從登革熱防治談社區動員

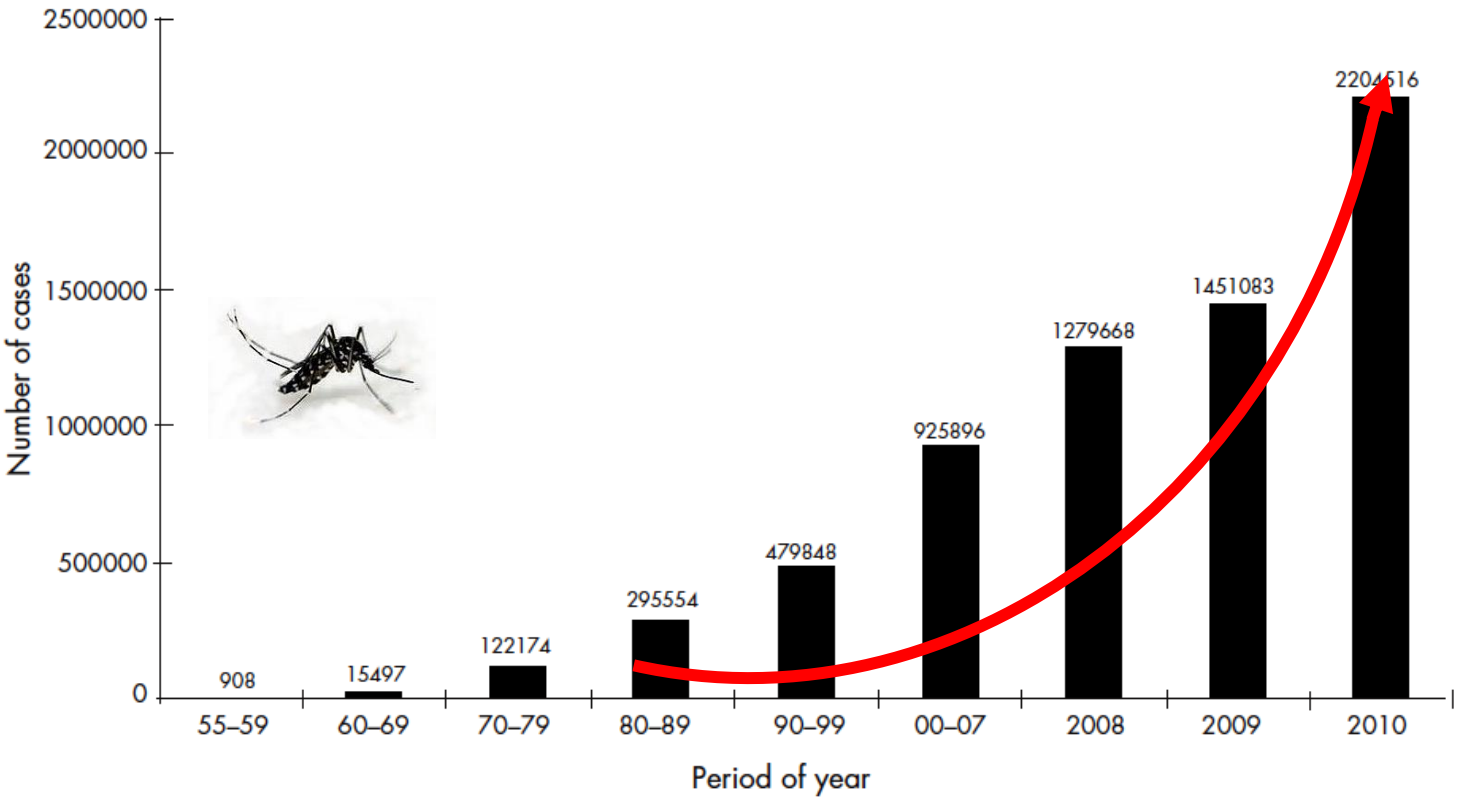
張念台

屏東科技大學

2016.1.5

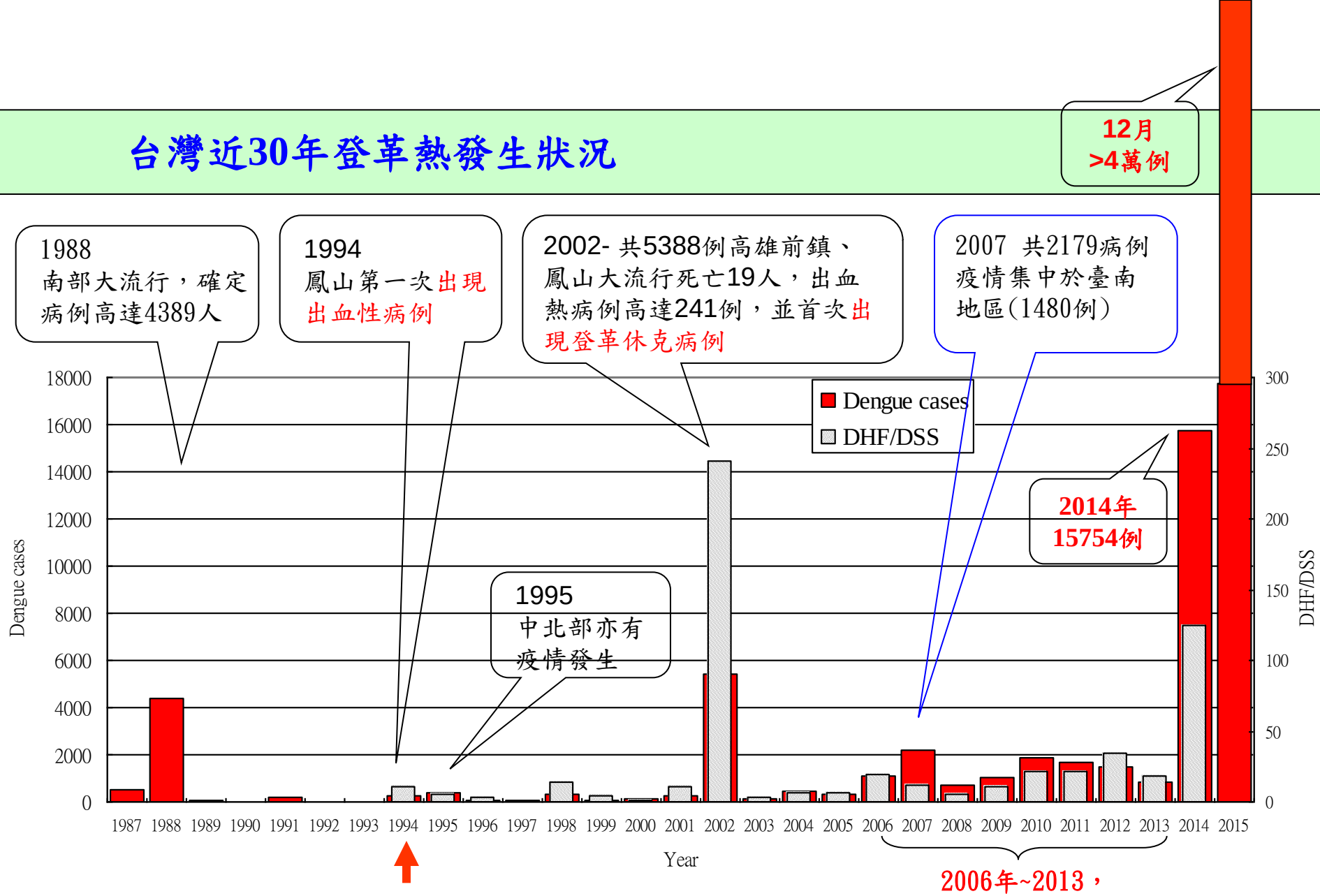
登革熱- 全球的威脅

登革熱每年約在100個國家流行，約感染五千萬病患，50年來病例的快速增加，已是過去的30倍，顯然登革熱已是世界上最重要的蚊蟲媒介之傳染病。



世界衛生組織1955~2007年接獲報告登革熱及嚴重登革出血熱之年平均病例數及2008~2010年病例數

台灣近30年登革熱發生狀況



➢台灣歷年登革熱病例盛行率

台灣1987~2013年人口與登革熱及登革出血熱/登革休克的盛行率

Year	Dengue cases	popoulation (0.1million)	case/0.1 million	Year	Dengue cases	popoulation (0.1million)	case/0.1 million
1987	527	197.2501	2.67	2001	281	224.05568	1.25
1988	4389	199.54397	22.00	2002	5388	225.20776	23.92
1989	35	201.56587	0.17	2003	145	226.0455	0.64
1990	10	204.01305	0.05	2004	427	226.89122	1.88
1991	175	206.05831	0.85	2005	306	227.70383	1.34
1992	23	208.02622	0.11	2006	1074	228.76527	4.69
1993	13	209.95416	0.06	2007	2179	229.5836	9.49
1994	244	211.77874	1.15	2008	714	230.37031	3.10
1995	369	213.57431	1.73	2009	1062	231.19772	4.59
1996	55	215.25433	0.26	2010	1888	231.62123	8.15
1997	76	217.42815	0.35	2011	1700	232.24912	7.32
1998	344	219.28591	1.57	2012	1477	233.15822	6.33
1999	68	220.92387	0.31	2013	857	233.73517	3.67
2000	139	222.76672	0.62	2014	15754	234.33753	67.23
				2015	43552	234.33753	185.85

3.2例 /10萬人

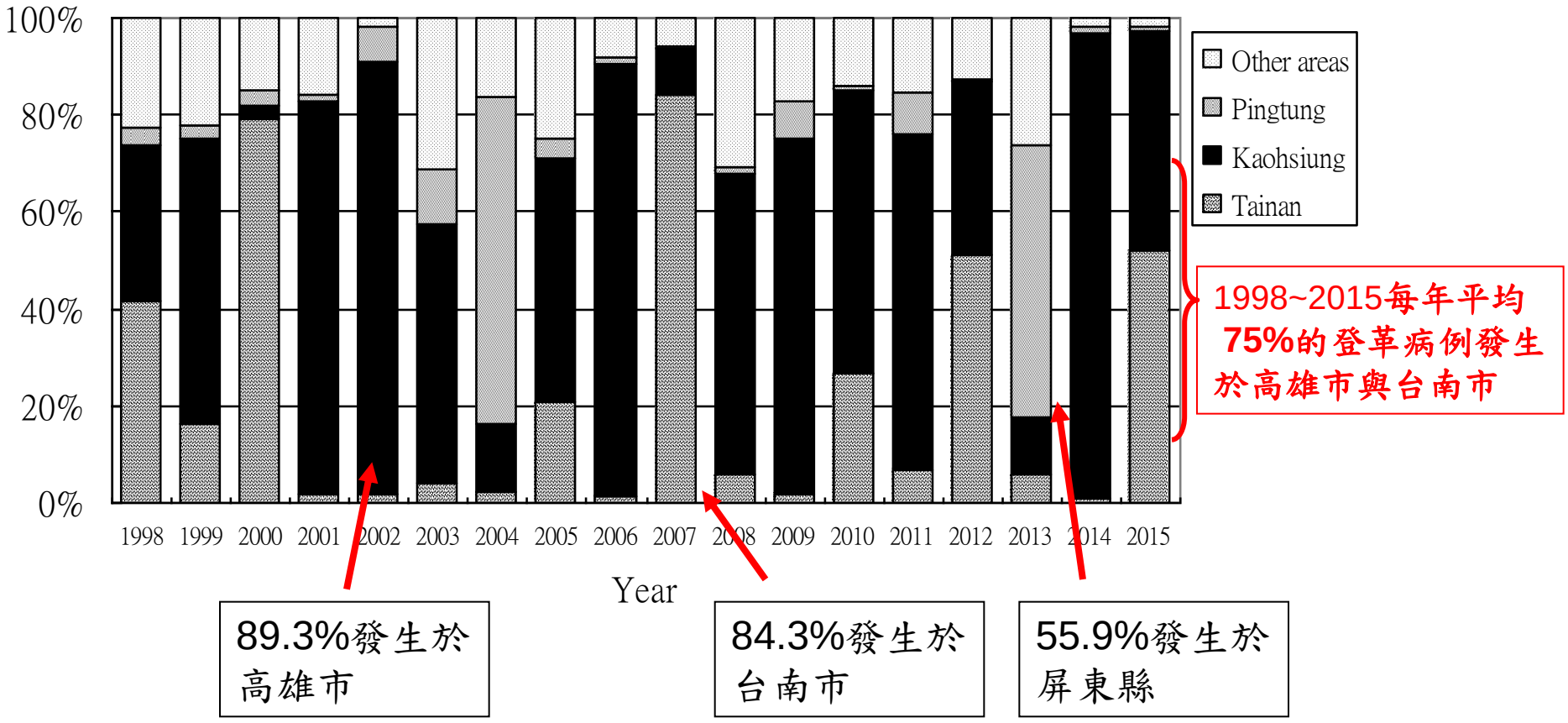
12.7例 /10萬人

30.0例 /10萬人

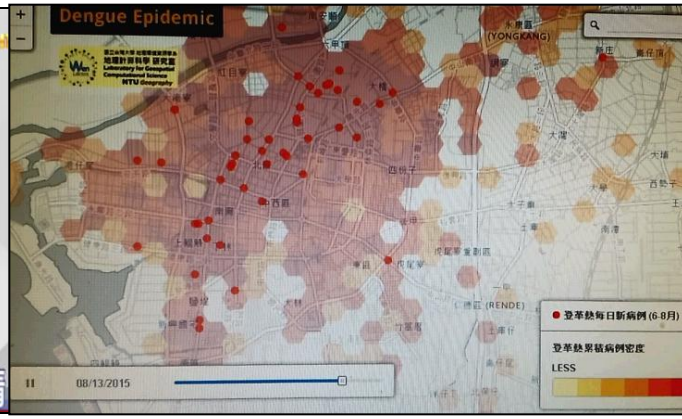
➢台灣歷年登革熱發生的地區

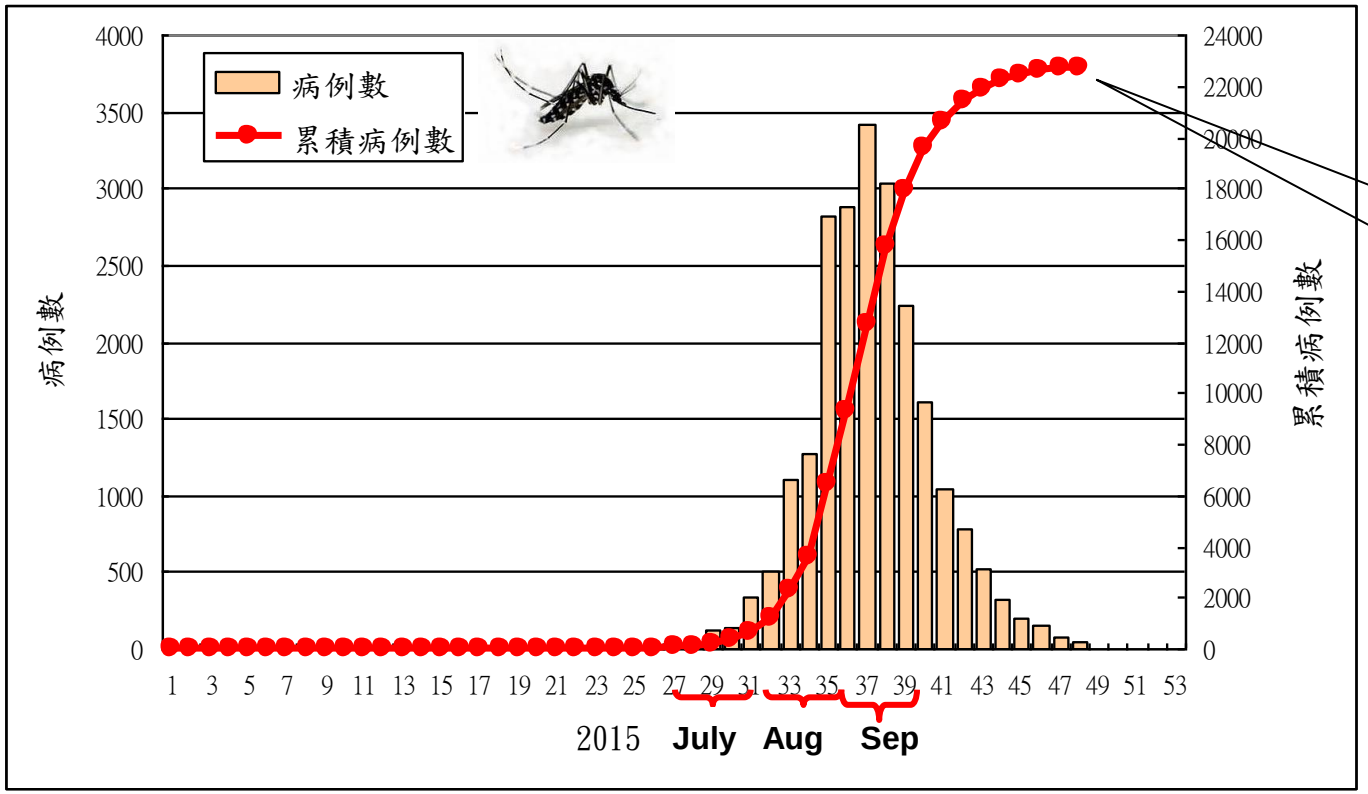
白線與埃及斑蚊皆有分布的台南、高雄與屏東三地，歷年登革熱的病例佔全省的69.0~98.1% (平均84.3%)

台灣1998~2013年各地區登革熱病例發生比率



2015年台南登革熱病例的發生



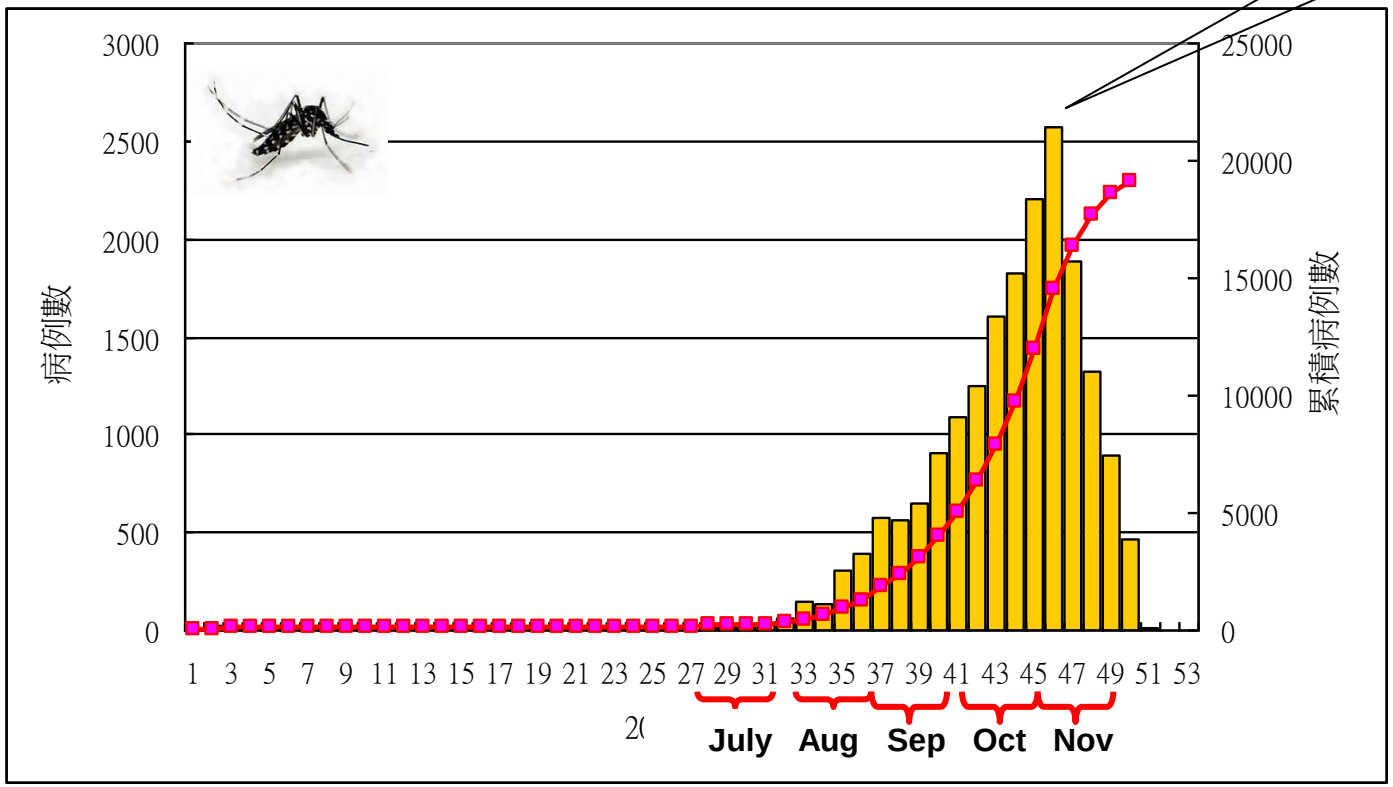


104.9.18

2015.12.31台南累積病例**22773**(全國**43684**例)

2015年高雄登革熱病例的發生

2015.12.31高雄
累積病例**19693**
(全國**43684**例)

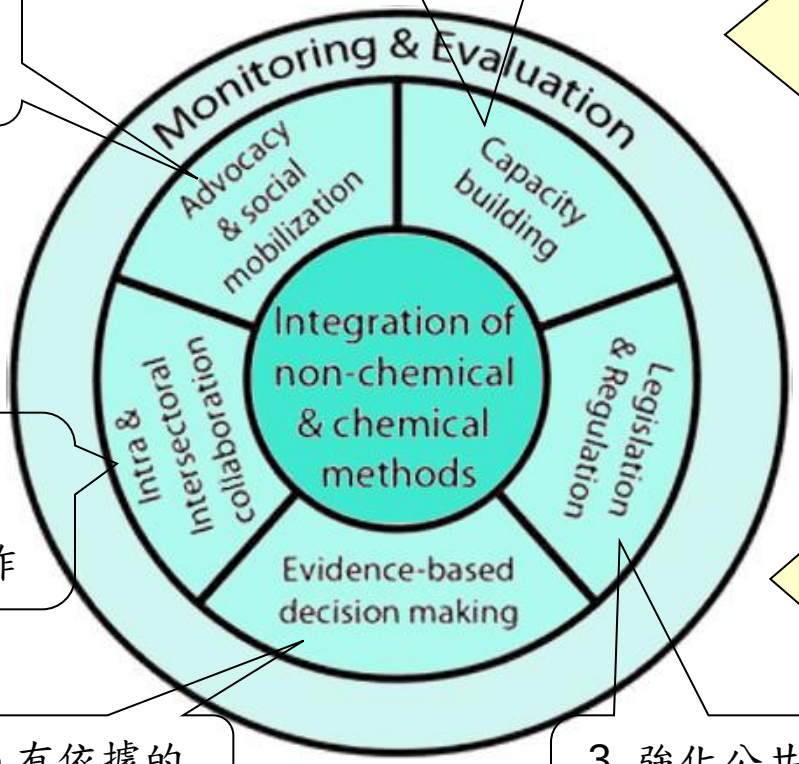


登革熱疫情發生時病媒蚊防治之策略與實際

理論 (Amaku, et al. 2014)	實際
1. **消滅成蚊是最有效的策略，可降低盛行率與感染力** Control of adult mosquitoes as the most effective strategy to reduce both human prevalence and force of infection.	a. 很難對分布廣泛的成蚊作全面的滅除 b. 施藥器材或方法的限制，使藥劑不易與病媒蚊接觸 c. 病媒蚊抗藥性的產生
2. **降低病媒與人的接觸(即降低叮咬率)** The reduction of the contact between the vectors and hosts, quantified by the daily biting rate.	a. 浸藥蚊帳不適用於白天活動的 媒介斑蚊 b. 藥劑處理布料(ITCs)還在研發中 c. 未落實個人防護工作
3. **降低病媒蚊幼期的環境負載力，即孳生源的清除** Reducing the carrying capacity of the immature stages, E.g. the mechanical control of the sources of the mosquitoes.	a. 人力、物力耗費甚大 b. 部分孳生源清除不易甚或隱密無法查得 c. 社區或居民配合意願不高或無力配合
4. **使用殺幼蟲劑，增加病媒幼期死亡率** The use of larvicide. This strategy is expected to increase the mortality rate of immature stages.	a. 幼蟲密度降低與疾病發生或流行的相關性不高 b. 殺幼蟲劑施用於孳生容器的限制

病媒綜合管理 (Integrated Vector Management, IVM):

IVM的定義是「適當使用各種資源來防治病媒的合理決策過程」



2. 以教育、訓練建構並強化疾病管制能力

1. 倡議與社會動員

整合性偵測與風險評估
Integrated surveillance and risk assessment

五個關鍵要項
5 Key elements of an IVM

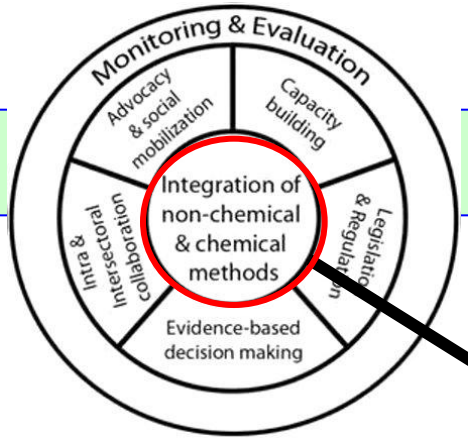
病媒綜合管理
Integrated vector management

4. 相關公、私單位內與單位間的合作

5.有依據的決策制定

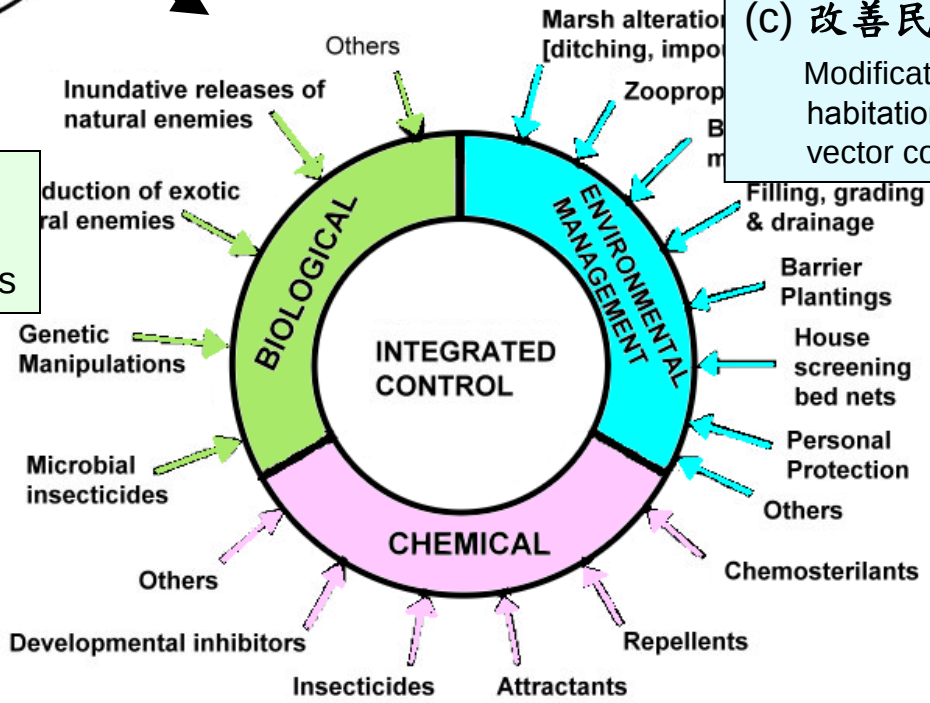
3. 強化公共衛生相關法規

病媒蚊的綜合管理



(a) 環境改善Environmental modification;
(b) 環境清理Environmental manipulation,
(c) 改善民眾居所與行為
Modification or manipulation of human habitation or behavior to reduce human − vector contact

施用幼蟲天敵
Introduction of larvivorous organisms



正確使用殺蟲劑Using insecticides (larvicides, adulticides) judiciously

使用化學藥劑的問題是.....
- without evaluating efficacy
- without evaluating cost-effectiveness,
- without monitoring local vector susceptibility.

登革熱及病媒蚊防治之社區參與及動員

GOAL:
TO REDUCE THE BURDEN OF DENGUE

OBJECTIVES:

- To reduce dengue mortality by at least 50% by 2020*
- To reduce dengue morbidity by at least 25% by 2020*
- To estimate the true burden of the disease by 2015

* The year 2010 is used as the baseline.

Technical element 1:	Technical element 2:	Technical element 3:	Technical element 4:	Technical element 5:
Diagnosis and case management 診斷與病患管理	Integrated surveillance and outbreak preparedness 整合性監測與疫情爆發準備	Sustainable vector control 永續性病媒防治	Future vaccine implementation 未來疫苗研發	Basic operational and implementation research 基礎實務與應用研究

ENABLING FACTORS FOR EFFECTIVE IMPLEMENTATION OF THE GLOBAL STRATEGY:

- advocacy and resource mobilization
- partnership, coordination and collaboration
- communication to achieve behavioural outcomes
- capacity-building

The global strategy for dengue prevention and control, 2012-2020

台灣目前登革熱病媒蚊之防治

(一)環境管理-例如病媒蚊孳生源清除;

(二)生物防治-例如利用劍水蚤與食蚊魚等天敵捕食病媒蚊幼蟲;

(三)物理防治-例如裝置紗窗紗門防止成蚊飛入;

(四)化學防治-例如預防性投藥(intermittent preventive treatment)與緊急噴藥等。

中華民國一〇四年十二月十五日　時事評析　科技報導　4

登革熱病媒蚊防治之理論與實務

羅怡珮 / 嘉南藥理大學生物科技系。
張念台 / 國立屏東科技大學植物醫學系。

建議病媒蚊管理的措施為：

- 持續病媒監測與防治新技術的研發
- 確實掌握病媒蚊發生熱點
- 了解地區病媒及孳生源特質
- 落實以地方政府為核心的部會整合
- 擬定因地制宜、符合地區居民生活習性的綜合管理方法
- 落實衛生、施藥、孳生源監測等教育訓練
- **帶動社區全面參與**

一、無論何種登革熱防治措施都需社區配合

提供社區
病媒蚊
防治資訊

疫情調查

24小時內完成

衛生、環保、
民政、警察、
教育等單位

孳生源
清除

噴藥前或噴藥時進行

緊急噴藥

原則上實施2次，
第2次噴藥間隔7天

住戶配合施藥
消滅帶毒成蚊

社區動員孳清
降低病媒蚊密度

Control of dengue virus vectors (*Aedes aegypti* and *Aedes albopictus*) in Western Pacific Region

Country/areas	Space spraying (outbreak) 空間噴灑	Larviciding (chemical & biological larvicide) 殺滅幼蚊	Biological control 生物防治	Environmental management (source reduction) 環境管理	Health education and community mobilization) 衛教與社區動員	Legislation 法規	Intersectoral and agency collaboration 相關部門合作
Australia (North Queensland	++	++		++	++	+	+
Australia (Northern Territory	++	++		++	++		
Cambodia	+	++	+ (guppy fish as operational research)	+	+ (school based)	-	+
China	+	-	-	+	+	-	+
Hong Kong (China) & Macau (China)	+	-	-	+	+	+	+
Lao People's Democratic Republic	+	+	+ (guppy fish as operational research)	+	++	-	+
Fiji	+	+	-	+	+	-	-
Malaysia	+	+	-	+	+	++	+
Philippines	+	+	+ (guppy fish as operational research)	+	+	-	+
Solomon Islands	+	-	-	-	+	-	-
Singapore	+	+	-	+	+	++	++
Vanuatu	+	+	-	+	+	-	+
Viet Nam	+	+	+ (*Mesocyclops*)	+	++	+	+

++ Exists and is a regular/core programme activity
+ Exists but irregular, only used under field research condition
- Does not exist
Source: Country Reports, 2008, World Health Organization Western Pacific Region.

(Chang, et al. 2010)

登革熱防治的社區配合:

空間噴灑

殺滅幼蚊

空間噴灑
殺滅幼蚊

生物防治
環境管理

住戶居民共 120 位，58 位(48.3%)男性，62 位(51.7%)女性，年齡為 22 歲- 68 歲之間，82.35%居民同意在積水地下室進行食蚊魚放養，但僅 39.49%居民同意定期觀察食蚊魚存活及維護；故食蚊魚在高雄市積水地下室登革熱病媒蚊之防治，需對社區民眾進行定期觀察食蚊魚存活及維護之衛教宣導，民眾若能配合定期觀察食蚊魚存活及維護，則能達事半功倍之效果。

空間噴灑
殺滅幼蚊
生物防治
環境管理
衛教與社區動員
法規
相關部門合作

傳染病防治法第二十三條：

傳染病發生或有發生之虞時，地方主管機關應督導撲滅蚊、蠅、蚤、蝨、鼠、蟑螂及其他病媒。

前項病媒孳生源之公、私場所，其所有人、管理人或使用人應依地方主管機關通知或公告，主動清除之。

請注意：對於民眾未能主動清除蚊、蠅等病媒時，係違反第23條第2項規定：處 1萬元以上，15萬元以下罰鍰(限期未改善者，可連續處罰)。

空間噴灑
殺滅幼蚊
生物防治
環境管理
衛教與社區動員
法規
相關部門合作

Stahl *et al. BMC Public Health* 2013, **13**:1048
http://www.biomedcentral.com/1471-2458/13/1048

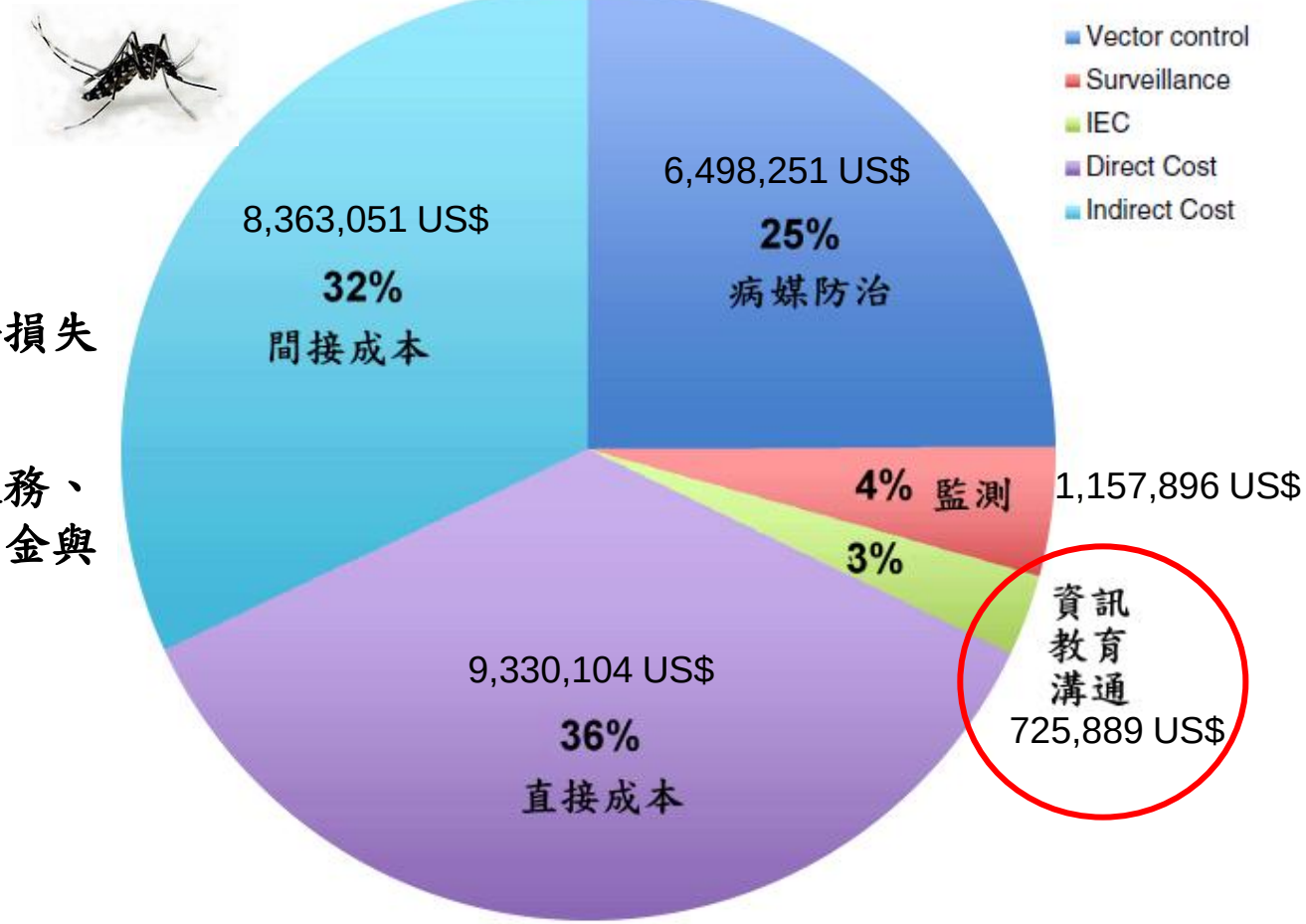
BMC Public Health

RESEARCH ARTICLE Open Access

Cost of dengue outbreaks: literature review and country case studies

Hans-Christian Stahl[1*], Vicki Marie Butenschoen[2], Hien Tinh Tran[3], Ernesto Gozzer[4], Ronald Skewes[5], Yodi Mahendradhata[6], Silvia Runge-Ranzinger[7], Axel Kroeger[8,9] and Andrew Farlow[10]

Vietnam 越南
Indonesia 印尼
Peru 祕魯
Dominican Republic 多明尼加



間接成本： 工時損失

直接成本：
實驗室、技術服務、藥劑、耗材、酬金與其他財力物力

二、以社區為基礎的病媒蚊生態-生物-社會防治策略是世界趨勢

Acta Tropica, 61(1996)169–179
Elsevier Science B.V.
ACTROP 00486

社區參與

Community involvement in the control of *Aedes aegypti*

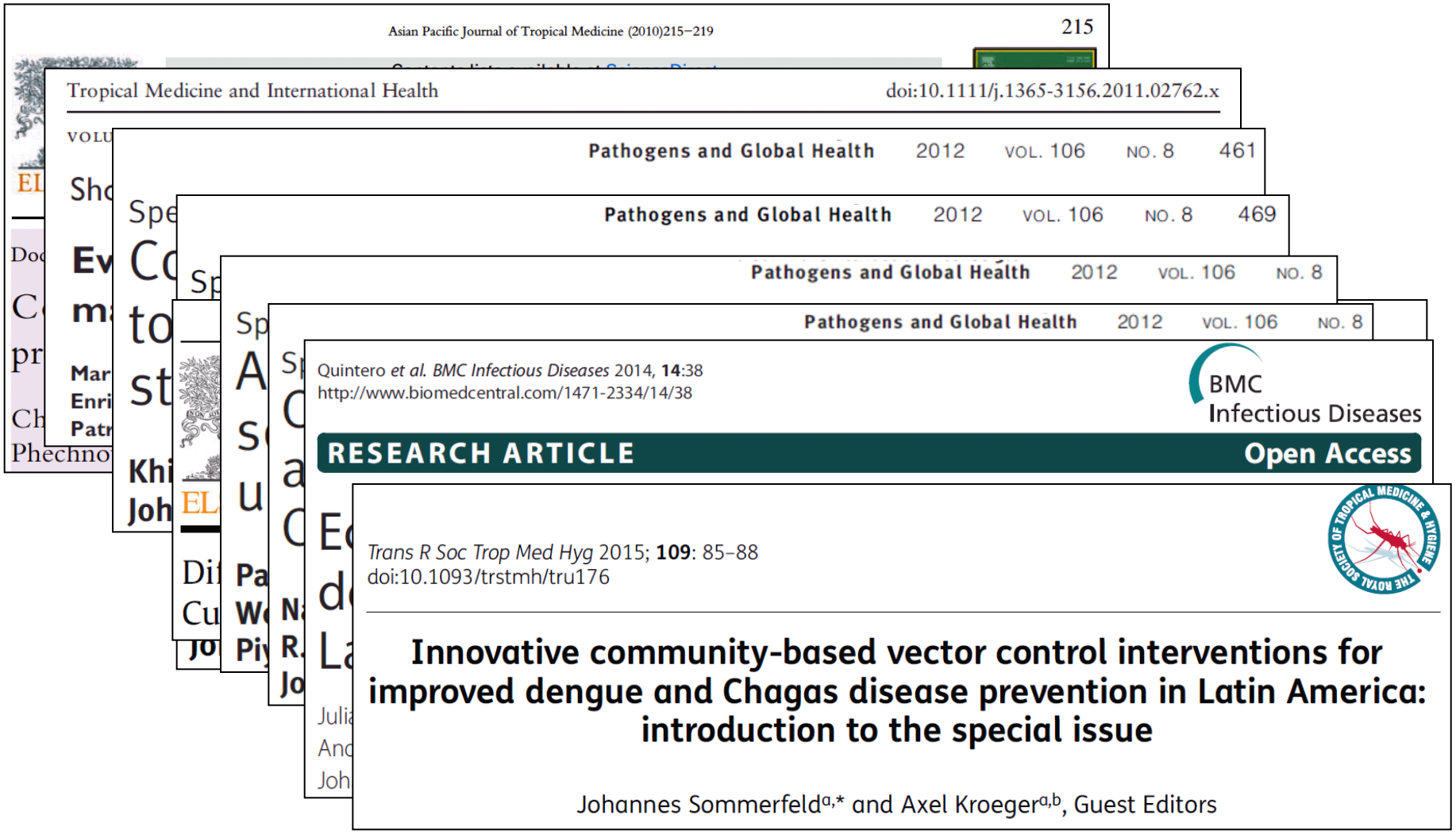
TABLE 1

Countries with Community-Based *Aedes aegypti* Control Programs

Country	Year Initiated	Scope	Evaluated	Comments
Singapore*	1968	Countrywide	Yes	Very effective for 20 years; recently major epidemics of DF/DHF indicate problems
Malaysia*	1972	Countrywide	No	Epidemic dengue indicates problems
Cuba	1981	Islandwide	Yes	Very effective for 14 years; no reported transmission
Puerto Rico	1984	Islandwide	In Progress	Current dengue epidemic indicates problems
Colombia	1985	Focal, Bucaramanga	No	Recent dengue outbreak indicates problems
Indonesia*	1985	Countrywide	No	Epidemic dengue indicates problems
St. Lucia	1985	Islandwide	No	Very effective initially, but surveillance is poor
Taiwan*	1988	South	No	Very effecitve, small outbreak in 1994
Honduras	1990	Focal, Yoro	No	Dengue transmission, but surveillance is poor
Mexico	1990	Focal, Yucatan state	No	Current epidemic, indicates problems
Panama	1990	Countrywide	No	Recent dengue outbreak indicates problems
South Pacific	1990	Selected islands	No	Current transmission, but surveillance is poor
Dominican Republic	1991	Focal	No	Dengue transmission, but surveillance is poor
People's Rep. of China	1991	Hainan Island	No	Current transmission, but surveillance is poor
Thailand	1991	Focal	No	Current transmission, but surveillance is poor
Brazil	1992	Focal	No	Epidemic dengue indicates problems
Sri Lanka	1992	Focal	No	Dengue transmission, but surveillance is poor
Caribbean Subregion	1993	Focal	No	Current transmission, but surveillance is poor
Australia	1994	North Queensland	No	Too early to determine efficacy

* While members of community were used, these programs are directed by the government.

2010之後-- Community-based Eco-Bio-Social approach



Trans R Soc Trop Med Hyg 2015; **109**: 85–88
doi:10.1093/trstmh/tru176

EDITORIAL

Innovative community-based vector control interventions for improved dengue and Chagas disease prevention in Latin America: introduction to the special issue

Johannes Sommerfeld[a,*] and Axel Kroeger[a,b], Guest Editors

Fortaleza, Brazil
Girardot, Colombia
Machala, Ecuador
Acapulco, Mexico
Salto, Uruguay

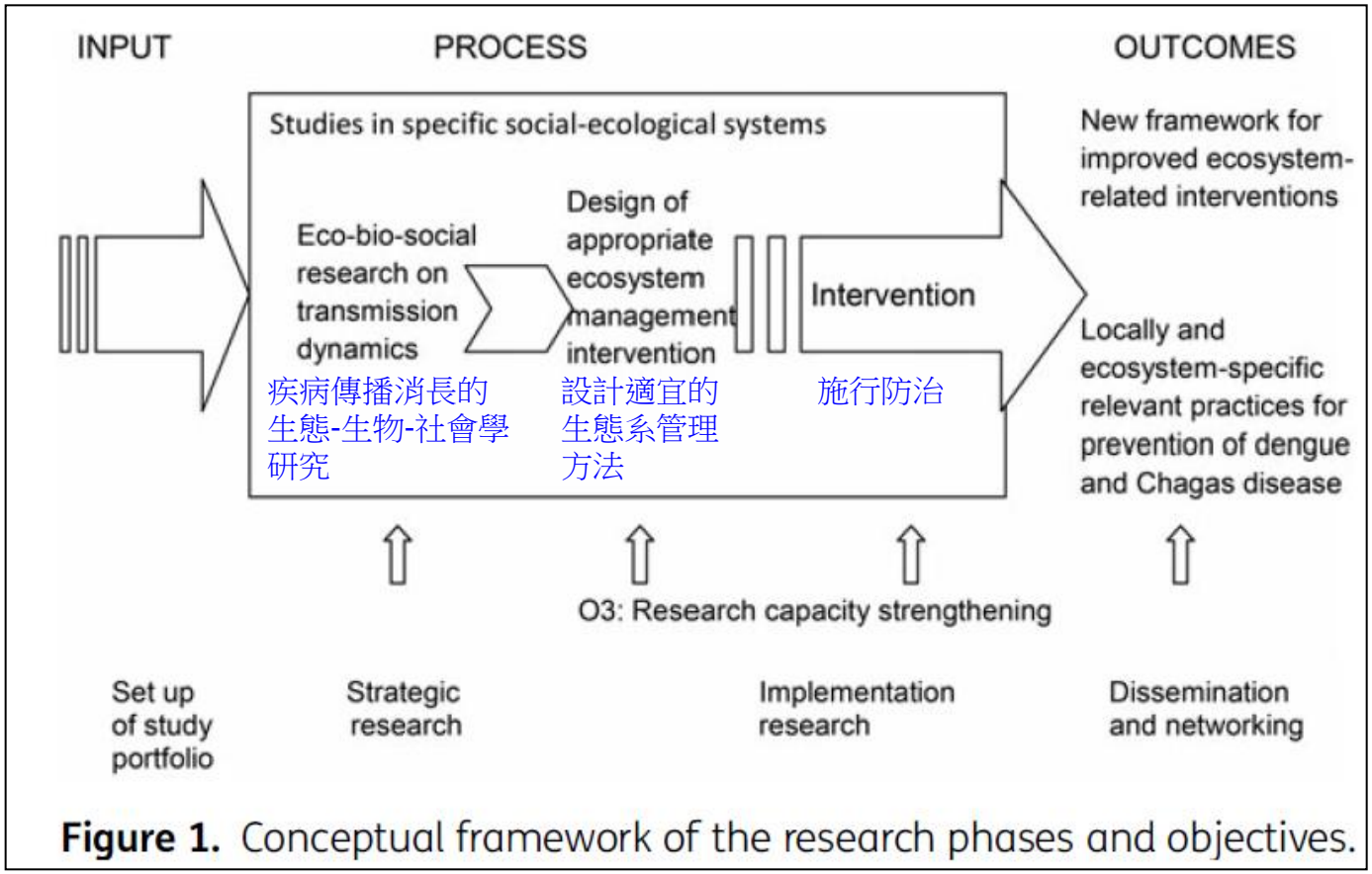


Figure 1. Conceptual framework of the research phases and objectives.

建置改善生態系相關的防治新架構

利用地區性與針對生態系的方法防治登革熱

Trans R Soc Trop Med Hyg 2015; **109**: 99–105
doi:10.1093/trstmh/tru187

ORIGINAL ARTICLE

Entomological impact and social participation in dengue control: a cluster randomized trial in Fortaleza, Brazil

例一、巴西

Andrea Caprara[a,*], José Wellington De Oliveira Lima[a], Ana Carolina Rocha Peixoto[a], Cyntia Monteiro Vasconcelos Motta[a], Joana Mary Soares Nobre[a], Johannes Sommerfeld[b] and Axel Kroeger[b,c]

participatory ecohealth approach (社區參與的生態健康法)

施行方法: 社區工作坊、社區清潔比賽、覆蓋高架容器與屋內未投放殺蟲劑的垃圾盛器、動員學童與年長的居民、社區散播訊息、衛育與溝通。

結果: 相較於例行防治法，嵌入社區參與環境管理的套裝方法，確實可行且能顯著降低病媒蚊密度。

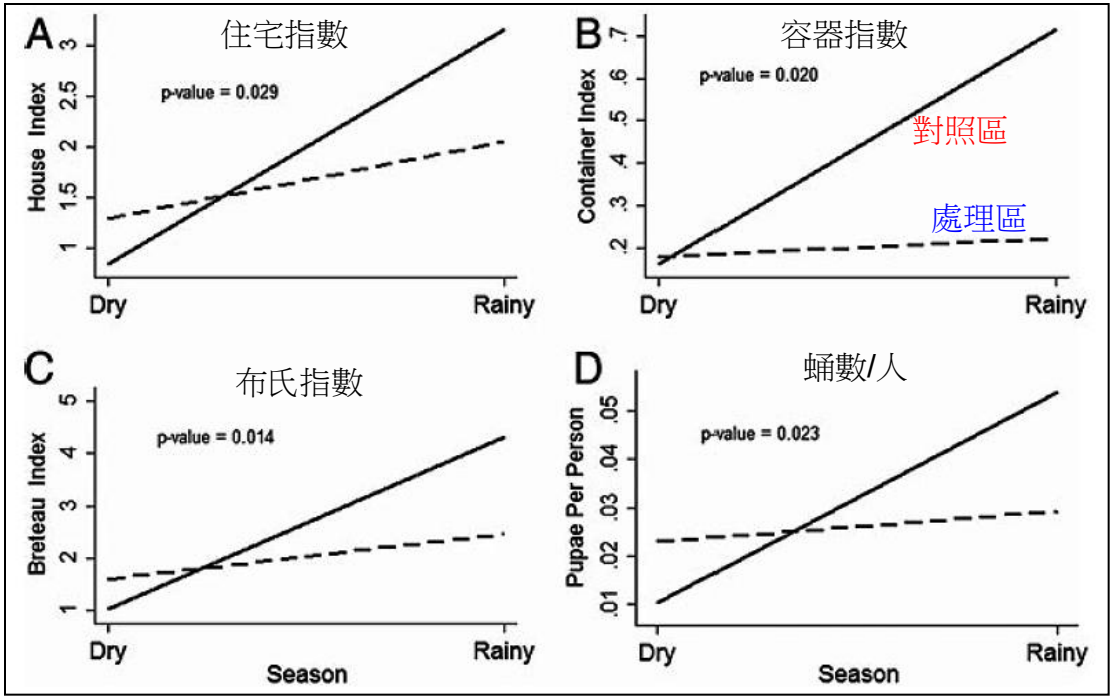


Figure 1. *Aedes aegypti* infestation, before (dry season) and after (rainy season) the intervention.
—— Control area;
------ Intervention area.

Trans R Soc Trop Med Hyg 2015; **109**: 116–125
doi:10.1093/trstmh/tru208

例二；
哥倫比亞

ORIGINAL ARTICLE

Effectiveness and feasibility of long-lasting insecticide-treated curtains and water container covers for dengue vector control in Colombia: a cluster randomised trial

Juliana Quintero[a,*], Tatiana García-Betancourt[a], Sebastian Cortés[a], Diana García[a,b], Lucas Alcalá[a,b], Catalina González-Uribe[a], Helena Brochero[b] and Gabriel Carrasquilla[a]

LLIN and container cover (長效藥浸紗網與積水容器覆蓋法)

施行方法: 使用長效藥浸紗網、覆蓋積水容器、及代表性病媒蚊調查。

結果: 社區922戶加裝浸藥紗網及303戶積水容器覆蓋，使病媒布氏指數由14 降為6，每人蛹數降低71%，而例行防治法布氏指數由8 降為5，但每人蛹數僅降25%。適當的社區動員，達成長期的行為改變，更可加強此套病媒防治法的效果。

Trans R Soc Trop Med Hyg 2015; **109**: 126–133
doi:10.1093/trstmh/tru209

ORIGINAL ARTICLE

例三:
厄瓜多爾

Integrating participatory community mobilization processes to improve dengue prevention: an eco-bio-social scaling up of local success in Machala, Ecuador

Kendra Mitchell-Foster[a,b,*], Efraín Beltrán Ayala[c,d], Jaime Breilh[e], Jerry Spiegel[a], Ana Arichabala Wilches[c,f], Tania Ordóñez Leon[d] and Jefferson Adrian Delgado[d]

eco-bio-social process (教育與社區動員法)

施行方法: 實施完整的小學登革熱教育計畫(包括課堂活動、實務技術與應用)，以及動員社區移除廢棄容器與覆蓋水桶的「清潔中庭，無蚊容器」策略的執行。

結果: 經過動員與活化社區的生態-生物-社會計畫(孳生源清除)，病媒蚊密度(每人蛹數)大幅降低，與對照群落差2.2倍。

Table 2. Effects on the pupa per person index (PPI) pre- and post-intervention

Effect	Odds ratio	95% CI	P value	B	SE	95% CI
All cluster pairs						
Annual change	1.6	1.0 to 2.6	0.033	0.491	0.2305	1.041 to 2.568
Intervention	1.7	0.9 to 3.3	0.121	0.528	0.3401	−0.054 to 1.302
Biolarviciding	0.4	0.1 to 1.2	0.091	−0.929	0.5499	0.135 to 1.160
Cluster pairs where study design applied[a]						
Annual change	1.8	1.0 to 2.8	0.011	0.595	0.2319	0.139 to 1.051
Intervention	2.2	1.2 to 4.7	0.015	0.801	0.3535	0.155 to 1.447
Biolarviciding	0.5	0.1 to 1.7	0.286	−0.684	0.6066	−2.358

Estimated with a generalized estimating equation models with binomial link function.
[a] Excluding clusters # 1,2,4 where all interventions were not carried out; and #7 where major infrastructure improvements took place.

Trans R Soc Trop Med Hyg 2015; **109**: 106–115
doi:10.1093/trstmh/tru189

ORIGINAL ARTICLE

Long-lasting insecticide-treated house screens and targeted treatment of productive breeding-sites for dengue vector control in Acapulco, Mexico

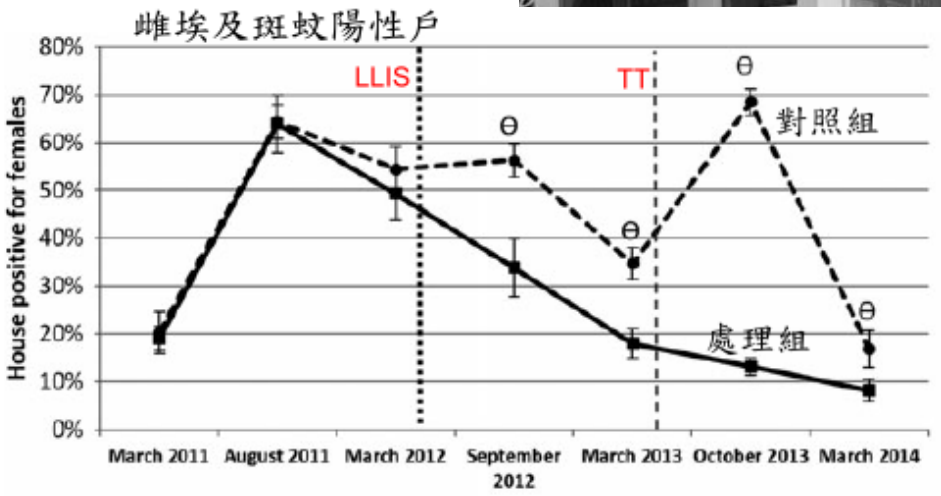
Azael Che-Mendoza[a], Guillermo Guillermo-May[b], Josué Herrera-Bojórquez[b], Mario Barrera-Pérez[b], Felipe Dzul-Manzanilla[c], Cipriano Gutierrez-Castro[c], Juan I. Arredondo-Jiménez[d], Gustavo Sánchez-Tejeda[d], Gonzalo Vazquez-Prokopec[f], Hilary Ranson[e], Audrey Lenhart[g], Johannes Sommerfeld[h], Philip J. McCall[e], Axel Kroeger[h] and Pablo Manrique-Saide[b,*]

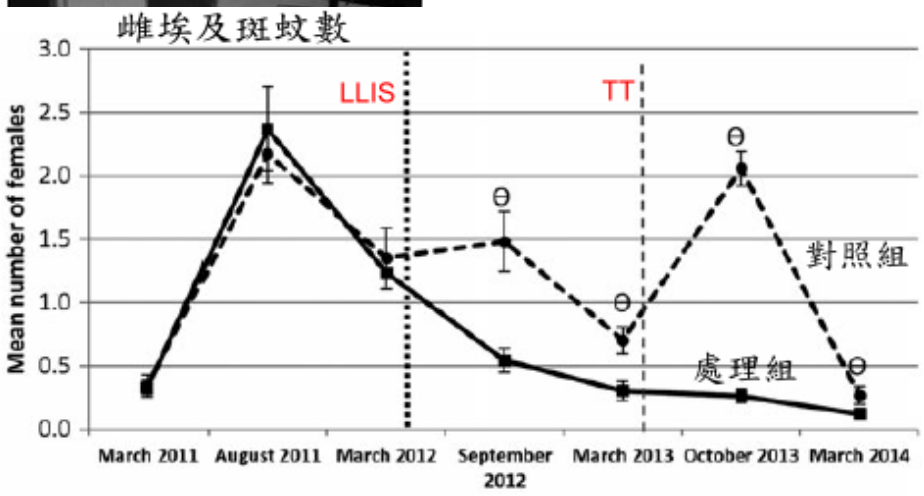
例四、墨西哥

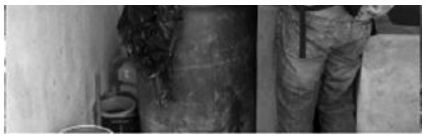
LLIS and TT (長效藥浸紗網與目標孳生源處理法)

施行方法: 社區居家與學校門窗使用長效藥浸紗網(LLIS)，埃及斑蚊孳生多的目標區大水桶施放殺幼蚊劑(Spinosad 7.48%)處理(TT)。

結果: LLIS處理後的5~12月病媒蚊孳生顯著減少，加上TT處理後低蚊密度可持續18~24月。







Trans R Soc Trop Med Hyg 2015; **109**: 134–142
doi:10.1093/trstmh/tru183

例五:
烏拉圭

ORIGINAL ARTICLE

Improved dengue fever prevention through innovative intervention methods in the city of Salto, Uruguay

César Basso[a,*], Elsa García da Rosa[b], Sonnia Romero[c], Cristina González[d], Rosario Lairihoy[b], Ingrid Roche[e], Ruben M. Caffera[f], Ricardo da Rosa[d], Marisel Calfani[g], Eduardo Alfonso-Sierra[h], Max Petzold[i], Axel Kroeger[h,j] and Johannes Sommerfeld[h]

Ecosystem management measures (生態管理法)

施行方法: 使用生態法對目標孳生源管理，包括住戶自覺及社區溝通，地方媒體宣傳，與醫師及衛生人員討論，及與衛生單位建立伙伴關係。

結果: 雖然不顯著但生態管理法病媒蚊孳生確有減少，且節省成本。

Table 2. Analysis of the Breteau index (BI), container index (CI), house index (HI), number of pupae per person index (PPI) and number of pupae par hectare index (PHI) values obtained in spring (November 2012) and autumn (April 2013) in intervention and control clusters. Effective number of houses and number of containers examined and infested. The intervention effect was assessed by calculating the difference in increase from spring (baseline; low vector density due to low temperatures) to autumn (post intervention; elevated vector densities due to higher temperatures) in intervention and control clusters taking the original differences at baseline into account (difference of differences method). A negative difference means that the increase in control areas was larger than in intervention areas. The vector densities in intervention clusters on average increased less than those in the control clusters, although the difference was statistically not significant probably due to the reduced sample size of clusters

	Intervention			Control			Difference in increase (p-value)
	Spring	Autumn		Spring	Autumn		
BI	3.40	12.02	+8.62	2.64	13.77	+11.13	−2.51 (0.60) NS
CI	1.45	6.94	+4.49	0.95	8.01	+7.06	−1.56 (0.61) NS
HI	2.38	6.62	+4.24	2.06	6.53	+4.47	−0.23 (0.90) NS
PPI	0.048	0.13	+0.082	0.016	0.14	+0.124	−0.041 (0.47) NS
PHI	0.89	1.92	+1.03	0.30	1.67	+1.37	−0.33 (0.64) NS
No. of containers	1441	889	-552	1910	874	-1036	
No. of infested containers	21	60	+39	18	64	+46	
No. of infested households	15	33	+18	14	31	+17	

NS: not significant.

三、社區參與及動員

the bmj | BMJ 2015;351:h3267 | doi: 10.1136/bmj.h3267

RESEARCH

OPEN ACCESS

Evidence based community mobilization for dengue prevention in Nicaragua and Mexico (*Camino Verde*, the Green Way): cluster randomized controlled trial

Neil Andersson,[1, 2] Elizabeth Nava-Aguilera,[1] Jorge Arosteguí,[3] Arcadio Morales-Perez,[1] Harold Suazo-Laguna,[3] José Legorreta-Soberanis,[1] Carlos Hernandez-Alvarez,[3] Ildefonso Fernandez-Salas,[4] Sergio Paredes-Solís,[1] Angel Balmaseda,[5] Antonio Juan Cortés-Guzmán,[6] René Serrano de los Santos,[1] Josefina Coloma,[7] Robert J Ledogar,[8] Eva Harris[7]

尼加拉瓜與墨西哥社區動員實例

A community mobilization protocol began with community discussion of baseline results. Each intervention cluster adapted the basic intervention-chemical-free prevention of mosquito reproduction-to its own circumstances. All clusters continued the government run dengue control program.

WHAT IS ALREADY KNOWN ON THIS TOPIC

- Current dengue control rests heavily on using the organophosphate pesticide temephos (Abate) in household water storage containers
- The dengue pandemic has continued to grow despite widespread use of temephos, and resistance to this pesticide is well documented. Space spraying with other pesticides is common but of little proved value
- Though several studies have shown an impact of community interventions on vector control, none has shown an impact on dengue illness or serological evidence of infection

WHAT THIS STUDY ADDS

- The Camino Verde (Green Way) is pesticide-free evidence based community mobilization, each community choosing and implementing its own mix of dengue prevention actions based on local vector reservoirs and community resources
- The project had a positive impact on serological evidence of dengue virus infection in children, reported illness at all ages, and all dengue vector control indices
- This is the first report of serological evidence of impact of community interventions
- Serological evidence could not confirm any protective effect of temephos against infection with dengue virus—overall or in any subgroups

「綠色」方法:

- 以有效的非藥劑方法進行社區動員，
- 每個社區依照自己社區病媒孳生源及自己社區有的資源來選擇並執行自己的防治計畫

結果:

以聚落為分析單位，血清學證據顯示社區動員結果:

1. 兒童登革熱病毒感染相對風險降低 29.5%,
2. 報告病例降低 24.7%,
3. 居家病媒減少，平均住宅指數降低 44.1%, 容器指數降低 36.7%, 布氏指數降低(35.1%,
4. 每人蛹數降低 51.7%,
5. 需醫療兒童數亦降低。

三、社區參與及動員的必要

- 可凝聚社區共識，提供社區病媒孳生源特質
- 可徹底清除孳生源，及早因應疫情發生
- 可配合疫情指揮中心執行有系統的緊急滅蚊策略
- 可共同學習了解病媒習性與孳生源特性，提升衛教效果
- 可協助弱勢居民清理家園、防除病媒蚊
- 可提高隱性孳生源發覺與清除的機會
- 可建立社區登革熱病媒防治的永續性團隊
- 可降低防治成本

四、登革熱防治社區動員與溝通之行為調查架構

Communication-for-Behavioural-Impact

社區動員與溝通登革熱防治的行為調查

BOX 4 • FIFTEEN STEPS OF COMBI PLANNING

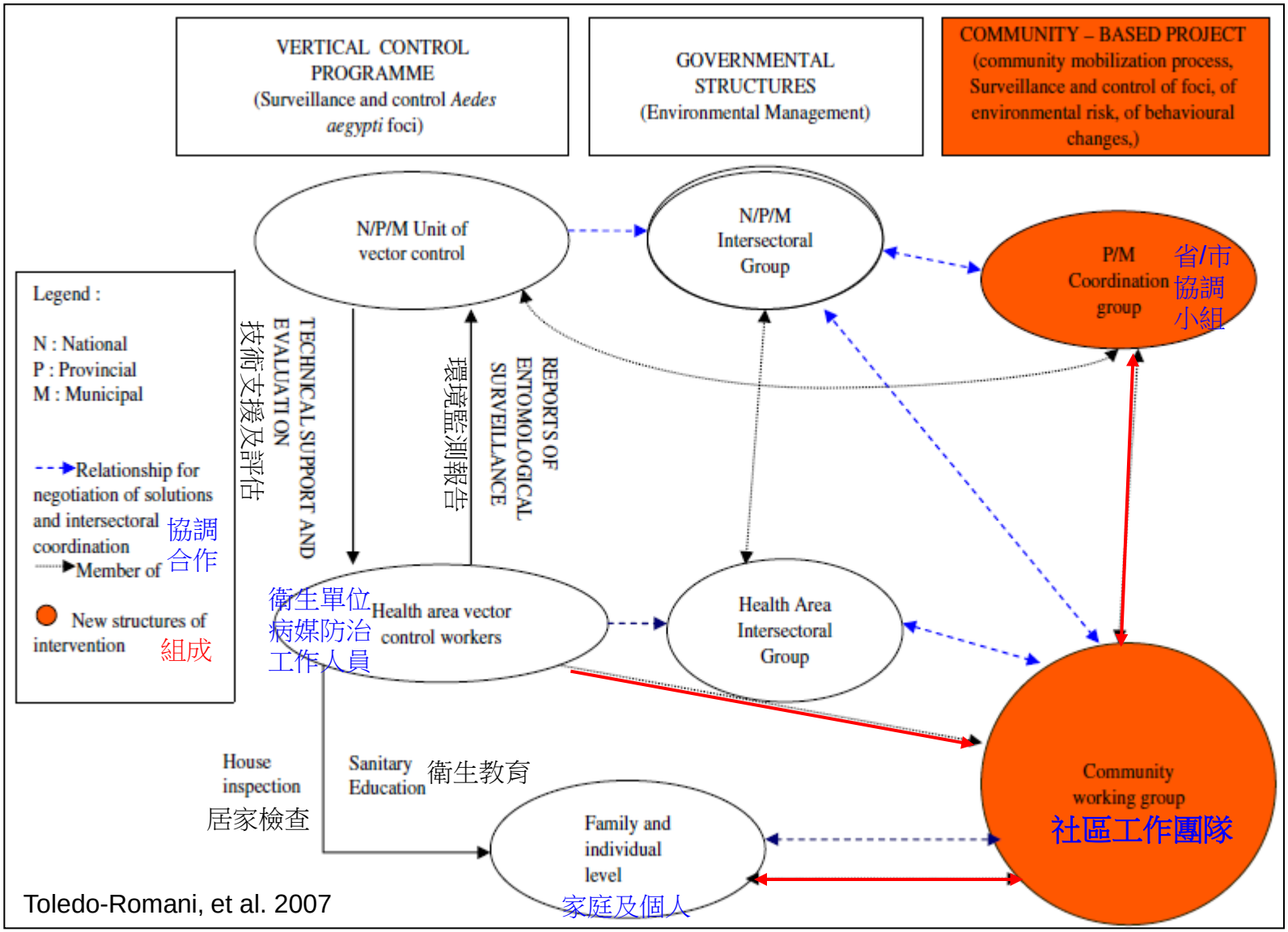
1. Assemble a multidisciplinary planning team
2. State preliminary behavioural objectives
3. Plan and conduct formative research
4. Invite feedback on formative research
5. Analyse, prioritize, and finalize behavioural objectives
6. Segment target groups
7. Develop your strategy
8. Pre-test behaviours, messages, and materials
9. Establish a monitoring system
10. Strengthen staff skills
11. Set up a system to manage and share information
12. Structure your programme
13. Write a Strategic Implementation Plan
14. Determine your budget
15. Conduct a pilot test and revise your Strategic Implementation Plan

Parks and Lloyd, 2004

BOX 26 • A FRAMEWORK FOR COMPREHENSIVE BEHAVIOURAL MONITORING OF SOCIAL MOBILIZATION AND COMMUNICATION FOR DENGUE PREVENTION AND CONTROL

	BEHAVIOURS IN INDIVIDUALS, GROUPS OR INSTITUTIONS RELATED TO		
	斑蚊孳生源防除	防止斑蚊叮咬	就醫與病患照護
Individuals and households	■ Water storage practices ■ Care of house plants ■ Care of animals ■ Refuse disposal ■ Storage of materials in the yard	■ Use of aerosol insecticides and repellents ■ Screening of windows and doors ■ Sleeping under nets during daytime naps	■ Disease recognition ■ Home-based treatment ■ Treatment-seeking outside the home
Communities, community groups, schools, NGOs	■ Communication with behavioural impact ■ Community clean-ups ■ Advocacy for or organization of essential services: water, refuse collection ■ Promote recycling of tyres, cans, bottles, etc.	■ Housing improvement	■ Facilitation of transport of patients to health-care facilities
Vector control and sanitation services of national, state and local governments	■ Communication with behavioural impact ■ Refuse collection ■ Water and sanitation ■ Larval source reduction on public lands (roadsides, cemeteries) ■ Application and/or distribution of larvicides	■ Area-wide application of insecticides during emergencies	■ Training of health workers in case management and disease surveillance protocols
Health-care workers, health-care facilities	■ Maintain health facilities free of larval production sites	■ Maintain health facilities free of mosquitoes	■ Correct application of case management and disease surveillance protocols
Decision-makers and policy-makers in national, state and local governments	■ Maintain adequate funding for larval source reduction, including multidisciplinary teams to plan, implement, monitor and evaluate social mobilization and communication strategies ■ Make appropriate decisions based on entomological and behavioural monitoring data	■ Make appropriate decisions about routine and emergency use of insecticides	■ Make appropriate decisions based on disease surveillance data
Private sector businesses	■ Promote recycling of tyres, cans, bottles, etc. ■ Production, distribution and (social) marketing of products to control mosquito larvae	■ Appropriate (responsible) marketing of insecticides and repellents	■ Not applicable

五、建構社區工作團隊



Toledo-Romani, et al. 2007

Tropical Medicine and International Health
VOLUME 16 NO 6 PP 744–747 JUNE 2011
doi:10.1111/j.1365-3156.2011.02762.x

Short Communication

Evidence on impact of community-based environmental management on dengue transmission in Santiago de Cuba

Maria E. Toledo[1], Adriana Rodriguez[2], Luis Valdés[2], Rigoberto Carrión[3], Georgina Cabrera[3], Digna Banderas[4], Enrique Ceballos[4], Mireya Domeqc[3], Carilda Peña[2], Alberto Baly[1], Veerle Vanlerberghe[5] and Patrick Van der Stuyft[5]

The main components of the community-based strategy in the intervention blocks were (i) establishment and training of a formal task force, the community working groups (CWG), in each area of responsibility of the family medicine practices, (ii) securing intersectoral coordination between the CWG and the existing local government and health structures and (iii) creation of formal links with the routine vector control programme.

(i)設立並訓練社區工作小組，(ii)強化社區工作小組與地方政府及衛生部門的協調，(iii)正式連結社區工作小組與例行的病媒蚊防治計畫。

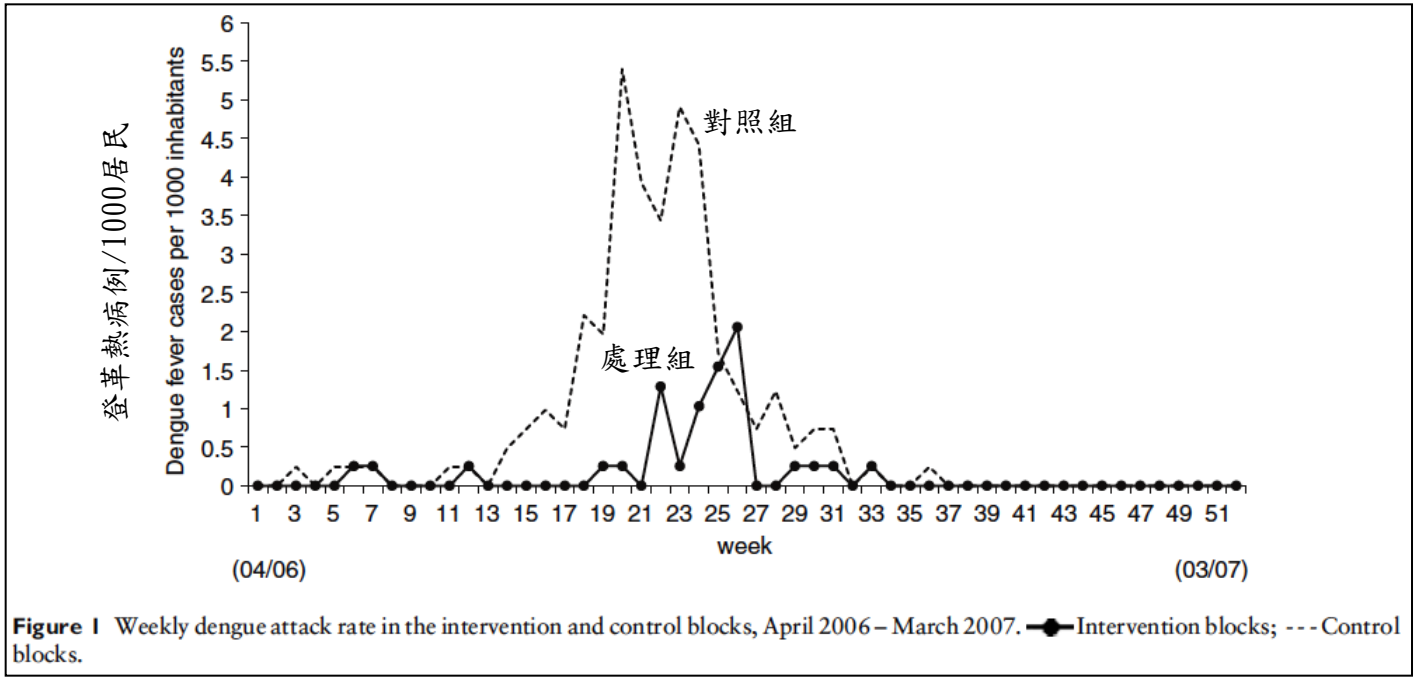


Figure 1 Weekly dengue attack rate in the intervention and control blocks, April 2006 – March 2007. —●— Intervention blocks; - - - Control blocks.

六、社區動員與參與的困境

- 老社區居民年紀大、溝通難、動員力弱

➢社區居民教育程度不同，衛生教育效果差、病媒監測技術提升不易

➢社區若無積極主動的鄰里長，則配合度不高，社區參與之執行效果差

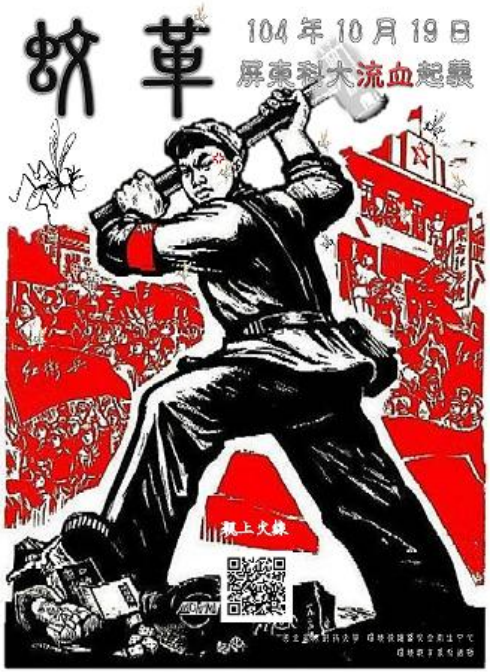
➢社區居民若無熱心與共識，則動員不易

- 支援社區衛教及動員所需之專業人力不足
- 社區衛教及動員所需之經費與資源不易籌措




結 論

- 登革熱的防治應是環保、衛生防治人員+志工+社區居民共同參與的工作
- 社區參與及動員是今後登革熱病媒蚊有效抑制的要件
- 重新規劃建置社區工作團隊的組織、職掌、訓練等之架構與內涵
- 加強宣導病媒蚊防治的生態-生物-社會學(Eco-bio-social)概念
- 更異現行登革熱防治思維為「生態-健康防治(Eco-health)」策略



社區參與？社區動員？


眾神遶境
祈登革熱退燒
台南登革熱高燒不退，中華道教聯合總會發起「台灣天狗熱消災代天巡狩祈安遶境活動」，該會執行長于美人（中）親自隨行跟著遶境，盼用宗教力量，幫助登革熱疫情降溫。（圖文：曹婷婷）

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