必須同意依照陸地與水生動物衛生法典（OIE’ s Terrestrial and Aquatic Codes）章節1.1之規定，承諾履行其向OIE通報疾病疫情與流行病學信息之義務。而在疫情通報的機制方面，OIE設立了一個WAHIS（The World Animal Health Information System）通報系統，以提供作為各會員國通報及獲得疫情資訊的平台，如下圖示。



該系統之重要目標有：（一）監測的目標：在呈現疾病的存在與否或感染的狀況，以及早期偵測出外來或新浮現之疾病；（二）提供可靠的信息：須符合 Code 章節 3.1 的獸醫服務規定、有其他科學研究資料所支持的監測數據，以及監督監測的透明度。當希望利用監測以證明自己國家為清淨區時，必須有可靠的監測來加以證明，包括：（一）確定疾病的分佈與發生的情形；（二）例行進行清除或控制計畫，以及強化措施的成效評估；（三）對動物及其產品的輸出入進行監測；（四）設計與收集一些變動的數據（如疾病的盛行率、發病率及死亡率，野生動物所扮演的角色等），而 OIE 在狂犬病方面的要求，按照陸生動物衛生法典章節 8.11 之規定：（一）必須向 OIE 通報的疾病發生情形；（二）狂犬病可感染所有哺乳動物；（三）任何物種動物感染狂犬病都算是一個發生案例。而自我聲明為清淨區之要件，依據 Code 8.13.3 之規範有下列幾點：（一）疾病是被列為法定通報疾病，而其流行病學狀況或相關事件的任何變化都必須依照 Code 1.1 之規範通報；（二）必須有按照 Code 1.4 規範可早期偵測狂犬病可疑動物之監測系統，且已進行 2 年以上；（三）落實與 Code 建議（包括對進口動物）一致的狂犬病預防措施；（四）證實過去 2 年無本土案例發生；（五）須證實過去 6 個月除檢疫站外沒有食肉目或翼手目動物之案例發生；（六）境外移入之人的狂犬病案例，並不影響其狂犬病清淨狀態。

（二）狂犬病監測之小組討論與結論

本議題由 Dr Mary Joy N. Gordoncillo 介紹有關18個與會國家的狂犬病國家監測系統，表列說明如下：

1.通報與定義

	Rabies is Notifiable	With case definition		Rabies is Notifiable	With case definition
BD	✓	✓	LK	✓	?
BT	✓	✓	MM	✓	×
CN	✓	✓	MY	✓	✓
HK	✓	✓	NE	×	×
ID	✓	✓	PG	✓	×
JP	✓	×	PH	✓	✓
KH	×	×	TW	✓	×
KR	✓	×	TH	✓	✓
LA	✓	✓	VN	✓	×

2.病例定義

			Captured in National Surveillance
BA	(Others)	Animal presenting with an acute neurlgical syndrome (encephalitis) dominated form of hyper excitability (furious form) or paralytic form (dumb form) presenting towards coma and death usually by respiratory failure within 7-10 days	

			Captured in National Surveillance
HK	Suspect	An animal that has had casual or potential contact with an infected animal in the past 14 days	Yes
	Probable	Any mammal (other than human) that has been exposed to or closely associated with an infected animal within the previous 14 days	Yes
	Confirmed	An animal known or believed to have rabies	Yes

			Captured in National Surveillance
CN	Suspect		No
	Probable	(Technical regulationj for rabies prevention and control) bite by rabies infected animals or shows abnormal behavior or attack a serios of persons or objects	No
		See specific definition in Technical Regulation for rabies prevention and control" and GB/T18639)	Yes

			Captured in National Surveillance
ID	Suspect	Bite 2 objects or 1 bite with other clinical sign	Yes
	Probable	-	No
	Confirmed	Positive for FAT	Yes
LA	Suspect	Stop eating and drinking	Yes
	Probable	Stop eating and drinking may appear to be left alone	Yes
	Confimred	Positive for FAT	Yes

			Captured in National Surveillance
PH	Suspect	An animal case that may show any of the following clinical sign sudden signs of apprehension or nervousness, irritability, hypersensitivity, hydrophobia, muscle paralysis, nervous signs	No
	Probable	A case associated with an unprovoked biting incidence or a suspect case that dies after period of observation (but no lab confirmation)	No
	Confirmed	A suspect or probable case animal confirmed positive for rabies using FAT	Yes

			Captured in National Surveillance
MY	Suspect	Dog with history of biting people or animals in immune belt area	Yes
	Probable	-	
	Confirmed	Positive by lab test	Yes
TW	Suspect	Wildlife die on road	Yes
	Probable	Neurological signs and/or biting human	YEs
	Confirmed	Confirmed by FAT	YEs

3.監測系統開始運作之年分

	Ongoing System for Surveillance	Year Started		Ongoing System for Surveillance	Year Started
BD	-	-	LK	Yes	-
BT	-	-	MM	No	-
CN	Yes	2005	MY	Yes	1952
HK	Yes	1980s	NE	-	-
ID	Yes	2010	PG	Yes	2016
JP	Yes	2014	PH	Yes	1990s
KH			TW	Yes	1999
KR	Yes	1970s	TH	Yes	1993
LA	Yes	-	VN	Yes	2012

4.權責單位

	Collating data	Reporting data		Collating data	Reporting data
BD	Epidemiology Unit DLS	Sub-District	LK	Director DAPH and Director PH Vet Services of MoH	Director DAPH and Director PH Vet Services of MoH
BT			MM		
CN	CADCS	CADCS	MY	Biosecurity & SPS Div	Biosecurity & SPS Div
HK	AFCD	AFCD	NE	Directorate of Animal Health	Vet Epi Center
ID	DAH	DAH	PG	NAQIA	NAQIA
JP	MHLW	MHLW	PH	BAI and DARFO	BAI
KH	-	-	TW	LDCCs, BAPHIQ	BAPHIQ
KR	MAFRA	MAFRA	TH	DLD	DLD
LA	Epi Unit, DLF	DLF	VN	DAH	DAH

在過去2年的監測成就方面，有提出說明的國家分別有：孟加拉：收集和彙整由狗咬傷與疑似狂犬病症狀的流行病學案例，2013年8,406例及2014年7,985例；中國大陸：透過疫苗接種監管手段，一些城市在促進狂犬病預防措施上已有很大提升；香港：2014年有844例咬人動物進行狂犬病隔離觀察，其中3例對死亡動物狂犬病檢測，2015年有619例進行狂犬病隔離觀察，其中8例對死亡動物狂犬病檢測；印尼：對若干個島嶼進行監測，以驗證其無狂犬病（如 Weh 及 Pisang 等），並建立 iSIKHNAS 監測系統；馬來西亞：在2015年爆發期間已建立對疑似狂犬病病例的早期發及疫情的控制能力；緬甸：收集來自一些地區和國家疑似犬狂犬病例的數據並使用 OIE SRR SEA 支援的狂犬病疫苗進行高風險區域的試點接種活動；菲律賓：制定更詳細的動物狂犬病個案調查表，以及2015-2016暫停收取實驗室檢測狂犬病之檢驗費，以鼓勵更多樣品送檢；韓國：在高風險地區建立（狗與牛之間）的免疫屏障，以及每年對野生動物監測其免疫狀態；巴布亞新幾內亞：對動物健康官員進行培訓，以強化其腦組織取樣及現場快速抗原ELISA檢測的能力，並與其他參考實驗室進行能力測試，以提昇實驗室診斷狂犬病的能力；泰國：根據東盟規劃2020年前消除狂犬病，泰國已於2020年前成立了狂犬病清除策略，而泰國DLD亦有政策推動主、被動監測之計畫，以及發展網路數據庫系統；台灣：過去兩年（103及104年）共有2,434樣品（包括狗、貓、蝙蝠及野生動物）進行狂犬病的檢測，其中235隻鼬獾及6隻白鼻心確診感染狂犬病。

單元七：消滅狂犬病政策下的動物福利

（一）在消滅狂犬病相關的指導原則與標準下的動物福利

本議題由 Dr Gardner Murray 介紹世界上每十分鐘就有一個人死於狂犬病，而每年死於狂犬病的近 70 萬人，其中大部分是發展中國家的兒童，且人的病例有 95%以上是由狂犬病犬隻咬傷所致。因此如消除感染狂犬病的犬隻為清除狂犬病的關鍵，但如何

兼顧動物福利益為當前的重要課題。世界動物衛生組織所規範的動物福利，Code 7.1 即在介紹動物福利的原理及 OIE 標準的科學依據；Code 7.7 則介紹流浪犬的控制，強調流浪犬及野犬嚴重影響人類及動物的健康與動物福利問題，且與控制狂犬病密不可分。而犬媒介人類狂犬病的主要風險，在於流浪犬密集或犬隻疫苗免疫不確實的區域，而影響犬隻生態的因素與人類的習性有密切關係，譬如當人類對飼養犬隻的責任與正確觀念提高時，則可明顯減少流浪狗與人畜共通傳染病的發生。在 OIE 控制流浪狗的人性化標準，強調雖然人的健康是首要的大事，但也強調應避免動物痛苦的重要性，因此其重點即著重在提高飼主的責任，以有效控制狗口數及疫苗免疫覆蓋率，進而維持無狂犬病之犬隻族群。而與提高飼主的責任有關之關係者，如下列圖示：

在減少流浪狗的相關規劃應注意事項，有（一）確認流浪狗的來源（如，有飼主的漫遊犬、被遺棄之犬隻或無主犬等）；（二）估算現有的數量、分佈及生態；（三）建立監管框架（如，註冊及標示、注射狂犬病疫苗、犬隻移動管理、環境控制、收容所之規定，以及業者與主管部門之動物福利義務等）；（四）執政當局的相關資源（包括人力資源、財務、技術工具、基礎設施、合作活動、公私及非政府組織間的夥伴關係，或者中央與地方的合作夥伴關係等）。一般制定之控制措施（應考慮到國情和當地的情況），大部分包括有：（一）飼主的教育與法律負責任；（二）犬隻之登記與標識；（三）生育控制；（四）移除與處理；（五）捕捉結紮後供認養或釋放；（六）環境控制；（七）犬隻進出口管制；（八）犬隻於國內的移動管理；（九）繁殖販賣業者的管理；（十）犬咬傷人案的管理；（十一）人道處理等。針對人道處理部分：

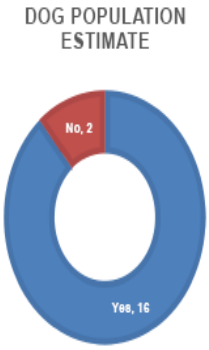
OIE的立場是單純的人道處理不是一個有效的控制措施，如果不得已必須實施，則必是人道的作法且有其他可長可久的配套措施才是真正的解決之道。而在做法上，有下列及種方式：（一）通過注射化學藥品：如巴比妥類藥物、Embutramide + Mebezoium+Tetracaine、麻醉劑過量（Thiopentone or Propofenol）及氯化鉀（KCl）;（二）機械方式：如槍擊、撞擊槍及放血；（三）氣體方式：如一氧化碳、二氧化碳、惰性氣體（氮氣或氬氣）、過量麻醉氣體（Halothane or Enflurane）;（四）電擊。

前項之控制措施之實施應進行成效評估，以利後續進行改善、究責及制定標準。最後，須再進行犬隻族群數之變化分析，以確認所制定之措施的施行成效。

（二）動物福利小組討論與結論

本議題由 Dr Yooni Oh 介紹，彙整18個與會國家所提報之資料，就犬隻族群數、犬隻與人口之比例、流浪犬控制措施之施行、對飼主賦予責任，以及人道處理實施概況，分別顯示如下：

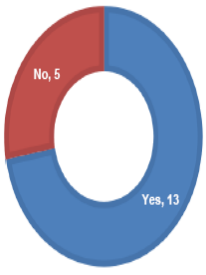
1. 犬隻族群數概況



Estimation of dog population

ASEAN	CA	IN	LA	MA	MY	PH	TH	VN
	?	20,000,000	?	300,000	4,000,000	?	8,662,474	NA
SAARC	BA	BH	NE	SK				
	1,600,000	73,000	2,500,000	?				
EA+Pac	CH	HK	JP	ROK	PNG	CT		
	70,000,000	247,500	?	?	NA	1,710,000		

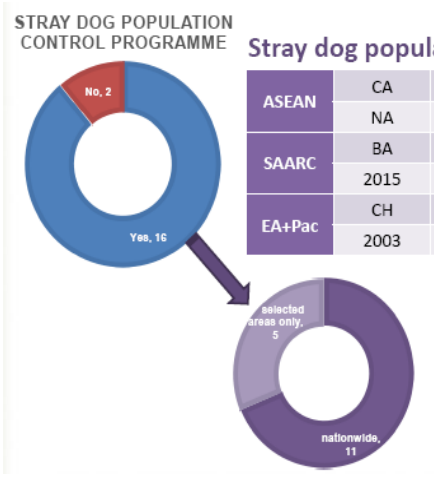
2. 犬隻與人口之比例



Estimation of dog:human ratio

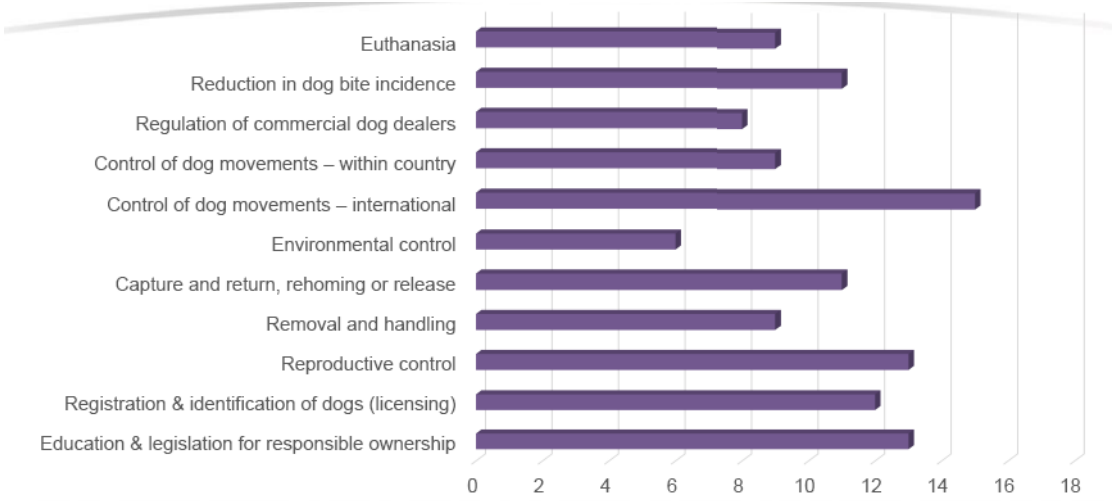
ASEAN	CA	IN	LA	MA	MY	PH	TH	VN
	1:3	1:15	?	NA	1:6	1:10	1:7.7	NA
SAARC	BA	BH	NE	SK				
	1:100	?	NA	1:8				
EA+Pac	CH	HK	JP	ROK	PNG	CT		
	1:10-18	1:28.4	NA	1:12	NA	1:13.5		

3. 流浪犬控制措施之施行

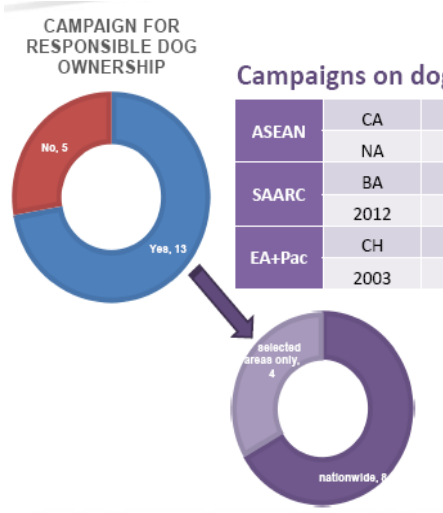


Stray dog population control programme since,

ASEAN	CA	IN	LA	MA	MY	PH	TH	VN
	NA	2010	NA	1952	1994	1997	1993	?
SAARC	BA	BH	NE	SK				
	2015	2009	?	?				
EA+Pac	CH	HK	JP	ROK	PNG	CT		
	2003	1980s	1950	1991	1950s	1998		



4. 對飼主賦予責任



Campaigns on dog pop management & responsible dog ownership since,

ASEAN	CA	IN	LA	MA	MY	PH	TH	VN
	NA	2010	NA	2010	2004	1997	1993	
SAARC	BA	BH	NE	SK				
	2012		NA	NA				
EA+Pac	CH	HK	JP	ROK	PNG	CT		
	2003	1980s	1950	1990s	NA	1998		

5. 人道處理實施概況

	IN	MA	PH	TH	CH	HK	JP	KR	CT
Method of restraint	Anesthesia	Using dog net catcher, muzzle, tranquilizer	catching net, traps, snares	Net , snares	Leashed.	Physical	Cage, net, wire	Anesthesia	Use restraint or squeeze cages to restraint the animals.
Method of euthanasia	High dose of pentobarbital	Drug (Pentobarbitone intracardiac)	Chemicals; overdose Phenobarbital (IV, IP), Inhalant anaesthetics, MgSO4 or KCl inject, Ketamine with other sedatives Bullets; head or heart	Chemical method	Injection air bubbles.	Using injectable	Anesthesia, CO_2 gas	Drug	Use sodium pentobarbital injection as euthanasia method.
Method to confirm death	Physical examination	Clinical examination	absence of vital signs	Respiratory, Heartbeat, pupil reflex	No heart beat.	Physical examination	Check heartbeat, pupillary reflex, eyelid reflex	Cardiac arrest	Check for the lack of respiration and heartbeat, and mydriasis to confirm death.
Method for carcass disposal	Burial	Buried	burying or burning	bury or burn	Deep bury.	Landfill	burning	Incineration in dedicated facility	Choose cremation as method of carcass disposal.

單元八：實現與維持消滅狂犬病的工作

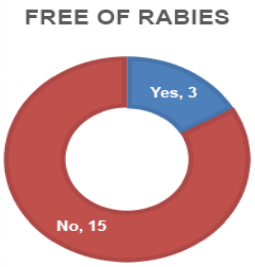
（一）應對感染狂犬病的國際標準

本議題由 Dr Hirofumi Kugita 介紹狂犬病是可100%預防的，但對於非洲與亞洲（尤其農村貧困地區的兒童）造成很多死亡案例，而從消滅犬媒介的人狂犬病是一個全球性的公益活動且是可行的。有關 OIE Code 對狂犬病的規範 8.13.1所介紹的為狂犬病一般特性，8.13.2則介紹犬狂犬病的控制，8.13.3介紹如何成為非疫國，而8.13.4至8.13.9則介紹對於進口的建議。在一般特性方面，特別提出來的是狂犬病的潛伏期可長達6個月之久，而犬的感染期則是在第一次明顯臨床症狀出現的10天前，此一訊息對於動物是否感染狂犬病提供很重要的處置依據。在狂犬病的控制方面，獸醫主管部門應執行，包括疫情發生與改變的訊息公布、對疑似病例早期監測與通報、疾病的預防與控制，以及流浪犬的管控。在如何成為非疫國方面，一個國家可被考慮非疫國的基本要件，包括（一）在國內被列為是必須通報的疾病；（二）過去的2年有持續進行監測；（三）訂有預防措施；（四）過去的2年無本土案例發生；（五）過去6個月沒有進口食肉目或翼手目陽性動物（檢疫站內之檢疫動物除外）案例發生。如果一個國家符合上述要求者，是可以宣稱成為非疫區國家，反之，則視為疫區國家。在進口方面的建議，所有哺乳動物須來自非疫區國家，且經獸醫師認證及在運輸過程中無臨床症狀（從出生起或至少6個月或野生動物捕捉自遠離疫區國家的地區）；如果狗、貓和貂是來自疫區國家時，須經獸醫師認證且無臨床症狀並經長時間確認，以及定期接種疫苗，其中和抗體在3-12個月之間維持在≥0.5IU/ml或經隔離檢疫達6個月；如果反芻動物、馬科、駱駝科及豬科動物是來自疫區國家時，須經獸醫師認證且無臨床症狀並經長時

間確認，以及在運輸前12月以上沒有狂犬病的場所內飼養達6個月，或按照製造商的建議接種或補強疫苗。如果嚙齒動物、兔科動物及野生動物來自疫區國家時，須經獸醫師認證且無臨床症狀，以及嚙齒動物、兔科動物飼養在無狂犬病之生物安全設施達12月，或野生動物在12月以上沒有狂犬病的場所內飼養達6個月。Focal Points 的疾病通報方面，須獲得常務代表的提名，其負責收集動物健康信息，並透過WAHIS提交給世界動物衛生組織，Focal Points與OIE動物衛生信息部應保持聯繫，並參與WAHIS培訓。野生動物Focal Points負責提供在野生動物疾病信息給OIE，其方式有半年報及年報等方式。而在自我聲明方面，係根據OIE Codes 的指導，並基於合理的證據，由OIE代表簽署後提交給OIE總部，OIE總部將根據OIE代表的要求，將該項宣稱公布在OIE公報，而該成員國須為此自我宣稱負責。

（二）狂犬病標準小組討論與結論

本議題由 Dr Yooni Oh 介紹彙整18個與會國家所提報之資料，就最近一次狂犬病發生案及過去3年的發生案例、何時開始進行監測及是否通報，以及自我宣稱的疫情狀態，顯示如下：



Last recorded rabies case?

ASEAN	CA	IN	LA	MA	MY	PH	TH	VN
Dogs/cats		2016	2016	2015	2016	2016	2016	
Livestock		2015				2016	2016	
Wildlife		NA						
Human		2016			2016	2016 (?)	2016	
SAARC	BA	BH	NE	SK				
Dogs/cats		2016		2016				
Livestock		2016		2016				
Wildlife		2016		NA				
Human		2016		2016				
EA+Pac	CH	HK	JP	ROK	PNG	CT		
Dogs/cats	2016	1987	1957	2013		2013		
Livestock		1955	1953	2013				
Wildlife				2012				
Human	2016	1981	2006+	2004				

+; imported case

Number of Rabies cases; ASEAN

		CA	IN	LA	MA	MY	PH	TH	VN
Dogs/cats	2014		1074*	68	0	3	656	237	
	2015		1416*	50	11	7	695	311	
	2016		-	22	0	3	205	159	
Livestocks	2014						2	13	
	2015						4	19	
	2016						1	21	
Wildlife	2014		NA					0	
	2015		NA					0	
	2016		NA				1	0	
human	2014		98			180	236	7	
	2015		109			160	188	5	
	2016		2			25		5	

*; aggregated data for dogs/cats & livestock, +; imported case

Number of Rabies cases; SAARC

		BA	BH	NE	SK
Dogs/cats	2014		17*	30	
	2015		23*	65	
	2016				
Livestocks	2014	122		4	
	2015			10	
	2016				
Wildlife	2014				
	2015				
	2016				
human	2014	93			
	2015	64		1	
	2016		1		

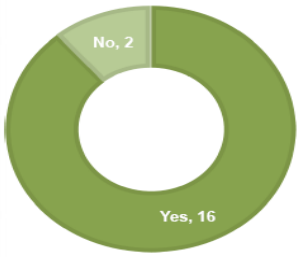
*; aggregated data for dogs/cats & livestock, +; imported case

Number of Rabies cases; EA & Pacific

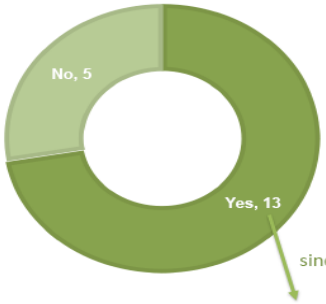
		CH	HK	JP	KR	PNG	CT
Dogs/cats	2014	90					
	2015	52					
	2016	12					
Livestocks	2014	4					
	2015	4					
	2016						
Wildlife	2014						148
	2015						93
	2016						21
human	2014		1+				
	2015						
	2016	appx 100					

*; aggregated data for dogs/cats & livestock, +; imported case

Animal Rabies, notifiable?



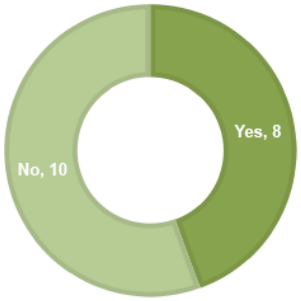
Rabies surveillance?



since

IN	LA	MA	PH	TH	VN	BA	CH	HK	JP	ROK	PNG	CT
2010	??	1952	1990	1993	2012	??	2005	1980s	2014	2002	1990s	1999

Internal process to declare rabies freedom?



	IN	MA	PH	TH	JP	PNG	CT	SK
Responsible to declare	MoA, DAH	Dir Biosec & SPS Div	NRPCC	MoAC	MAFF	MoA	COA	VPHS, MoH
Conditions	Follow OIE Code	No case from surveillance, quarantine of dog bite cases, on-going vax program within immune belt area	Joint DoH & DoA	no rabies for 2 years, surveillance, 80% vax cover, 80% dog register, no stray dog, movement control	No rabies report	Appropriate scientific and technical advise	Follow OIE Code	By clinical cases reported among Human

上述有關自我宣稱非疫區部分，目前只有日本始終維持為非疫國，其餘如香港、南韓及巴布亞紐幾內亞雖已有2年沒有疫情發生，但仍未自我宣稱為非疫區國家，主要是因為仍未達足夠的監測證據加以證明或野生動物狂犬病實在難以清除，以及有限資源及獸醫人力等理由。

單元九：夥伴論壇

本議題分別由全球狂犬病控制聯盟（GARC）、糧農組織亞太區域辦事處（FAO）、世界動物保護協會、澳洲外交事務和貿易部（DFAT）、日本信託基金（JTF）及南亞區域合作聯盟（SAARC）秘書處等單位之代表，簡介該單位在狂犬病的控制上所做的努力。

單元十：消除犬媒介狂犬病之全球框架

本議題由 Dr Mary Joy N. Gordoncillo 及 Dr Yooni Oh總結本次研討會目標在於：（一）傳播在不同條件下成功消滅犬媒介人狂犬病的正確觀念，並探討如何將其擴大及推展至其他流行地區；（二）建立從國家、區域、全球和其他利益相關者（包括私人機構）的投入致力於消滅犬媒介人狂犬病的支援機制；（三）提倡“One Health-防疫一體”觀念，以結合人與動物衛生部門及其他部門間的合作模式；（四）形塑與捐助者和利益相關者共同合作在消滅犬媒介人狂犬病的未來願景。同時也期望進而形成一個全球性策略框架，而此一全球性框架，包含若干重要支柱，包括（一）社會文化方面的支柱：狂犬病控制涉及面廣，其利益相關者包括一般公眾，而社會文化背景往往影響其對狂犬病的觀念，進而影響其犬隻飼養管理方式，因此，有必要使其了解因果關係，以激勵其行為改變，而使計畫變為可行而達到最終目的；（二）技術方面的支柱：即是需要有健全的動物衛生及公共衛生系統，且必須強化及獲得適當的資源，並清楚其

缺漏而加以填補，其包括：1.疫苗接種：犬用及人用疫苗及免疫球蛋白應確保安全、有效且方便取得，並推動實施大規模狗的疫苗接種--最經濟有效的防疫措施，以實現消滅犬媒介人狂犬病之目標；2.後勤支援：收集有關預測所須的數據，以作為疫苗採購依據，並建立和維持有效的供應和實施大規模犬隻疫苗接種計畫及PEP治療所需的後勤支援；3.診斷：透過具有精良設備及訓練有素的實驗室診斷，以提供快速而準確的狂犬病診斷量能；4.監測：支援完善的監測、採樣、報告及資訊共享；（三）組織方面的支柱：即是防疫一體，結合人及動物衛生部門和其他利益相關者間的密切合作，其包括：1. 防疫一體：透過部門間的協調，促進中央與地方建立防疫一體的防疫網絡；2.良好的管理：建立角色清楚、完善的指揮體系及可衡量成效及時間表的良好管理；3. 一致化：協調並促進中央與地方之部門間工作計畫及重點活動的一致化；4.協調：整合人力資源、後勤支援及基礎設施等，使相關方案與倡議適當可行；5.指標與性能：確立目標與指標，以監測與驗證數據來進行成效評估，以確定區域的需求與額外的支助；6.監測與評估：支持監控與評估國家計畫的成效，以確保其為及時且具有成本效益的計畫；（四）政治方面的支柱：即是成功取決於政治支持消滅犬媒介人狂犬病強度與是否將其列為一個國家、區域和全球的公益作為，其包括：1.政治支持：當國家不穩定（政治動盪，自然災害等）將嚴重影響其成敗；2.國際支持：鼓勵各國要求透過WHO的世界衛生大會與OIE會員代表大會在消滅犬媒介人狂犬病方面的決議；3.法律框架：建立並實施狂犬病通報與消滅的適當法律框架；4.示範的影響：展示落實犬隻疫苗接種方案對保護與拯救人類生活的影響，以提供令人信服的理由；5.區域參與：積極支持國家和地區的參與和合作，承諾一個消滅狂犬病的方案，並促進經驗的交流、充分利用資源與共同參與；（五）資源方面的支柱：即是消滅狂犬病的活動經常跨越數年，並因此需要持續且長期的支持，包括：1. 投資案例：促進政府在消滅犬媒介人狂犬病的投資案；2.業務計畫：在消滅犬媒介人狂犬病全球框架的基礎上成立業務計畫；9.投資：鼓勵各種形式的投資與夥伴關係（私人和公共投資）的資源與參與。最後成功的關鍵因素，在於長期的政治與社會承諾、社區參與，以及持續保持70%的犬隻免疫率，由小逐漸擴大規模，並且需要有充足的資源、後勤支援及基礎設施、促進疫苗的銀行的設置與採購，以及確保有質量保證的狂犬病疫苗與人免疫球蛋白的充足供應到達偏遠、農村及高風險區，且須開展各級能力測試，以維持實施人員的培訓與激勵。

單元十一：研討會之結論與建議

一、持續關注那些無狂犬病的國家/地區所面對狂犬病入侵的威脅，以及許多仍有疫情流行的國家進行消滅狂犬病所面臨的挑戰。

二、同意各國考量整體情形與實際狀況提出在該地區防疫措施，包括監測、診斷、疫苗與疫苗銀行，以及在防疫一體的協調下推動消滅狂犬病的活動，即使如此，仍有一些缺口持續存在。

三、評選一些國家的狂犬病監測進展，並大力鼓吹向 WAHIS 提出：以瞭解成效發展與趨勢，即進行狂犬病的風險評估和管理，驗正防疫措施的成效，並呼籲於 2030 年前達成全球消滅犬媒介人狂犬病的目標。

四、關注在亞太地區的動物狂犬病的情況與進展，並同意提供給研討會的綜合性信息作為數據庫，以支持未來在該地區消滅狂犬病的分析。

五、同意 OIE 準備一份研討會的分析文件，就今後的行動提出建議。（對於尚未更新最新資料的國家，請於 2016 年 6 月中旬完成相關問卷的答覆）。

六、同意該報告分發給 OIE 的區域成員，包括東盟、南盟、南太平洋委員會及其他相關組織如 FAO、OIE、GARC 與世界動物保護協會。

七、同意各區域所採取消滅犬媒介人狂犬病的辦法，是符合並支持 2015 年 12 月瑞士日內瓦舉行的狂犬病全球會議所倡議的全球性框架。

八、支持一些消滅犬媒介人狂犬病之額外技術準則的建立，如緊急應變計畫、疫苗免疫（包括基於風險的接種方法與後續之監測）、犬隻登記、狗口數估算、犬隻管理，以及有利於犬避孕方面的研究等。

九、鼓勵各會員國按照 OIE 標準申請無狂犬病的國家/地區的自我聲明。

十、同意要求 OIE 除了熒光抗體試驗外，把直接快速的組織免疫化學染色法納入 OIE 手冊中的黃金標準，並指出該檢驗方法為一種廉價的替代診斷方法。

十一、同意挹注資金後續於 2019 年舉行研討會，以評估消滅狂犬病及符合國際標準的進展。

十二、感謝各與會國家、參與者在準備與提供相關訊息所作出的貢獻。

十三、感謝泰國牲畜發展部（DLD）協助辦理本次研討會。

肆、心得及建議

一、本次研討會讓我們清楚了解 OIE 在推動消滅犬媒介人狂犬病的政策擬訂之過程及建立全球性框架蒐集全球資訊的運作模式，位來亦可作為國內擬訂狂犬病防疫策略之參考作法。

二、藉由此次會議可以瞭解各國的狂犬病疫情概況與防疫作為，可供我國在狂犬病防疫方面的參考。

三、針對狂犬病疫苗免疫的頻度及覆蓋率，各國因疫情狀況及財力條件的不同而作法上亦有所不同，譬如有狂犬病疫情風險高的國家其疫苗免疫多採每年補強 1 次，免疫覆蓋率大致訂在 70%以上，而泰國則訂犬隻注射率達 80%為防疫目標。日本雖是狂犬病的非疫國，但為防範外來狂犬病的入侵，其每年的 4-6 月間均要求飼主帶犬隻注射狂犬病疫苗。

四、有關 OIE 大陸地區狂犬病參考實驗室研究推廣的狂犬病腦組織採樣方式，對於大型動物及須一次進行多數動物之檢測時，確實是一種很實用的作法，且可大大降低以電鋸開腦可能的汙染情形，實值得推廣使用。

五、本次研討會中，在動物福利方面，我國以實際案例（Video）提供國內在面對即將廢除人道處理措施前，積極推廣對收容所犬隻進行訓練成有用的工作犬（如檢疫犬、狗醫生..等）的經驗分享，以各國參考。

六、本次研討會特別強調要能成功消滅犬媒介人狂犬病之最終關鍵在於長期的政治支持與社會的一致共識，並共同參與，且使有風險地區之犬隻的免疫覆蓋率可持續維持在 70%以上。而我國的狂犬病疫情屬於森林型（野生動物）之狂犬病，欲將其消滅其困難度遠勝於犬媒介人的狂犬病，因此，更需要長期的政治支持與社會的一致共識與參與，才有可能達成消滅的目標。

伍、誌謝

感謝世界動物衛生組織 OIE 亞太區代表 （OIE RR AP）結合東南亞次區域代表（OIE SRR SEA）共同舉辦此次狂犬病防疫國際性會議，使我方人員有機會瞭解全球狂犬病防疫趨勢與框架，以及各國狂犬病疫情概況與防疫作為，可供我國在狂犬病防疫方面的參考。

陸、附錄 1：研討會期間照片

圖 1、開幕式各國泰代表人員合影

圖 2、開幕式首先由 OIE 亞太區代表 Hirofumi Kugita 博士致歡迎詞

圖 3、我國代表參與會中討論情形

圖 4、我國代表與 Hirofumi Kugita 博士合影

圖 5、我國代表與 OIE 亞太區代表處 Yooni Oh 博士及韓國代表於我國海報前合影

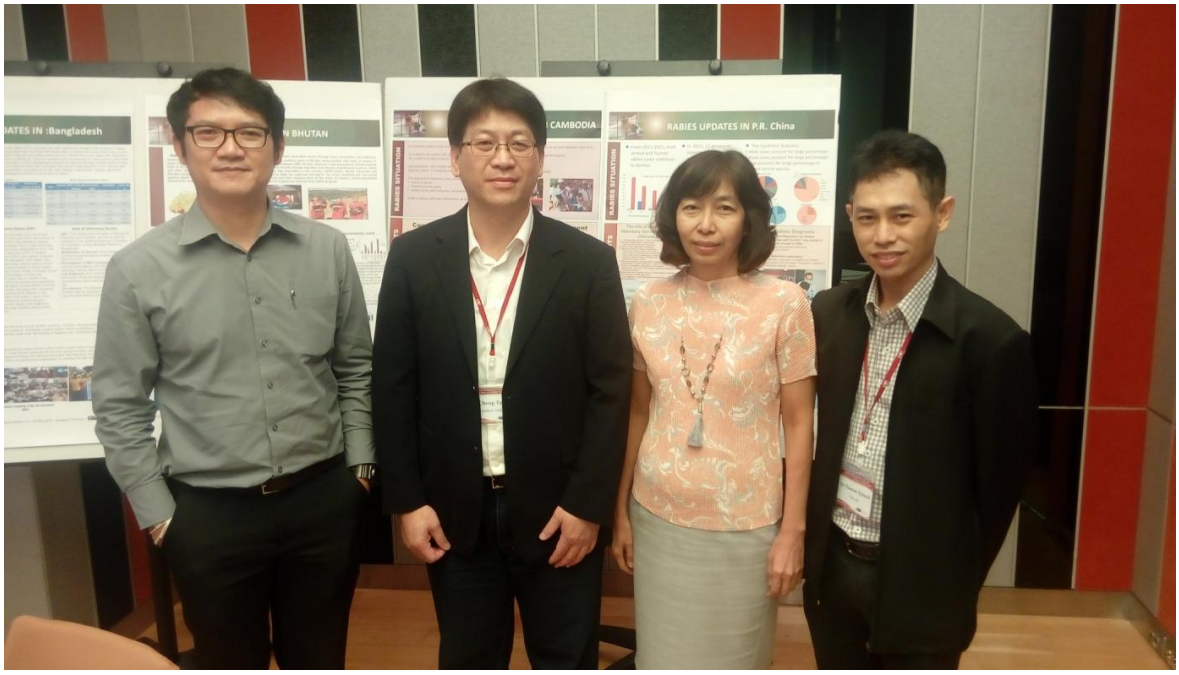


圖 6、我國代表與泰國代表人員合影

附錄 2：參與研討會之各國海報

RABIES UPDATES IN :Bangladesh

RABIES SITUATION

In Bangladesh more than two thousand people used to die of rabies annually before 2010, but there has been substantial change in the scenario of rabies during the last few years. Bangladesh has an estimated 1.6 million dog population with more than 83% being stray or community unvaccinated dog. Around three to four thousand people are exposed to animal annually. The majority of dog bite and rabies victim are poor, children from rural areas with superstition on dog bite management and ignorance and inaccessibility to post exposure prophylaxis. There are exposure and development of rabies among cattle head and other domestic animals also with reporting of eight thousand cases annually. In 2010, Bangladesh adopted the National Strategy for Elimination of Dog mediated rabies, formed the multisectoral National Steering Committee and National Technical Committee and started implementation of the national plan having advocacy, dog bite management, mass dog vaccination and dog population management as the main strategic approaches. Though, significant accomplishments are done with some good achievements, but there challenges for achieving elimination of rabies.

Human Rabies Before and After 2010

Year	Infectious Disease Hospital, Dhaka	National Survey
Before 2010	>160	
2010	104	2147
2011	109	
2012	88	1445
2013	86	
2014	93	
2015	64	

Intradermal Vaccine Status

Year	Number of District IDRV Centers	Number of victims receiving IDRV	Increase in number of IDRV
2009	0	0	0
2010	1	43,259	Base line
2011	8	45,536	
2012	52	113,214	Double
2013	64	227,369	About Double
2014	65	233,908	Continuing
2015	66	293,403	Continuing
Total	66	956689	

Mass Dog Vaccination Status

Year	Rounds	MDV Campaign Number	Estimated Dogs	Vaccinated	Coverage %
2011	1st	1	4500	3285	73.0
2012	1st & 2nd	39	60252	51474	85.4
2013	1st & 2nd	16	18261	16089	88.1
2014	1st &3rd	13	31271	26318	84.2
2015	1st	5	126303	97917	77.5
2016	1st	6	11520	9984	86.67
2011-15		73	240587	195083	81.1

KEY ACHIEVEMENTS

Mass Dog vaccination

Bangladesh did piloting on MDV in a district municipality, Cox's Bazar in 2011 with no experience and logistic. This piloting has become a phoenix bird in scaling up the MDV throughout the country with much enthusiasm, capacity building and momentum in implementation of rabies elimination activities of the country. So far about two hundred thousand dogs have been vaccinated through 73 MDV campaigns covering all 64 district municipalities, six whole districts and a number of sub-districts with more than two thousand expert dog catchers, thousand dog vaccinators, a dozen of MDV consultants distributed across the country. The country can now achieve three rounds of MDV within the shortest possible time, if fund and vaccine for MDV are made available.

Human Rabies IDRV

There is reporting of 17 human cases and 122 animal cases of rabies up to April in the year 2016; the number of human cases in 2015 was 64 in the Infectious disease hospital (IDH), Dhaka. But before 2010, it was more than 160 annually. In a national survey, conducted in 2010, the number of human rabies cases was 2147; in another national survey conducted in 2012, the number of human cases showed decline with estimated 1445 cases. The present estimate of annual human rabies case is around two hundred. Theses downward trends in human rabies cases are thought to be the impact of high coverage of post exposure prophylaxis and coverage of mass dog vaccination. Before 2010, there was no centre of the health providing PEP; in 2010 one centre was established providing free intra dermal rabies vaccine (IDRV) to 43259 victims. The number of centers providing IDRV increased every year since then, covering all 64 districts of the country by 2013 with at least one center in each of the districts. The number of victims of animal exposure receiving free IDRV along with rabies immunoglobulin (RIG) also increased every year reaching around three hundred thousand in 2015.

Role of Veterinary Service

NSC: The minister and Secretary of Ministry of Fisheries and Livestock and DG of LSD are members of the National Steering Committee for Elimination of Dog Mediated Rabies in Bangladesh

Mobilization of Vaccine: DLS collected two hundred thousand doses of rabies vaccine for MDV from OIE

Participation of MDV Campaign: DLS is actively participating in the MDV campaign in planning, training and in vaccinating dogs.

Lab Diagnosis: DLS is trying to strengthen and restart of the lab diagnosis with training of lab personnel home and abroad, equipping the lab.

Surveillance: The Epidemiology Unit collect monthly data on exposure of cattle and goat to dog and development of rabies.

MAJOR CHALLENGES

Deterrents to Animal Rabies Elimination in the country

Availability of sufficient fund is the most important deterrent to complete the three rounds of MDV covering 1.6 million dog population. It needs prioritization both in the ministry of Health and ministry of Fisheries and Livestock. Availability of good quality vaccine according to need is another deterrent. Rabies surveillance along with lab diagnosis is another important weak area with lacking of reagents and insufficient manpower at the central and peripheral level.

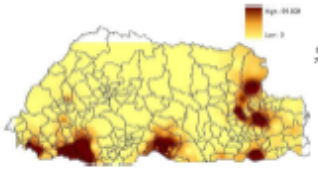
Conclusion

Bangladesh may establish itself as one of the countries in South Asia achieving rabies freedom within 2030 or even before if support from national and international level are available to complete the three rounds of MDV. It has trained manpower all over the country to catch, vaccinate and counting dogs. The country has functional national level multisectoral committee, national strategy and national action plan with allocation of some fund for MDV. It needs more funds from the government, development partners and other non government organization to complete the task within the shortest possible time when the iron is still hot.

Preparatory meeting: A key for successful MDV

RABIES UPDATES IN BHUTAN

Rabies was present in most parts of Bhutan until the early 1990s but has been controlled mainly through mass vaccination and restrictive elimination of dogs. Currently, only sporadic cases (animals) are reported in southern parts of Bhutan along borders with India. In human 17 cases of rabies (cumulative incidence: 2.3/100,000 pop) have been reported between 2006- till date. However, large populations of free-roaming dogs or stray dogs prompt concern for animal welfare and for public health threats through dog bites and disease transmission such as rabies and other zoonotic diseases. In order to sustainably manage the stray dog population in the country, CNVR (Catch, Neuter, Vaccinate and Release) program was started in 2009, wherein the stray or free-roaming dogs are captured, brought to the clinic, neutered and vaccinated against rabies, put permanent identification mark through ear-notching and then released back to the place of capture. Community-based animal birth control (CABC) program are also conducted in the villages to support the national level CNVR program



Rabies endemic areas in Bhutan

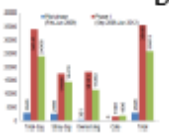
CNVR being performed in field clinic

Technology or Tools employed

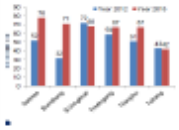
The CNVR program are being monitored and evaluated through dog population surveys by estimating the population size, assessing the CNVR coverage, and health status of dogs

The CNVR coverage is assessed by counting the proportion of ear-notched dogs sighted during the population surveys or by marking vegetable colour paints spray of vaccinated dogs during mass vaccination campaign and then estimate the vaccination coverage. The health status are assessed by examining the body and skin condition of neutered and intact /entire dogs.

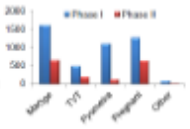
Delivery & Key achievements



A total of 60,993 dogs and 3354 cats have been covered between February 2009 and June 2015 with an overall estimated CNVR coverage of 64 % in urban areas and 45 % in rural Bhutan



Sample survey in six districts demonstrated that a higher proportion of neutered dogs were observed in 2015 (64%) than in 2012 (52%) indicating the success of the CNVR program.

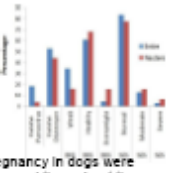


CNVR program have improved animal welfare and also health condition of dogs in Bhutan.

There was significant reduction of pyometra and transmissible venereal tumour (TVT) cases in stray dogs after implementation of CNVR program.

Delivery & Key achievements cont...

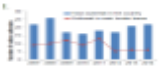
Neutered dogs had significantly higher overall body condition scores and lower prevalence of CDV and CPV than entire/intact dogs.



Pregnancy in dogs were observed throughout the year with higher incidences during the months of September to December, which was confirmed through foetal counts at the time of ovario-hysterectomy at CNVR clinic (n=7938

Regular monitoring of the free-roaming dog population size in Thimphu city demonstrated stable population size after continuous CNVR program

Reduction of rabies outbreaks in animals in the south border towns and drastic reduction of human rabies deaths following CNVR & mass rabies vaccination campaigns



Key elements for further improvement

- ❖ Carry out CNVR program prior to peak breeding season by targeting females.
- ❖ Conduct regular monitoring to evaluate the effectiveness of the CNVR program through six monthly indicator counts

Conclusions and recommendations

-Recognizing the benefits of the CNVR program and considering the existing coverage, the program should be continued in Bhutan

-Rabies is a cross-border issue in most of SAARC countries, so regional approach focusing on cross border control program is the key for rabies elimination.

-Rabies control is a public good and should be implemented through "One Health" approach

RABIES UPDATES IN CAMBODIA

RABIES SITUATION

In Cambodia, Rabies is still very much neglected. Although, the disease has been put on the notifiable disease list and It has been little done.

According to the Institute IPC, 19.705 (93.5%) patients who attended the IPC rabies PEP in 2013 report dog bite injuries.
As a majority of rabies endemic countries, rabies surveillance in Cambodia is weak.

Dog population : Est. 5 million dogs in rural areas (Pasteur Institute, 2007)
Dog vaccination : In Cambodia estimated of dog vaccination are less than 2% in rural areas (CIRAD-IPC, 2009)

The approach to implement mass vaccination
- House-to-house
- Fixed vaccination posts
- Mobile teams with temporary vaccination posts

ZTWG to discuss and share information on Animal and Human Health

KEY ACHIEVEMENTS

Coordination

➢ *The role of the National Veterinary Services in rabies elimination*
- National Strategy for Rabies Control and Elimination (NSRCE) by 2015-2020 developed;
- Action plan for implementation of NSRCE developed;
- National Strategic Plan for Zoonoses Control developed;
- ZTWG (MAFF/MoH) established;
- Celebrate World Rabies' Day with relevant institutions and partners every year;
- Rabies is a notifiable disease in Cambodia.

Vaccination

➢ *Rabies Vaccines and Vaccination*
- Monitor importation and distribution of rabies vaccine;
- Dog vaccination campaign during World Rabies' Day and under pilot vaccination campaign;

➢ *Rabies Diagnosis*
- Staff trained by IPC but no routine diagnosis conduct

➢ *Rabies Surveillance*
- Animal rabies surveillance guideline developed but reporting rabid case from the field is still limited

➢ *Animal Welfare in Rabies Elimination*
- No policy on culling stray dogs

Commitment

➢ *Working towards achieving and maintaining rabies freedom*
- To have NSRCE 2015-2020 and its implementation plan endorsed by MAFF and MoH;
- To continue collaboration between Animal Health and Human Health sector for the response to rabies cases;
- To seek for technical and financial supports in order to operationalize the NSRCE 2015-2020 and its implementation plan.

MAJOR CHALLENGES

Future Plan
- To strengthen the National Mechanism to develop functional and sustainable coordination on zoonotic diseases between the Animal-Human Health sectors. This is critical to addressing the challenges posed by endemic, emerging and re-emerging zoonoses. It outlines the terms of reference, standard operating procedure and focal points for coordination at the National level and is to be used as a guideline for enhancing coordination at lower level.
- To work together between Animal and Human Health sectors for coordinating of planning and response to zoonotic disease outbreaks
- To share active and passive surveillance information on known zoonoses and unusual disease events with national and international partners.
- To conduct joint risk assessments to allow efficient and coordinated responses to zoonotic disease threats.
- To conduct coordinated risk reduction activities including strategy development, material development and joint IEC campaigns.
- To provide a forum and dissemination point for the sharing of research proposals and outcomes both nationally and internationally.

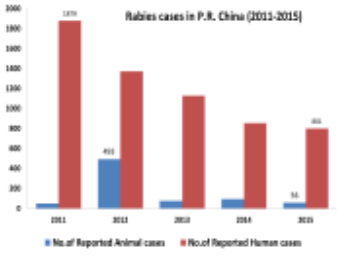
Challenges
- Public awareness is very low;
- Limited number of owned dogs vaccinated against rabies (cost related);
- Animal rabies case is neglected and not reported;
- Limited funding support for rabies control activities

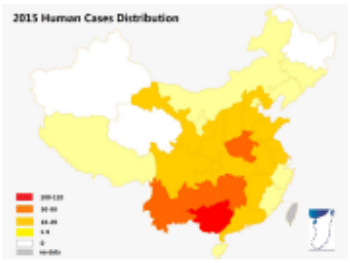
RABIES UPDATES IN P.R. China

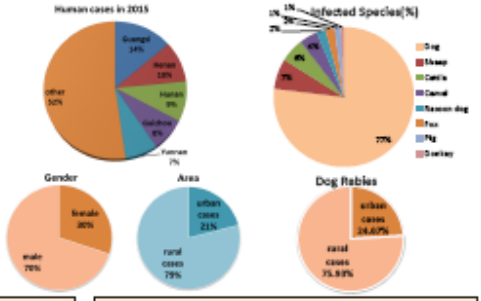
RABIES SITUATION

- From 2011-2015, both animal and human rabies cases continues to decline.
- In 2015, 27 provinces reported 801 human rabies cases, declines by 13% compares to 2014.
- The Epidemic features:

1.Male cases account for large percentage.
2.Rural cases account for large percentage.
3.Dog accounts for large percentage in infected animal species.







KEY ACHIEVEMENTS

The role of the National Veterinary Services in rabies elimination

- The Veterinary Services in China includes:

1.Veterinary administrative departments:
- Veterinary Bureau, Ministry of Agriculture

2. Animal health supervision institutions
3. Veterinary technical support institutions:
- China Animal Disease Control Center(CADC)
- China Institute of Veterinary drug Control(CIVDC)
- China Animal Health & Epidemiology Center(CAHEC)
- National Veterinary Research Institutes under Chinese Academy of Agricultural Sciences (CAAS) :

4. Entry-exit inspection and quarantine institutions:
- Administration of Quality Supervision , Inspection and Quarantine(AQSIQ)

5. Technical committees, associations and societies
- National law: <The Law of the People's Republic of China on Animal Disease Prevention>

<National Mid-and Long-term Plan on Animal Disease Prevention and Control launched on 20th May, 2012>
- Local regulation: Kennel Management Regulation
- (Provincial/Civic)

Rabies Vaccines and Vaccination

- Policy of overall vaccination, with local budgets.
- Vaccines includes:
  - Live(Flury)
  - Inactivated(VP12/G52/HCP-SAD/Flury LEP/ CVS-11/SAD)
- Mass Vaccination Demonstration Program

1. Red collar project: Anhui, Guizhou, Shanxi province, 2013-2016), combined measures of mass vaccination, surveillance, publicity and training.

World Rabies Day publicity　　Vaccination

2. Guangxi province project (2011-2015)

Rabies Diagnosis

- "Technical Regulation for Rabies Prevention and Control" was issued in 2005 and revised in 2006 .
  - The related technological standards includes:GB/T18639
- OIE Reference Laboratory :
  - Diagnostic Laboratory on Rabies and Wildlife-associated Viral Zoonoses, Changchun Veterinary Research Institute, CAAS.

Regional Rabies Diagnosis Workshop in Changchun Veterinary Research Institute, August 18th-22nd, 2014.

MAJOR CHALLENGES

1. Long-term mechanism for rabies prevention and control needs to be established.
- Specific national law or regulations for rabies control is needed.
- Cooperation between different ministries involved in rabies control should be strengthened.
  - MOA-animal rabies vaccines administration, organization of dog vaccination and surveillance.
  - NHFPC-human rabies prevention and treatment.
  - MPS-city（above county level）dog registration, catch and kill infected dogs.
  - FDA-human rabies vaccines administration.
  - FG-wildlife rabies surveillance and treatment.

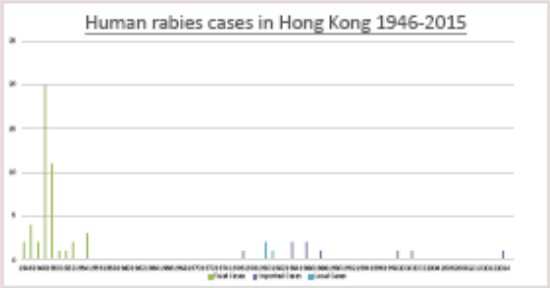
2. The management of rural dogs is hard and complicated.
- No clear responsible agency for rural dogs, which accounts for about 80% of dog population in China.
- More and more rural dogs become stray dogs accompany with quick urbanization.

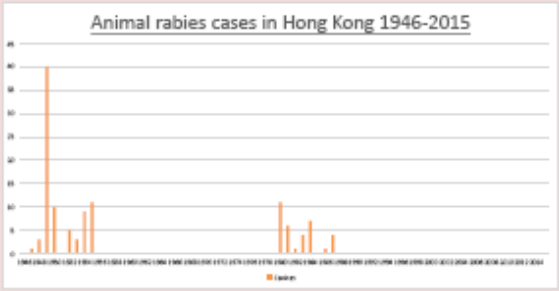
3. Lack of budget, overall vaccination is hard to implement.
- No national special funds for animal rabies vaccination , surveillance, training and publicity.

4. Awareness of rabies prevention and responsible dog raising is low.
- People in remote areas is lack of knowledge of rabies, has no money to pay for PEP or dog vaccination.

RABIES UPDATES IN [HONG KONG]

RABIES SITUATION





Animal and human rabies cases in Hong Kong have been recorded since 1946. Although rabies infection in humans and animals gradually subsided after the Dogs and Cats Ordinance was enacted and the enhancement of control measures in 1950, the disease reemerged in humans and animals in 1980. A mass stray dog catching operation to confine the spreading of disease in Hong Kong was conducted and over 69300 dogs were destroyed in that year. Sporadic outbreaks of the disease continued to occur in humans and animals and 8 cases of human rabies and 34 cases of animal rabies (32 in dogs and 2 in cats) were reported from 1980 to 1988.The last local and imported human rabies cases in Hong Kong occurred in 1981 and 2014 respectively. Hong Kong has been free of local human rabies since 1982 and animal rabies since 1988. Hong Kong is still at high risk of rabies outbreak as it is located in an endemic region of rabies with many cases occurring just across the border. To prevent the disease occurring in Hong Kong, a number of measures which focus on dogs and cats, backed by laws, have been put in in place.

KEY ACHIEVEMENTS

[Role of AFCD]

The Agriculture, Fisheries and Conservation Department (AFCD) is responsible in managing stray animals with the aim to control rabies.
To control stray dogs, AFCD adopts the capture-and- remove approach which is also applied by overseas countries and professional bodies. AFCD catches stray dogs in response to complaints. Dogs with good health and temperament will be rehomed via Animal Welfare Organizations, whilst dogs cannot be rehomed will be humanely put down.

[Legislation and Vaccination]

The Dogs and Cats Ordinance (Cap. 167) and the Rabies Ordinance (Cap.421) are the two main pieces of legislation developed in response to previous rabies outbreaks for the prevention and control of the disease in order to safeguard public health and public safety in Hong Kong.
The law stipulates that all dogs over 5 months of age must be licensed, microchipped, vaccinated against rabies and properly kept under control in public places. We estimated that over 85% of pet dogs in Hong Kong are vaccinated against rabies.

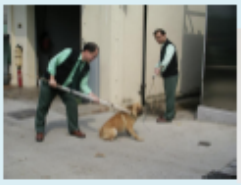
[Rabies Surveillance]

Importation control for animals and animal products are in place.
Animals are quarantined based on the disease risk of the importing country.
Animals, especially dogs, which bite a person will be quarantined and observed for 7 days for any signs of rabies; animals that die or display clinical signs will be tested.
The head of the animal will be sent to the Government Laboratory for testing using the standard direct fluorescent antibody test (dFA).
Private veterinary clinics will also report any suspected cases to AFCD.

MAJOR CHALLENGES

With the development of internet purchase and door to door delivery, members of the public may purchase pets sold illegally online which are shipped across the border making import control and traceability very difficult. These "pets" may also include wildlife with unknown rabies status.

There are diverted opinions in Hong Kong as to the management of stray animals. Some members of the public could not accept euthanasia as a last resort in handling stray animals despite other measures are also in place to reduce stray animals on the streets.

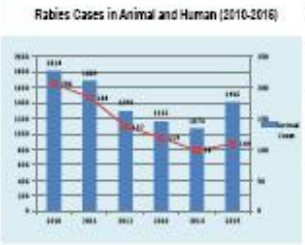


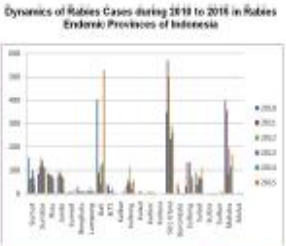
RABIES UPDATES IN INDONESIA

RABIES SITUATION

Rabies is endemic in several parts of Indonesia. Of 34 provinces in Indonesia, 25 reporting rabies. The Government of Indonesia have worked together with international organizations to develop comprehensive program to control rabies in Indonesia. The program is using a One Health approach. Collaboration of National and provincial animal health services as well as international organizations worked closely to implement rabies strategic plan and improve as well as facilitate control program .

The trend of animal and human rabies cases in Indonesia is declining in the last 5 (five) years, with exception in 2015 where animal and human rabies cases is increase, due to an increase of cases in Bali, Maluku, South Kalimantan and South Sulawesi.





KEY ACHIEVEMENTS

Progressive Control Program

- *Road map for rabies elimination by 2020*
- *Maintaining 9 (nine) provinces free from rabies.*
- *Progressive control program- focus on small island and other targeted area (Sitaro, Nias, Bali, Flores-Lembata).*
- *Real time reporting system using iSIKHNAS (integrated national animal health information system) – integrated with health reporting system through SIZE (information system for zoonoses and emerging diseases).*

One Health Program

- *Establishment of one health task force for rabies since 1970s through "rabies coordination team" (Ministry of Agriculture, Ministry of Health, and Ministry of Internal Affairs).*
- *Establishment of National Committee for Zoonosis Control (2012) with more ministries involved and broader tasks.*
- *Establishment of integrated bite cases management (IBCM) - a one health concept in actions.*
- *Development of a Integrated Road Map for Rabies Elimination.*

Diagnosis Capacity

- *8 (eight) Diseases Investigation Centres (DICs) as a regional veterinary laboratory has capacity in rabies testing using FAT and other methods.*
- *Establishment of National Reference Laboratory for Rabies in Bukittinggi.*
- *More Provincial and district veterinary laboratory with capacity to diagnose rabies.*
- *Development of Rabies Immunoperoxidase Antigen Detection (RIAD) with AAHL, a robust test for rabies without using fluorescent microscope.*

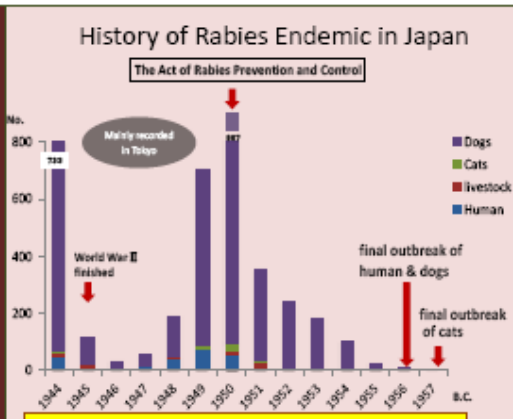
Pictures: Courtesy of Doggy Style Vaccination Team, Bali

MAJOR CHALLENGES

- Insufficiency in funding support for progressive rabies elimination by 2020 by Central and Local Government.
- Limited vaccine availability for vaccination program.
- Limited veterinary resources to implement rabies control program, especially in the local government.
- Availability of local regulations to support rabies control program - only available in some area.
- Roaming/stray dogs - issues in many area.
- Lack of responsible pet ownership in many area.
- Variety of structure of veterinary services in local government – limitation in the implementation of rabies control program.

RABIES UPDATES IN [JAPAN]

RABIES SITUATION



Japan has remained free from Rabies for more than 50 years!

- **The Act of Rabies Prevention and Control**

Target animals: Dogs, cats, raccoon dogs, foxes, skunks

➢Dog owners must register their dogs and have the dogs vaccinated.

➢Importers must submit the health certificate issued by the exporting countries ensuring the animal is not infected.

➢Resource mobilisation :

–Dog owners: to register their dogs and have them vaccinated

–Local governments: to capture the stray dogs

–Ministry Institutes: Import/Export Quarantine and Protocol

- **Infectious Disease Control Act**

➢Notifiable system for all imported terrestrial mammals

Target animals: except for the above and livestock animals

- **The Act on Domestic Animal Infectious Disease Control**

Target animals: Livestock animals

➢ Importers must submit the health certificate issued by the exporting countries ensuring the animal is not infected.

KEY ACHIEVEMENTS

[Rabies Surveillance]

Surveillance and epidemiology

➢ACTIVE SURVEILLANCE for Dogs and Wild animals (MHLW)

* Dogs and the wild animals biting human, as well as dogs and the wild animals with clinical signs, etc. are targeted for active surveillance since August 2014.

** Wild animals targeted for surveillance:

- 1st priority: raccoons, raccoon dogs, foxes, small Indian mongooses
- 2nd priority: Japanese Badgers, Masked Musang, Japanese minks, martens
- 3rd priority: bats

➢PASSIVE SURVEILLANCE for Livestock animals (MAFF)

[Rabies Diagnosis]

Laboratory diagnoses

- ➢ National institute of Infectious Disease
- ➢ Some of local institutes for Public Health
- ➢ Animal Quarantine Service*

* In Sep. 2015, FAVN test for rabies in AQS in Chubu Diagnostic Center was approved by EU reference laboratory for Rabies Serology

MAJOR CHALLENGES

Challenges

- Remember or learn the terrible rabies epidemic history for raising rabies threat awareness
- Public awareness activity for both pet owners and the general public
- Improvement of surveillance system especially for wild animal
- Technical training (*e.g.* Brain Sampling and Diagnostic Tests)
  - ➢ for local governments (enhanced from 2015)
  - ➢ for all new Animal Quarantine Officers (continuation of current protocol)
- Strengthen Multi-sectoral coordination
  - Regional, national and sub-national coordination
    - ➢ Technical meeting and information exchange among national and regional governments
  - Inter-sectoral coordination
    - ➢ Information exchange and attendance at Governmental and International conferences

RABIES SITUATION

Human Rabies Situation

■ Last Outbreak: 2004 (No cases since 2005)
• 1 Human Death by Dog Bite
■ Number of animal bite cases, 2005-2013
• Dog Bite (over 80%) > Cat(12%) > Wild animals(5%)

■ Treatment
• Over 80% -Exposure Category Ⅲ Wound
• Wound Tx (50%) >Complete PEP(30%) >Incomplete PEP(20%)

North Korea- Uncontrolled
12:1
51 million
4.4 million
DMZ(demilitarized zone)
Gangwon province
Gyeonggi province
High Risk Regions
☑ Mountainous Area
☑ Rural Area
☑ Close to DMZ, North Korea
☑ Wildlife
☑ Dense Population
124°18'E-130°41'N
38°37'-43°00'N

Animal Rabies Situation

■ Last Outbreak: 2013 (No cases in 2014, 2015)
• 6 Cases- 1 Cow, 4 dogs, 1cat

KEY ACHIEVEMENTS

Annual Vaccine Supply

■ Distributed Vaccine Doses
• >3.5 million doses yearly
Domestic Animal: 1.4 (Locally Produced)+1.5(imported) million doses
Wild Animal: 970,000 doses

■ Vaccination
• Whole Country - Compulsory Vaccination of Dogs and Cats
• High Risk Regions
-100% Compulsory Vaccination
-All dogs and cows

Region Focusing Surveillance

■ Target Region: Gyeonggi, Gangwon province
• Active Vaccination and Annual Sample Monitoring
• Immunity Evaluation through antibody formation rate
■ Rabies Ab Positive Rate in High Risk Regions
• 2014- Dog 78% (64.1%, over 0.5 IU/ml)
Cow 66.6% (59.2%, over 0.5 IU/ml)

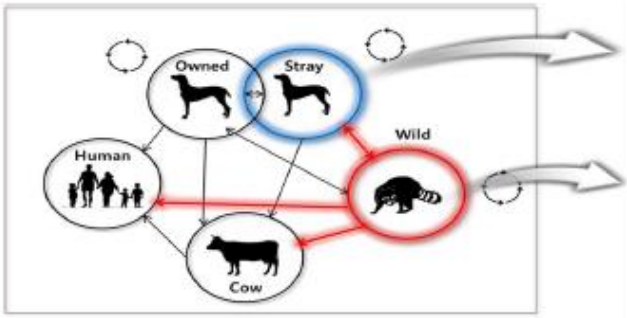
■ Wild Life (Raccoon)
• Row Immunity- 35.1%

International Movement

■ Int'l Move of Dogs and Cats

■ Pet Quarantine Requirements (Bringing to Korea)
• Microchip
• Blood Titre Test (Rabies) - greater than or equal to 0.5 IU/ml

MAJOR CHALLENGES



Our Challenges Ahead for Elimination !!

■ Stray Dog Control !
• About 60,000 Stray Dogs
- Animal Protection Center : Vaccination
- Surveillance on Stray Dogs: Rabies Immune Status
• Raising public awareness of animal welfare
- Encouraging Dog registration
- Adoption Support (Stray->Owned)
- Veterinary Services:
Pet Playground in Public Park, Pet Festival, etc.
■ Wild life Control !!
• Research on Raccoons Ecology & other wildlife vectors
• Immune Barrier Formation
- High Risk Regions: Oral Bait Vaccine
- Regularly Monitoring/Annual Surveillance

RABIES UPDATES IN LAOS

RABIES SITUATION

Rabies is contagious disease can be transmitted from animals to humans which cause genus Lyssavirus of family Rhabdoviridae. Rabies is spread widely across the world more than 55,000 people died in each year from rabies disease. About 95% of people died is mainly found in Asia and Africa.

In 2015 Department of Livestock and Fisheries (DLF) was reported rabies infection of 6 provinces such as Vientiane capital, Champasak, Viengchan, Laungphabang, Bokeo and Sekong provinces found that infection rate 82.05% of 39 cases

No	Provinces	Samples	Results	
			Positive	Negative
1.	Vientiane capital	25	19	06
2.	Champasak	10	09	01
3.	Viengchan	01	01	00
4.	Laungphabang	01	01	00
5.	Bokeo	01	01	00
6.	Sekong	01	01	00
	Total	39	32	07

KEY ACHIEVEMENTS

❑ The role of the National Veterinary Services in rabies elimination

- Providing the information to the technical authority in each level in order to let them understand and consider the importance of the prevention and control of rabies .
- Seeking the assistance from the national and international organization.
- Organizing the public awareness on the prevention procedure of rabies.
- For the effectiveness on the implementation of rabies prevention and control.
- To strengthen the participation of people on the prevention and control of rabies.

❑ Rabies Vaccines and Vaccination

- To get the detailed statistic on the dog population including the stray dogs in the whole country.
- To reduce the risk on the transmitted of rabies from animals to human.
- To reduce the spreading of rabies among dogs population.

❑ Rabies Surveillance

- To study the case of rabies in early stage and conduct rapid response .
- To develop the data base of rabies epidemiology up to date.
- To increase the coordination between the diagnostic laboratory and each region, nationally and internationally.
- To get the technical data base in order to improve the policy, strategy and find out the appropriated measures to solve the problems.

MAJOR CHALLENGES

1.Surveillance system is not systematic
2.Lack of human resources both number and qualification
3.No legislation or specific rules on management and rabies disease control
4.The majority animals are not vaccinated
5.Collecting statistics dog has initiated and there is not a registered dog population
6.Financial support on rabies control and prevention activities is limited

RABIES UPDATES IN MALAYSIA

RABIES SITUATION

Introduction

Malaysia was declared free from Rabies in 2013. However, on 27th July 2015, a dog bite case was reported at Kaki Bukit, in state of Perlis which later was confirmed positive for Rabies.

Subsequently, Rabies outbreaks were also declared in two other states Pulau Pinang (Penang) and Kedah following confirmed cases in three dog bite cases. The outbreaks was contained and declared resolved on 3rd November 2015.

Current Rabies Situation

Figure 1 : Map of Peninsular Malaysia showing location of positive cases in 2015 (red dots)

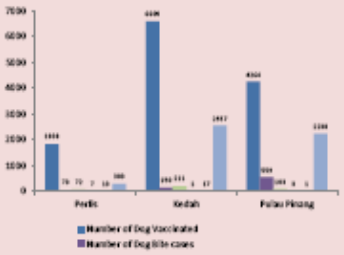


Figure 2 : Rabies vaccination and case status in 2015

KEY ACHIEVEMENTS

The Role of National Veterinary Services in rabies elimination

At National level, Department of Veterinary Services (DVS) has been providing leadership towards rabies elimination through:

- *Legal framework for control and prevention activities by Animal Act 1953*
- *Clear strategies to contain high risk dogs by creating and maintain 'immune-belt' area, compulsory vaccination and high risk dog population control*
- *Communication framework to reduce human exposure by inter-ministerial zoonotic committee and public engagement*

Rabies vaccine and vaccination

In Malaysia, inactivated commercial vaccine Rabisin® is used in control and elimination of rabies. One of the key components in National Rabies Control Plan is vaccination of at least 70% of dog population.

Currently, *more than 70% owned dogs were vaccinated in immune-belt area.*

Rabies Diagnosis and Surveillance

Two major components in rabies surveillance in Malaysia is by monitoring dog bite cases and random sampling in high risk dog population, at high risk area or immune-belt.

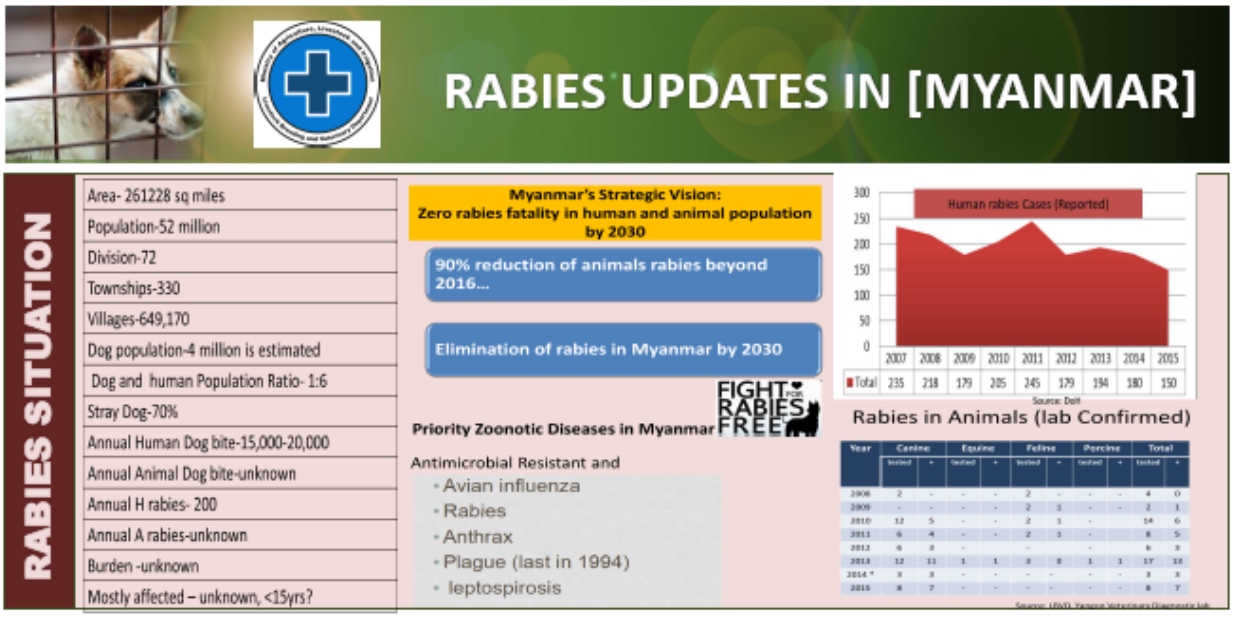
In 2015 outbreaks following dog bite cases, infected dogs were detected and eliminated through both surveillance components. Early detection and confirmation of infected dogs means that health authority could give timely prophylaxis treatment to exposed people.

MAJOR CHALLENGES

Critical deterrents to animal rabies elimination:

Malaysia was free from rabies nearly 16 years without any cases in dogs or other animals after last case reported in 1999. Outbreaks that have occurred in July 2015 involved both immune-belt area and non immune belt. Based on these outbreaks, major challenges to maintain freedom include:

- Maintenance of sufficient immuned dog population in immune-belt area, through responsible pet owner that ensure their dogs get vaccinated timely and reducing strays
- Difficulty in controlling movement of stray dogs at the border area as many strays can past through outside custom or border control area while roaming for foods. Non immune-belt area could be exposed to infected dogs if appropriate measures to control their border is not applied.


RABIES UPDATES IN [MYANMAR]
RABIES SITUATION
Area- 261228 sq miles
Population-52 million
Division-72
Townships-330
Villages-649,170
Dog population-4 million is estimated
Dog and human Population Ratio- 1:6
Stray Dog-70%
Annual Human Dog bite-15,000-20,000
Annual Animal Dog bite-unknown
Annual H rabies- 200
Annual A rabies-unknown
Burden -unknown
Mostly affected – unknown, <15yrs?
Myanmar's Strategic Vision:
Zero rabies fatality in human and animal population by 2030
90% reduction of animals rabies beyond 2016…
Elimination of rabies in Myanmar by 2030
FIGHT RABIES FREE
Priority Zoonotic Diseases in Myanmar
Antimicrobial Resistant and
Avian influenza
Rabies
Anthrax
Plague (last in 1994)
leptospirosis
Human rabies Cases (Reported)
2007 2008 2009 2010 2011 2012 2013 2014 2015
Total 235 218 179 285 245 179 194 180 150
Source: DoH
Rabies in Animals (lab Confirmed)
Year Canine Equine Feline Porcine Total
2008 2 4 0
2009 2 1
2010 12 5 14 6
2011 9 4 8 5
2012 9 8 3
2013 12 11 1 1 8 8 1 1 17 13
2014 * 3 3 3 3
2015 8 7 8 7
KEY ACHIEVEMENTS
[The role of the National Veterinary] Services in rabies elimination
Objectives
To demonstrate using Pilot Project in Iewei for reduction of rabies at animal source by Mass Dog Vaccination Campaign covering 70% of dog population
To initiate taking social responsibility on controlling dog mediated rabies by LBVD with MDV Approach
4- Strategies
Advocacy, Communication Social Mobilization Education (Multiagencies)
Mass Dog Vaccination (LBVD)
Rabies Control
Management of Dog Bite (DoH)
Dog Population Management (Multiagencies)
[Rabies Vaccines & Vaccination]
OIE Donation of Rabies Vaccines for Dogs
OIE Year No. of Doses Funding
OIE (Regional Rabies Vaccine bank for Asia) 2013 200,000 OIE-SRR SEA (HPED)
2014 -
2015 2016 200,000 STANDZ
Australian AID
Piloting Mass Dog Vaccination in Lewei (2016-2017)
Strategic Planning
Vaccination Teams
Pilot MDV Area Lewei Township, Nay Pyi Taw
Year MDV Jan-Mar 2016
Estimated Dogs in 40,000
Vaccinated Dogs 35618
Vaccinated Cats 517
Vaccination Coverage >80%
Second Vaccination 3347
[Rabies Diagnosis, surveillance and animal welfare]
Rabies Laboratory Capacity of LBVD's lab
Limited Rabies diagnosis facility in other regional lab (only Ngo Lab)
Human resource for animal rabies diagnosis is not sufficient
Areas of need to improve quality of testing
PT, QA/QC program
Molecular test
Serology (ELISA, FAVAN, Immunohistochemistry)
Areas of need to maintain sustainability of operations
Rabies lab Networking
Diagnostic reagent support
Capacity Building (training)
Very few Samples submission (Urban only)
Public awareness program, data collection of dog population for the whole country or in some selected region is needed
Disease surveillance in canine population is important issue for preparing a national plan.
Improved diagnostic capability for rabies both in animal and human sector
Vaccination campaign together with canine surgical sterilization program
MAJOR CHALLENGES
Challenges
Competing Priority Diseases
Inadequate data and information
Lack of political support
Lack of responsible ownership
Weak coordination among the various sectors
Inadequate management structure
Lack of public cooperation
Weak sample submission to laboratory confirmation
Actions needed
To establish National Rabies Control Programme
Strengthen inter-Ministerial and inter-sectoral for rabies control
Mass vaccination
Population control
Active community participation
Dog Bite Management
Rabies Curriculum to Ministry of Education
Future Plan
To establish National Rabies Control Committee and Plan
Better Coordination b/t animals and human health sector
Continue Rabies control in Myanmar through Vaccination Campaign, awareness education, responsible pet ownership and dog bit management starting at Pilot areas
To demonstrate Rabies Control at animal at source by Strategic Pilot mass Dog Vaccination
FOLLOW UP WORKSHOP ON RELEVANT INTERNATIONAL STANDARDS FOR DOG RABIES 17 – 19 May 2016 Bangkok, Thailand

RABIES UPDATES IN [Nepal]

Background Information on Human rabies

RABIES SITUATION

- Human rabies cases are mostly diagnosed on clinical ground only
- 100 to 200 human annual death dut to rabies
- More than 98% cases due to dog bite
- About 35000 people take post exposure prophylysis every year
- Not a notifiable disease
- No policy framework (No rabies control policy, program and strategy)
- No vaccine production in the country

Background Information on animal rabies

Rabies is endemic in Nepal. It is present in two epidemiological cycles: an urban and sylvatic cycle. Animal rabies is reported from almost all 75 districts of the countryDog population of the country is 1849106 (NZFHRC, 1998) A total of 60 outbreaks and 154 deaths reported in animals in 2015. In 2014/15, 54 samples from different animal species were tested at CVL of these 45 samples were found to be positive. Outbreak investigation occasionally performed

KEY ACHIEVEMENTS

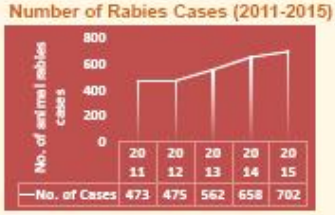
- Diagnostic capability strengthened and expanded to regional level.
- Cell culture vaccine production technology established in the country.

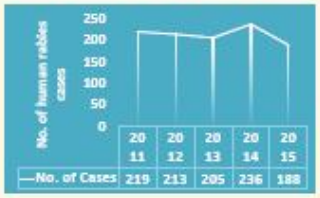
MAJOR CHALLENGES

- Enforcement of compulsory dog registration
- Dog population management in collaboration with the muncipalities and NGOS
- Adequate resource allocation and capacity building
- Development and implementation of national rabies control plan/strategy with the multisectoral involvement
- Mass dog vaccination in collaboration with the wildlife department and muncipalities
- Development and implementation of community awareness program

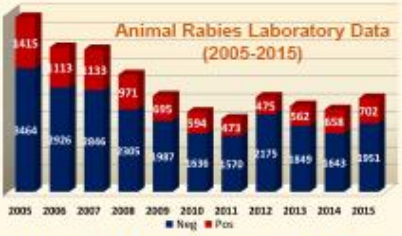
RABIES SITUATION

Number of Rabies Cases (2011-2015)





Animal Rabies Laboratory Data (2005-2015)



Top Provinces and Municipalities/Cities with Animal Rabies

Province	No. of Rabies Cases	Municipality/City	No. of Rabies Cases
PAMPANGA	88	SAN JOSE DEL MONTE CITY	25
PANGASINAN	70	QUEZON CITY	24
BULACAN	66	CAGAYAN DE ORO CITY	20
MISAMIS ORIENTAL	55	DUMAGUETE CITY	18
CEBU	51	LAPU-LAPU CITY	16
CAVITE	51	DAVAO CITY	16
RIZAL	27	GENERAL SANTOS CITY	15
BATAAN	23	ZAMBOANGA CITY	14
SOUTH COTABATO	21	ANGELES CITY	14
NUEVA ECIJA	20	TAGBILARAN CITY	11

Region	No. of (+) Samples	No. of (-) Samples	Total of (+) and (-) Samples	% Positivity
III	180	501	681	26.43%
I	87	226	313	27.80%
IV-A	83	114	197	42.13%
NCR	69	202	271	25.47%
II	43	48	91	47.25%
VII	41	222	263	15.59%
VI	40	84	124	32.26%
XII	32	39	69	46.38%
CARAGA	26	83	109	23.85%
V	26	173	199	13.07%
X	23	130	153	15.03%
IX	19	14	33	57.58%
IX	14	15	29	48.28%
CAR	11	57	68	16.18%
VIII	6	27	33	18.18%
IV-B	4	15	19	21.05%
Grand Total	702	1951	2653	26.57%

2015

KEY ACHIEVEMENTS

The Role of the National Veterinary Services in Rabies Elimination

REPUBLIC ACT NO. 9482 (Anti-Rabies Act of 2007)

"An Act Providing for the Control and Elimination of Human and Animal Rabies, Prescribing Penalties for Violation Thereof and Appropriating Funds Therefor"

YEARLY CELEBRATION OF RABIES AWARENESS MONTH per Executive Order No. 84 (dated 13 March 1999) "Declaring March as the Rabies Awareness Month, Rationalizing the Control Measures for the Prevention and Eradication of Rabies and Appropriating Funds Therefor"

REGULAR RABIES MEETINGS

(for information sharing, planning and coordination)

- National Rabies Prevention and Control Committee
- Regional Rabies Coordinators
- National Capital Region (NCR) Veterinarians

ANNUAL CELEBRATION OF WORLD RABIES DAY

Rabies Surveillance

Developed a detailed Animal Rabies Case Investigation Form

RABIES PROJECT

Practical Linking of the Animal and Human Health Rabies Case Investigations Workshop

MORATORIUM

On the charging of the laboratory fee for rabies examination at the Philippine Animal Health Center of the Bureau of Animal Industry (now the Animal Disease Diagnosis and Reference Laboratory or ADDRL) and Regional Animal Disease Diagnostic Laboratories (RADDLs) for 2015-2016 encouraging more submission of samples for rabies testing

Working Towards Achieving and Maintaining Rabies Freedom

35 Rabies-free zones

MAJOR CHALLENGES

Socio-Cultural

1. Proper understanding and awareness of rabies by pet owners
2. Reluctance of some pet owners to have their dogs vaccinated

Technical

1. Estimating the dog population
2. Improving reporting of rabies cases and utilization of vaccines
3. Timely delivery of procured animal rabies vaccines
4. Reaching the annual 70% target of the dog population to be vaccinated
5. Controlling rabies in highly urbanized cities
6. Management of stray dogs

Organizational & One Health

1. Mechanisms to encourage and strengthen public-private partnerships
2. Coordination of Regional Rabies Coordinators with Local Government veterinarians

Policy & Legislative

1. Political will to support the rabies program by some Local Chief Executives
2. Dedicated personnel to focus on the program (e.g. government veterinarians, vaccinators)
3. Increasing yearly budgetary releases for the rabies program
4. Enforcing annual dog registration and regular vaccination
5. Implementation of local rabies ordinances and enforcing of penalties by Local Governments

FOLLOW UP WORKSHOP ON RELEVANT INTERNATIONAL STANDARDS FOR DOG RABIES 17 – 19 May 2016 Bangkok, Thailand

RABIES UPDATES IN PAPUA NEW GUINEA

RABIES SITUATION

Papua New Guinea (PNG) has never reported a case of rabies in its history. *We aim to keep it that way through vigilant surveillance, awareness and animal health reporting systems of many unregulated risk pathways across our borders. Regulated live animal trade is subject to import risk assessments. Relevant training of field and laboratory personnel as well as basic diagnostics capacity with laboratory networking is required. Appropriate policies are also very important to enable biosecurity functions that aim to maintain PNG's rabies-free status.*

KEY ACHIEVEMENTS

Surveillance

Reporting	• Weekly • SMS-based
Disease investigation	• Response to reports • Opportunistic dead dog sampling
Risk pathway mapping	• Basis for targeted surveillance, monitoring, awareness

Diagnosis

Disease list	• Public health threat • Biosecurity risk
In-house test capacity	• Develop lab capabilities • Train personnel
Lab network	• Proficiency testing • Twinning arrangements

Freedom

Historically free	• Nil case reported from both humans and animals
Prevent incursion	• Public awareness, reporting • Import risk assessment
Disease response	• Emergency response plans • Containment, eradication

MAJOR CHALLENGES

PNG is fortunate not to have rabies on its shores, but faces constant threat of incursion from Indonesia across the land border. The lack of urban and rural dog population control, coupled with the lack of awareness of responsible pet ownership and no-vaccination policy will be conducive for the ready establishment and spread of canine rabies from the initial point source of incursion. These remain major challenges for PNG.

RABIES UPDATES IN TAIPEI CHINA

RABIES SITUATION

Taipei China was recognized as one of the ten rabies-free countries from 1961 to June 2013. The Bureau of Animal and Plant Health Inspection and Quarantine (BAPHIQ) has implemented rabies surveillance programs for dogs since 1999 and for bats since 2008. There are a total of 10,269 dog and 624 bat samples that have been tested so far. In 2013, the "targeted wildlife pathogen surveillance" was launched to obtain information about rabies and other epidemic diseases. Rabies was first confirmed in 3 ferret-badgers by the Animal Health Research Institute (AHRI), and the report was submitted to the OIE on 17 July 2013. Up to 28 April 2016, there have been 532 rabid ferret-badger cases and 8 rabid non-reservoir host cases which are spillover infections by the Taiwan ferret-badger rabies virus (TFBRV), including 1 puppy which was bitten by a rabid ferret-badger, 1 house shrew and 6 formosan gem-faced civets. From the 7 rabid cases detected in 15 retrospective samples, the first known rabies-positive sample was collected on 17 July 2010. Ferret-badger is the main infected species in Taipei China. The rabies virus belongs to Lyssavirus genotype I, and the phylogenetic tree of ferret-badger rabies virus (N gene) shows that there are two groups of virus with different geographical distribution, namely, Central/ South Taiwan (TW-CS) and East Taiwan (TW-E).

Table. Rabies test results of animals — Updated: 28 April 2016

Animal	1999-2012		2013		2014		2015		2016	
	No. of tests	No. of Positive Incidences	No. of tests	No. of Positive Incidences	No. of tests	No. of Positive Incidences	No. of tests	No. of Positive Incidences	No. of tests	No. of Positive Incidences
Dogs	6,841	0	1,553	1[a]	940	0	730	0	197	0
Cats	5	0	112	0	11	0	21	0	1	0
Bats	322	0	64	0	129	0	95	0	23	0
Carnivores	--	--	1,019	276	396	148[b]	321	97[b]	93	21
Other wildlife Animals	--	--	341	1[c]	28	0	55	0	16	0
Total	7,168	0	3,089	278	1414	148	1202	93	326	21

a. A 1.5 month-old puppy which was bitten by a rabid ferret-badger was confirmed rabies-positive after 24 days of quarantine.
b. A house shrew was confirmed rabies-positive and was considered bitten by a rabid ferret-badger.
c. Six Formosan gem-faced civets were confirmed rabies-positive.
d. One rabid dog, one shrew and six Formosan gem-faced civets are considered to be spillover cases, since the virus sequence showed high similarity to those from ferret-badger rabies viruses.

Ferret-badger (*Melogale moschata subaurantiaca*)

Formosan gem-faced civet (*Paguma larvata*)

KEY ACHIEVEMENTS

Rabies Diagnosis

The Animal Health Research Institute (AHRI) supported 2 veterinary colleges to set up rabies diagnostic laboratories. AHRI is responsible for confirmation of rabies diagnosis.

Brain sample

Sampling :
- brain stem
- cerebral cortex
- cerebellum
- hippocampus

Histopathology Immunohistochemistry (IHC)

Fluorescent antibody test (FAT)

Need to confirm (±)

Virus isolation
-MNA cell culture
-Inoculation of mice

RT-PCR

☆ Other Methods
-Strip
-Electron microscope (EM)

Rabies Vaccines and Vaccination

Vaccination and immunoglobulin therapy should be implemented when a person needs post-exposure prophylaxis.

Ferret-badgers — Dogs & cats — Human

To improve vaccination coverage to over 70% to prevent rabies spillover to dogs & cats.

To evaluate and develop an oral vaccine for ferret- badgers.

Working towards achieving and maintaining rabies freedom

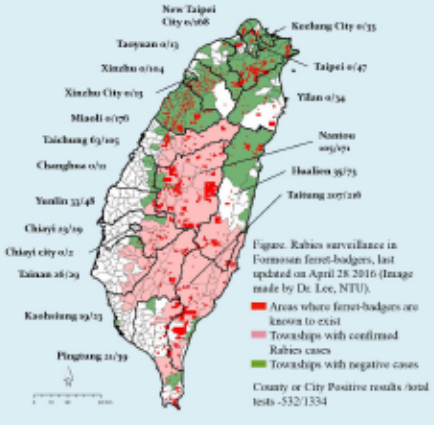
The strategies of rabies control adopted in Taipei China include: strengthening public awareness and the management of dogs and cats; improving vaccination of dogs and cats with the aim of the vaccination coverage in high risk areas (rabies-positive or mountainous areas) to around 90% of the dog and cat population, while in the other areas to around 70%; stockpiling around 250,000 doses of rabies vaccines; surveying wild animal diseases, pets, bats and those who bite human; implementing rabies post-exposure prophylaxis (PEP) for human; investigating the distribution, density, behavior and rabies prevalence of wild animals; continuing to do research on oral rabies vaccines, epidemiology and pathogenicity of rabies virus; strengthening import control of susceptible animals, preventing animal smuggling and developing a rapid public health response mechanism. We also consult international experts on prevention strategies and oral vaccination for the elimination of wildlife rabies.

Goal: keeping cats and dogs free from rabies

Improve vaccination coverage — Public communication & awareness — Safeguard of human beings — Emergency vaccine storage — Rabies prevention — Support laboratory — Study & research — International cooperation — Dogs & Cats management — Animal surveillance

MAJOR CHALLENGES

- The registration and owner transfer system of dogs is not very reliable.
- Owners' awareness of the necessity of having their pets be vaccinated has gradually tapered down after the first detection of rabies in Taipei China.
- The taste and size of commercial oral rabies vaccine baits do not attract ferret-badgers in Taipei China, so we need to spend more time to develop a new form.
- Ferret badgers populate in all mountain areas of Taipei China, which cover approximately 2/3 of the territory; therefore, the implementation of vaccination program is difficult.
- It requires a large amount of budget and long-term research effort to collect relevant information about the ecology and microhabitat of ferret-badgers and wild animals.
- Most mountains in Taipei China are quite steep, so artificial placement of oral vaccine and the airdropping method are difficult.



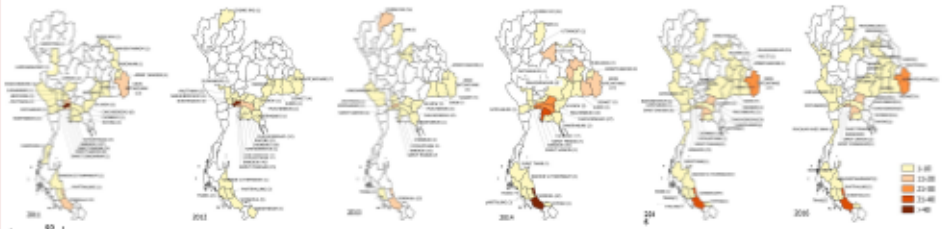
RABIES UPDATES IN THAILAND

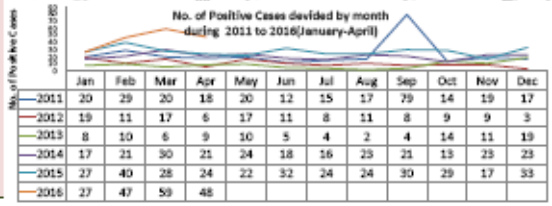
RABIES SITUATION

*In Thailand, during 2011 to 2016(Jan.-Apr.)found 1,272 **animal rabies cases**. Dogs are still main reservoir (91%) followed by cattle (5%) cats (3%) and the others (1%). Rabies occurs in animals of all age and most of them (even owned-dog) were vaccinated. Recently, animal rabies cases mostly found in central and southern part of Thailand and it occurred through the year.*

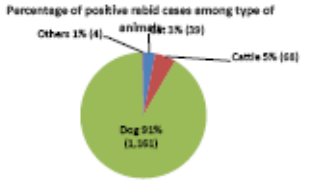
*From Jan to May, 2016; 5 **human rabies cases** were reported and confirmed.*

The Situation of animal rabies during 2011 to 2016 *(Jan.-Apr.16)*





	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	20	29	20	18	20	12	15	17	79	14	19	17
2012	19	11	17	6	17	11	8	11	8	9	9	3
2013	8	10	6	9	10	5	4	2	4	14	11	19
2014	17	21	30	21	24	18	16	25	21	13	23	23
2015	27	40	28	24	22	32	24	24	30	29	17	33
2016	27	47	59	48								



KEY ACHIEVEMENTS

VETERINARY AUTHORITY

-Dept. of Livestock Development, MOAC is the government agency responsible for the prevention and control of animal rabies that conduct under Rabies act, Animal Epidemics act and Cruelty prevention and welfare of animal act

COLLABORATION AND NETWORK

-National strategic plan for rabies elimination by 2020 is jointly developed by multi-sectorial partners

-Memorandum of Understanding (MoU) has recently been signed between the Department of Disease Control (DDC), Department of Livestock Development (DLD), and Department of Local Administration (DLA) so as to foster interagency efforts to eliminate rabies from Thailand

-Developed Guideline for rabies free areas in Thailand based on WHO and OIE criteria

-World Rabies Day (WRD) are arranged annually by multi-sectorial partners

RABIES CONTROL ACTIVITIES

Rabies Vaccines and Vaccination

-About 1 million doses per year has been provided by DLD with emphasis on outbreak areas

-Rabies vaccination campaign has been performed annually in March and April

Animal rabies diagnostic laboratory services

-Currently, 8 rabies diagnostic laboratories (DLD and QSMI), are located in 7 provinces across Thailand. Those meet required standards and are capable of providing easy access for necessary laboratory testing services, offering fast services and covering all areas of the country, to serve the people and fulfil epidemiological surveillance activity.

Rabies surveillance

-Establish rabies surveillance system and network. Conduct passive surveillance and active surveillance.

-Rapid outbreak response to animal rabies cases

-Established online reporting system : Thairabiesnet (www.thairabies.net)

Dog population control

-Hormonal injection in female dogs and sterilisation to control dog population.

-Dog registration is implemented in many local areas through online system (thairabiesnet)

Animal welfare in Rabies Elimination

- Thailand has cruelty prevention and welfare of animal act B.E. 2557 (2014)

Working towards achieving rabies free

-Strengthening rabies control and prevention in a specific area such as risk area ,border area and establish milestone for rabies elimination in the area

-Expanding number of Rabies-Free Areas

MAJOR CHALLENGES

- Vaccination of dogs to meet the target 80% of dog population and 100 % of dog population in outbreak areas in the sub-district
- Dog population management, especially control and vaccinating stray dogs
- Dog population survey and dog registration
- Responsibility of ownership, many pet owners do not take proper care of their pet dogs, which lead to the problem of stray dogs.
- Law enforcement

CURRENT SITUATION OF RABIES IN VIETNAM 2011-2016

RABIES SITUATION

Introduction: Rabies has existed and circulated in Vietnam for many years. It occurs at any time in the year. In 1990s- rabies declining; 2004 - today rabies increasing. In 2015 the country had recorded 394 189 people who are bitten by a dog, go to preventive treatment and has had 78 deaths in 29 provinces and cities; especially in the first 3 months in 2016 had 18 people die from rabies infection in 10 provinces, including Thai Nguyen, Son La, Thanh Hoa, Bac Giang, Gia Lai, Nghe An, Ha Giang, Hoa Binh, Bac Ninh and Tay Ninh ; deaths mainly in midland and mountainous provinces in the North.

Knowledge and Attitude	vs	Practices for prevention
✓ 96% are aware of rabies		• Most people leave their dogs roaming & unchained increasing risk of exposure
✓ 90% are aware that dogs are the main reservoir of rabies transmission to humans		• Only 8 % report dog bites or suspected rabid dogs
✓ 94 % know that dog rabies can be prevented by vaccination		• Only 24 % vaccinate their dogs for rabies
✓ 83 % know that human rabies can be prevented by vaccinating dogs		• Only 32.2% register their dogs

- Most cases Rabies occur in the northern mountainous provinces, most outbreaks were detected when humans bitten by dogs.
- Dogs population cannot be fully managed, numbers of dog cases may not be accurately counted .
- 2 rabies vaccination rounds annually: April-May and Sept-October. In urban areas, more than 80% of pets was vaccinated while in rural and remote areas, vaccination percentage was less than 50%.
- Peoples do not think it is important to vaccinate their dogs.

KEY ACHIEVEMENTS

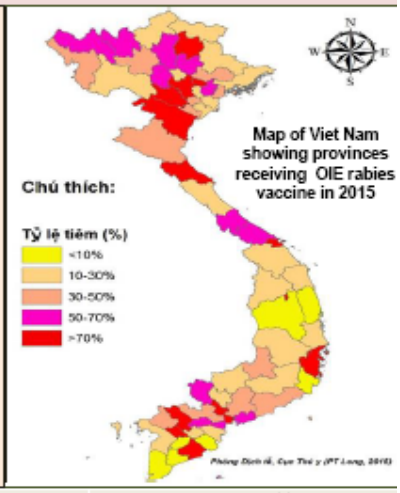
National Program on Rabies prevention & control (2011-2015)

The combination of: MOET (education), MIC (communication); MPS (Ministry of Public Security), MARD & MOH (Ministry of Health)

- Increase public awareness of the risk of rabies and methods for rabies control & prevention
- Improve MARD & MOH rabies monitoring & surveillance systems
- 80% of dog population will be managed
- 80% of dog population will be vaccinated against rabies
- 70% of Provinces will be free from rabies
- Strengthening the capacity to diagnose rabies

Major Support Provided by International Organizations on Rabies Prevention & Control

- 2013 & 2014: OIE dona 2013-2015: FAO TCP Project to "Strengthening institutional capacity for and Improving inter-sectoral collaboration, coordination, and communication for effective prevention and control rabies in Vietnam" - US$ 386,000 + in kind + complimentary donor (WSPA) funding 200,000 & 672,000 doses of rabies vaccine for emergency use
- 2014: OIE and Rabies National Programme donated poster, leaflet, T-Shirt and Caps, booklet/brochures.



Map of Viet Nam showing provinces receiving OIE rabies vaccine in 2015

MAJOR CHALLENGES

- Lack of funding leading to be difficult to control rabies in animals. Rabies vaccine too expensive for some families to vaccinate dogs
- Inadequate public and animal health resources; limited involvement of local authorities of certain areas.
- Limited diagnostic support for rabies control in animals. Limited access to preventive treatment, especially at the remote and mountainous areas; Highlands.


Policy and Coordination Workshop


Communication Workshop


Fattening dog for meat consumption


vaccination for dogs


Training of Diagnosis

Guideline for trainers

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