



NOTES FROM THE FIELD

The effects of placing an operational research fellow within the Viet Nam National Tuberculosis Programme

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In April 2009, an operational research fellow was placed within the Viet Nam National Tuberculosis Control Programme (NTP). Over the 6 years from 2010 to 2015, the OR fellow co-authored 21 tuberculosis research papers (as principal author in 15 [71%]). This constituted 23% of the 91 tuberculosis papers published in Viet Nam during this period. Of the 21 published papers, 16 (76%) contributed to changes in policy ($n = 8$) and practice ($n = 8$), and these in turn improved programme performance. Many papers also contributed important evidence for better programme planning. Highly motivated OR fellows embedded within NTPs can facilitate high-quality research and research uptake.

Operational research (OR) can be defined as research for knowledge on interventions, strategies or tools that enhance the quality, effectiveness or performance of health systems or programmes in which the research is being conducted.^{1,2} During the routine implementation of programme activities, many challenges arise that can be identified and resolved through OR with the aim of increasing efficiencies in health service delivery and improving health outcomes.^{1,3,4} In the recently launched World Health Organization (WHO) End TB Strategy, Pillar Three explicitly states the need for research to optimise implementation and impact.⁵

Viet Nam is a lower-middle-income country with a high tuberculosis (TB) burden. The country recognises the need for OR and the utilisation of research findings by decision makers, and it is expected that these should lead to positive development outcomes. Research is a key component in Viet Nam for providing strategic information for ending TB, and it has been included in Pillar Three of the Viet Nam National Tuberculosis Strategy Implementation Plan 2015–2020 (Ministry of Health, Hanoi, Viet Nam, July 2014).

In January 2009, with initial support from Bloomberg Philanthropies (New York, NY, USA) and later from the Department for International Development (London, UK), the International Union Against Tuberculosis and Lung Disease (The Union), based in Paris, France, established the Centre for Operational Research, with the principal objective of building OR capacity in low- and middle-income countries through the Structured Operational Research Training Initiative (SORT IT) courses,⁶ and the placement of OR fellows within or close to programme settings. With the

agreement of the director of the Viet Nam National Tuberculosis Programme (NTP), in April 2009 a part-time OR fellow, who had previously co-authored one published paper, was appointed within the NTP to promote and lead a relevant TB-specific OR agenda. The terms of reference included an obligation to submit at least two papers per annum to peer-reviewed journals.^{2,7}

Six years later, we describe the output of OR conducted and published by the OR fellow in conjunction with the NTP and NTP colleagues, and outline how the research informed changes in policy and practice and improved programme performance.

ASPECT OF INTEREST

Published papers

Over the 6 years from January 2010 to December 2015, the Viet Nam OR fellow co-authored 21 TB-related research papers that were published in international journals (Table 1). This constituted 23% of the 91 TB research studies conducted in Viet Nam and published in international peer-reviewed journals (as indexed on Medline) with Vietnamese authors over the same time period. This contrasts with the 52 TB research papers published over the 6 years from 2004 to 2009. Of the 21 published papers, the OR fellow was first author of 15 (71%). Eleven (52%) papers were published in journals offering immediate open access, with the remainder offering open access after a period of time. In addition to these 21 papers, the OR fellow provided advice and suggestions and contributed to discussions for four other papers on which he was not a co-author.

Translation of research findings into policy and practice and observed impact

Once the research studies were completed, the findings were disseminated through national meetings, conferences and scientific publications, and were self-assessed as to whether they changed policy and practice and improved programme performance.

Of the 21 published papers, 16 (76%) contributed to changes in policy and practice (Table 1, with more detailed examples shown in Table 2). These were classified as 1) changes in policy ($n = 8$, 38%): changes in programmatic guidance using Xpert® MTB/RIF (Cepheid, Sunnyvale, CA, USA) to identify multidrug-resistant (MDR) TB in new TB cases; using chest radiography for active case finding in densely populated

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KEY WORDS

policy; practice; OR fellow; Viet Nam

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TABLE 1 Published research papers co-authored by the Viet Nam Operational Research fellow, January 2010–December 2015

Year	Journal	Article title	First author, volume: pages
2010	Int J Tuberc Lung Dis	Completeness and consistency in recording information in the tuberculosis case register, Cambodia, China and Viet Nam [†]	Hoa N B, 14: 1303–1309
2010	Bull World Health Organ	National survey of tuberculosis prevalence in Viet Nam*	Hoa N B, 88: 273–280
2011	Int J Tuberc Lung Dis	Measuring socio-economic data in tuberculosis prevalence surveys	van Leth F, 15 (Suppl 2): S58–S63
2011	Trop Med Int Health	Health seeking behaviour among adults with prolonged cough in Vietnam*	Hoa N B, 16: 1260–1267
2011	BMC Public Health	Characteristics of tuberculosis patients at intake in Cambodia, two provinces in China, and Viet Nam [†]	Hoa N B, 11: 367
2011	Emerg Infect Dis	Proportion of tuberculosis cases diagnosed and treated in the private sector in Vietnam*	Hoa N B, 17: 562–564
2011	Int J Tuberc Lung Dis	Household expenditure and tuberculosis prevalence in Viet Nam: prediction by a set of household indicators*	Hoa N B, 15: 32–37
2012	BMC Public Health	A descriptive study of TB cases finding practices in the three largest public general hospitals in Vietnam [†]	Hoa N B, 12: 808
2012	BMC Res Notes	Human resource requirements for quality-assured electronic data capture of the tuberculosis case register	Hoa N B, 5: 75
2012	Public Health Action	Adequacy of anti-tuberculosis drug dosage prescriptions in Viet Nam	Hoa N B, 2: 5–9
2012	Public Health Action	Time to unsuccessful tuberculosis treatment outcome, Cambodia, China, and Viet Nam [†]	Hoa N B, 2: 15–20
2012	Int J Tuberc Lung Dis	Yield of interview screening and chest X-ray abnormalities in a tuberculosis prevalence survey*	Hoa N B, 16: 762–67
2013	Int J Tuberc Lung Dis	Free TB diagnosis and treatment are not enough: patient cost evidence from three continents*	Mauch V, 17: 381–387
2013	Int J Tuberc Lung Dis	First national tuberculin survey in Viet Nam: characteristics and association with tuberculosis prevalence	Hoa N B, 17, 738–744
2013	Int J Tuberc Lung Dis	Changes in body weight and tuberculosis treatment outcome in Viet Nam [†]	Hoa N B, 17: 61–66
2014	Public Health Action	The Structured Operational Research and Training Initiative for public health programmes	Ramsay A, 4: 79–84
2014	Trop Med Int Health	Prescription patterns and treatment outcomes of MDR-TB patients treated within and outside the National Tuberculosis Programme in Pham Ngoc Thach hospital, Viet Nam*	Hoa N B, 19: 1067–1081
2015	Int J Tuberc Lung Dis	The fourth national anti-tuberculosis drug resistance survey in Viet Nam*	Nhung N V, 19: 670–675
2015	Western Pac Surveill Response J	Tuberculosis case notification data in Viet Nam, 2007 to 2012 [†]	Nhung N V, 6: No. 1
2015	BMC Public Health	Challenges in detection and treatment of multidrug resistant tuberculosis patients in Vietnam [†]	Thuy T T H, 15: 980
2015	BMC Res Notes	Adverse events in the treatment of MDR-TB patients within and outside the NTP in Pham Ngoc Thach hospital, Ho Chi Minh City, Vietnam [†]	Hoa N B, 8: 809

*Contributed to policy change.

[†]Contributed to changes in practice.

TB = tuberculosis; MDR-TB = multidrug-resistant tuberculosis; NTP = national tuberculosis control programme.

districts and in vulnerable and high-risk groups; providing instructions about how the NTP should collaborate with public and private health facilities; and modifying health insurance schemes to cover the costs of TB diagnosis; and 2) changes in practice ($n = 8$, 38%): better monitoring of weight change during treatment; improved focus on TB case finding among males, the poor and household child contacts; and improved diagnostic algorithms in patients with presumptive pulmonary TB using chest X-ray.

Many of the research findings were used for programme planning, to develop the Viet Nam National Tuberculosis Strategy Implementation Plan 2015–2020, the Global Fund Against AIDS, Tuberculosis and Malaria 2011–2015 Round 9 projects, and the TB-HIV Joint Concept Note 2015–2017.

DISCUSSION

This study shows the value of placing a motivated, driven and enthusiastic OR fellow within a disease control programme setting. The fellow was a co-author of between two and five published papers per annum from 2010 to 2015, he personally contributed to

over one fifth of the total TB research publications from Viet Nam over the 6-year period, and assisted in a number of other TB-related papers for which he was not a co-author. Furthermore, publications on TB from Viet Nam increased by 75%, from 52 to 91, during that period compared with the previous 6 years. These findings are similar to experiences in India, and testify to a growing belief in the value of the OR fellowship model promoted and implemented by The Union in Asia and Africa.²

Over three quarters of the published papers on which the OR fellow was co-author contributed to changes in policy and practice, and many of these studies also added to the evidence base for planning within the NTP. This uptake of research is slightly higher than that observed from the OR capacity building SORT IT courses, where 74% of 88 studies and 55% of 81 studies were assessed as making a difference to policy and practice, respectively.^{8,9} The better research uptake is probably due to direct placement of the OR fellow within an NTP, as the research was highly relevant to programmatic needs, and national co-authorship was always prominent. This is similar to findings in the Malawi NTP 15 years previously.¹⁰ Based on the success of OR over

TABLE 2 Examples of operational research studies on tuberculosis in Viet Nam between 2010 and 2015, the implications for policy and practice change and the observed impact

Reference	Main findings	Implications for policy and practice and observed impact
Hoa N B, Sy D N, Nhung N V, et al. National survey of tuberculosis prevalence in Viet Nam. <i>Bull World Health Organ</i> 2010; 88: 273–80	TB prevalence rate in Viet Nam was found to be 145 per 100 000: this was 1.6 times higher than previously estimated	Provided strategic information for the NTP that used the findings to develop the Viet Nam National Tuberculosis Strategy Implementation Plan 2015–2020, the Global Fund 2011–2015 Round 9 projects and the TB-HIV Joint Concept Note 2015–2017 The NTP focused more on TB case finding following this survey and TB case detection rates in the country increased rapidly from 54% (95%CI 43–71) in 2010 to 77% (95%CI 65–94) in 2014
Hoa N B, Chen W, Chay S, et al. Completeness and consistency in recording information in the tuberculosis case register, Cambodia, China and Viet Nam. <i>Int J Tuberc Lung Dis</i> 2010; 14: 1303–1309	Excellent recording of information in the TB registers, although there was need to improve on sputum smear examinations and correct TB treatment outcomes, especially for failure cases	Reassured the Viet Nam NTP about the quality of the recording and reporting systems More attention needed to be paid during supervision to ascertaining the correct classification of treatment outcomes in the TB register and quarterly reports Findings used to strengthen surveillance systems and help Viet Nam move from a paper-based to an electronic-based record system (VITIMES)
Hoa N B, Chen W, Chay S, et al. Characteristics of tuberculosis patients at intake in Cambodia, two provinces in China, and Viet Nam. <i>BMC Public Health</i> 2011; 11: 36	Higher ratio of males to females with respect to smear-positive PTB in routine case finding, but still lower than the levels seen in the TB prevalence survey	The NTP became more focused on identification of TB amongst males, and, as a result, the male to female ratio in case notifications increased from 2.9 in 2011 to 3.1 in 2015
Hoa N B, Khanh P H, Hennig C, et al. A descriptive study of TB case finding practices in the three largest public general hospitals in Viet Nam. <i>BMC Public Health</i> 2012; 12: 808	Chest X-ray was the initial diagnostic test in Viet Nam's largest hospitals, but further investigations were only performed for those with clear TB-related symptomatology	The Viet Nam NTP updated TB screening and diagnostic procedures in the public hospitals to use chest X-ray as a general screening tool for all chest out-patients, with further investigations by sputum smear examination or other diagnostic tests
Hoa N B, Lauritsen J M, Rieder H L. Changes in body weight and tuberculosis treatment outcome in Viet Nam. <i>Int J Tuberc Lung Dis</i> 2013; 17: 61–66	Weight change during anti-tuberculosis treatment was associated with treatment outcomes: weight gain indicated successful treatment and weight loss unfavourable outcomes	The Viet Nam NTP recommended that monthly weight be recorded in patients on anti-tuberculosis treatment to assess and predict treatment outcomes. This was used to help maintain the country's treatment success rates of 90% or higher
Mauch V, Bonsu F, Gyapong M, et al. Free TB diagnosis and treatment are not enough: patient cost evidence from three continents. <i>Int J Tuberc Lung Dis</i> 2013; 17: 381–387	Assessment of indirect patient costs during anti-tuberculosis treatment. The average total patient cost for anti-tuberculosis treatment was USD 1021, slightly higher than the average annual income, at USD 948	The Viet Nam NTP worked to minimise patient costs by providing completely free services, by decentralising care with appropriate supervision and by improving access to care. The NTP also worked with donors to use health insurance schemes to maximise social protection for TB patients
Hoa N B, Khanh P H, Chinh N V, et al. Prescription patterns and treatment outcomes of MDR-TB patients treated within and outside the National Tuberculosis Programme in Pham Ngoc Thach hospital, Viet Nam. <i>Trop Med Int Health</i> 2014; 19: 1076–1081	The treatment outcomes of patients with MDR-TB managed within GLC guidance were significantly better than those managed outside of GLC guidance	The findings were used to develop the Viet Nam Joint TB-HIV Concept Note, especially around the management of MDR-TB, and this was subsequently approved by the Global Fund The NTP worked with providers of MDR-TB treatment for patients managed outside of GLC guidance by encouraging adherence to NTP procedures, notification of cases and patient-centred approaches Treatment success outcomes of MDR-TB patients managed outside of GLC guidance improved from 53.7% in 2010 to 69.4% in 2012
Nhung N V, Hoa N B, Sy D N, et al. The fourth national anti-tuberculosis drug resistance survey in Viet Nam. <i>Int J Tuberc Lung Dis</i> 2015; 19: 670–675	The fourth drug resistance study showed that the proportion of new cases with MDR-TB was 4.0% and of previously treated cases with MDR-TB was 23.3%	The findings supported the data and advocacy necessary to increase the budget for MDR-TB activities The findings furthermore supported the use and scale-up of Xpert® MTB/RIF for both new and previously treated cases. As a result of this and other activities focused on MDR-TB, MDR-TB case notifications increased from 948 in 2013 to 1522 in 2014 and 2131 in 2015
Nhung N V, Hoa N B, Khanh P H, et al. Tuberculosis case notification data in Viet Nam, 2007 to 2012. <i>Western Pac Surveill Response J</i> 2015; 6: 1	Smear-positive PTB case notifications from 2007 to 2012 decreased from 65 to 57 per 100 000, reflecting possible declining TB incidence in the country as well as programmatic improvements. Less improvement was found with children and young males	The findings have supported the NTP efforts to intensify case finding for children, especially in the context of screening close child contacts of adult index TB patients

TB = tuberculosis; NTP = National Tuberculosis Programme; Global Fund = Global Fund Against AIDS, Tuberculosis and Malaria; HIV = human immunodeficiency virus; CI = confidence interval; BMC = BioMed Central; PTB = pulmonary tuberculosis; USD = United States dollars; PMDT = programmatic management of drug-resistant TB; MDR-TB = multidrug-resistant TB; GLC = Green Light Committee; AIDS = acquired immune deficiency syndrome.

the past few years, in September 2015 the Viet Nam Ministry of Health established the Viet Nam Integrated Centre for TB and Lung Disease Research (VICTORY) to lead in implementing and coordinating TB and lung disease research under the management of the National Lung Hospital in Hanoi and the Viet Nam NTP, thereby institutionalising research within a programme setting.

In conclusion, a motivated, well-supported and mentored OR fellow, embedded within the Viet Nam NTP under a performance-related contract, performed well and contributed to substantial TB research evidence generated between 2010 and 2015, which in turn contributed to changes in policy and practice and improved programme performance. During this time the OR fellow also assisted in supervising and mentoring other Vietnamese colleagues in the NTP, some of whom were attending SORT IT courses in Asia. As a capacity building strategy, the OR fellowship model deserves continued support.

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En avril 2009, un responsable de recherche opérationnelle (RO) a été placé au sein du Programme national de Lutte contre la Tuberculose (PNT) du Viet Nam. Au cours de 6 ans, de 2010 à 2015, ce responsable a été le co-auteur de 21 articles de recherche relative à la tuberculose (et comme auteur principal pour 15 articles [71%]), et ceci a constitué 23% des 91 articles publiés sur la tuberculose au Viet Nam pendant cette période. Sur les 21 articles publiés, 16 (76%) ont

contribué à changer la politique ($n = 8$) et les pratiques ($n = 8$), et ceci à son tour a amélioré la performance du PNT. De nombreux articles ont également contribué dans une manière importante à une meilleure planification du PNT. Des responsables de RO très motivés incorporés au sein des PNT peuvent faciliter une recherche de qualité élevée et l'adoption de recherche.

En abril del 2009 se asignó un becario en investigación operativa al Programa Nacional de Control de la Tuberculosis (PNT) de Viet Nam. Durante un período de 6 años, del 2010 al 2015, el becario fue coautor de 21 artículos de investigación sobre tuberculose (primer autor en 15 de ellos [71%]), que representaron el 23% de los 91 artículos publicados sobre el tema en Viet Nam durante este período. De los 21 artículos publicados, 16 (76%) contribuyeron a una

modificación de las políticas ($n = 8$) y las prácticas ($n = 8$) y estas innovaciones mejoraron el desempeño del PNT. Muchos artículos aportaron además datos importantes para optimizar la planeación del PNT. La incorporación a los PNT de becarios en investigación operativa, muy motivados, favorece la realización de investigaciones de gran calidad y la aplicación práctica de sus resultados.