Vietnam research evidence for policy
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Pork handling at a wet market in Ha Nam, Vietnam. Students of the Hanoi School of Public Health (HSPH) risk assessment course learn how specific hygienic practices – such as wearing gloves and keeping butchering areas clean – can significantly reduce health risks. They also learn how "from farm to fork" works, an increasingly widespread approach to promote food safety throughout the value chain.

Risk assessment for food safety in Vietnam

Case studies featured here were conducted in: Vietnam

Food-borne diseases are a major, vastly underreported health problem in most developing countries. According to WHO, they cause around 2 billion episodes of illness each year. But developing countries with many smallholders and a large informal food sector must balance protection of human health with protecting the livelihoods of food producers. Risk assessment (RA) is an innovative way of managing food safety and reducing the human health burden of food-borne diseases. This policy brief outlines how RA tools can be used effectively to manage food safety in Vietnam and similar countries.

Policy message

- Food-borne disease is among the most important public health problems in Vietnam.
- Risk Assessment (RA) is a new approach to managing food safety that answers the questions of concern to policymakers and the public: Is our food safe? If there are safety risks, how significant are they? And what are best ways of reducing the risks?
- Researchers are beginning to develop and apply RA in Vietnam.
- An RA Task Force bringing together relevant experts and government officials is strengthening Vietnam's capacity in RA and food safety.

Risk analysis and food safety

In recent years, risk analysis has become the gold-standard approach for managing food safety in the developed world. Risk analysis has three parts: (1) Risk assessment (RA) estimates the possible extent of harm and the probability that harm will occur. This is followed by (2) risk management, which uses a pathway approach ("farm to fork") to identify critical control points and strategies to eliminate or minimise risk. Finally, (3) risk communication involves two-way communication of risk between authorities and those affected, incorporating useful feedback from all parties into RA and risk management.

Determining food safety: hazards vs. risks

Before proper food safety policies can be created, reliable evidence of the risks to human health must be established. Prior to RA, much food safety policy was based on the mere presence of harmful substances in food (hazards). RA shifts the focus onto the more important issue of the harm these substances cause (risks). For example, in Kenya the discovery of bacteria in milk led authorities to ban sales of fresh milk. Poor consumers were forced to buy pasteurised milk at twice the price, reducing their consumption of this nutritious food. But RA showed that virtually all consumers boiled milk before consuming it and the risk to human health was therefore

negligible. As a result of this evidence, smallholder farmers were permitted to resume selling their milk, and poor consumers could buy it once again (Leksmono et al 2006).

A series of studies on food safety in Vietnam incorporating RA have been conducted by the Hanoi School of Public Health (HSPH) and partners (see "Featured case studies"). These studies illustrate how a risk-based approach can enable new insights and better management of food safety in Vietnam. The results are helping to fill Vietnam's current evidence gap regarding hazards in important foods such as pork and vegetables and the potential risks to human health.

Building capacity for RA in Vietnam

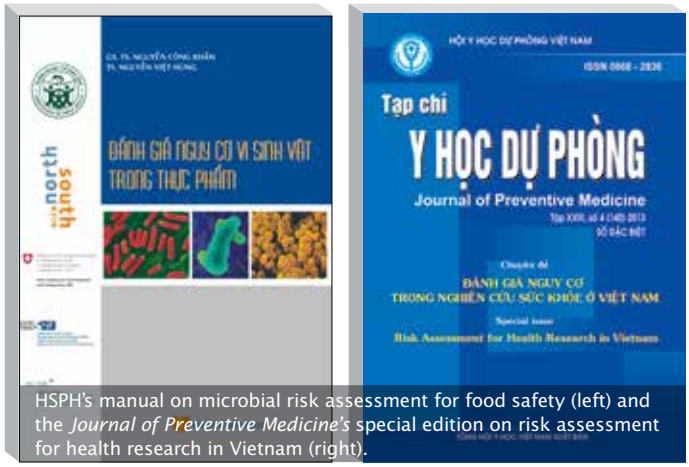
In Vietnam, the national Law of Food Safety (in effect since July 2011) mandates application of RA to high-risk food products intended both for domestic consumption and for export. In May 2013, the Government of Vietnam announced its support for development of a rapid detection system for food safety, and its Ministry of Agriculture and Rural Development issued a circular on using RA in food safety management. However, there is a lack of local capacity in practical application of RA. The situation is especially urgent in Vietnam's informal markets, where most domestically produced food is bought and sold. RA is rarely applied in these settings.

One important way RA capacity is being strengthened in Vietnam is through an RA Task Force. It brings together representatives from Vietnam's Ministry of Health, its Ministry of Agriculture and Rural Development, and researchers involved in RA and food safety from key universities and research institutes. The Task Force is developing guidelines for use of RA on behalf of food safety management in informal markets catering to local consumers. These guidelines will be used to train a wide range of decision-makers, including high-level policymakers. A technical course and case studies of food safety in informal markets are being used to increase RA capacity among implementers, followed up by mentoring and on-the-job support. The support of international and regional research institutes is already in place for such activities.

Researchers belonging to the Risk Assessment (RA) Task Force meet with senior members of the Vietnam Food Administration (VFA) in Hanoi.

A growing RA evidence base

In June 2013, the Vietnamese *Journal of Preventive Medicine* published a special edition on "Risk Assessment for Health Research in Vietnam" (http://cenpher.hsph.edu.vn/english/news/risk-assessment-health-research-vietnam). It describes how RA and improved risk communication are beginning to be applied in Vietnam. For example, RA was used to estimate how much human illness is caused by bacteria in pork, contaminated water, and pesticides used in agricultural. In addition, HSPH has published two books on RA in Vietnam – "Microbial Risk Assessment for Food Safety" (2011) and "Environmental and Occupational Risk Assessment" (2013) – and now offers a course on "Environmental and Occupational Health Risk Assessment" to students pursuing a bachelor's or master's degree in public health. Drawing on these publications and the growing evidence base, a manual on microbial risk assessment for food safety and related training materials were recently developed and validated for use throughout Vietnam.



HSPH's manual on microbial risk assessment for food safety (left) and the *Journal of Preventive Medicine*'s special edition on risk assessment for health research in Vietnam (right).

Partners

- Hanoi School of Public Health (HSPH)
- National Institute of Hygiene and Epidemiology (NIHE)
- National Institute of Nutrition (NIN)
- National Institute of Veterinary Research (NIVR)
- Ministry of Health (MOH)
- Ministry of Agriculture and Rural Development (MARD)
- Swiss Tropical and Public Health (Swiss TPH)
- International Livestock Research Institute (ILRI)
- International Food Policy Research Institute (IFPRI)
- World Health Organization (WHO)
- Food and Agriculture Organization (FAO)

Featured case studies

Food safety in supermarkets and wet markets in Hanoi

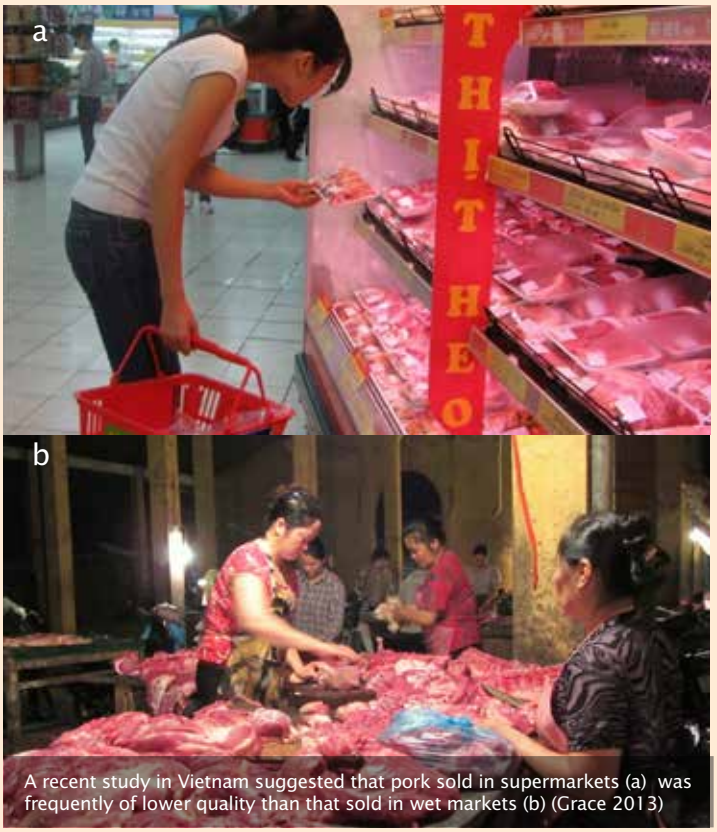
A 2010 study in Hanoi compared traditional and modern pork value chains. Researchers found that the hazards – including parasites, bacteria, and antibiotic residues in pork – were very high and that slaughterhouses linked to supermarkets were a major contamination point. To the surprise of many stakeholders, pork sold in supermarkets was of consistently lower quality (in terms of high bacterial contamination) than that sold in wet markets, most likely because meat was contaminated at the slaughterhouse and was kept longer in supermarkets, allowing bacteria to grow despite refrigeration (Grace 2013). This study supports the argument that local, informal food markets (e.g. wet markets) can have a role in supplying safe, high quality meat.

Understanding *Salmonella* contamination in pig slaughterhouses

In a 2013 study of *Salmonella* contamination in four pig slaughterhouses in Hung Yen, samples were taken from pig carcasses, workers' hands, cutting boards, and belly skin material. The prevalence of *Salmonella* on pig carcasses was found to be 35% and the most common contamination point was workers' hands. This very high *Salmonella* prevalence likely presents real risks to human health. The study suggests that interventions emphasising good hygienic practices, especially hand washing, would reduce contamination risks (Sinh et al 2013). The next step is to test corresponding slaughterhouse interventions that effectively incentivise hygienic practices.

Using RA to reduce the risk of dioxin exposure in foods

RA was applied to evaluate the risks of dioxin in food to residents living near airbases in Bien Hoa and Da Nang. Data collected on people's consumption patterns and the dioxin levels in foods revealed that residents faced high risks by eating locally produced foods. High-risk foods included freshwater fish, snails, crabs, free-range chicken, duck, pumpkin, and lotus produced near the airfields. The results of these RAs were used to develop Vietnam's first public health intervention programme to combat dioxin exposure in foods (Hanh 2010).



A recent study in Vietnam suggested that pork sold in supermarkets (a) was frequently of lower quality than that sold in wet markets (b) (Grace 2013)

Featured case studies (continued)

Household-level practices affecting food safety in Hanoi

A study in Hanoi examined how people's household cooking and eating habits exposed them to *Salmonella*. Evidence of *Salmonella* contamination was found in 25% of the samples of pork at markets where people shopped, and people's preparation methods risked spreading the bacteria to other foods in their household. Given the difficulty of changing the food-handling practices of millions of people, the best interventions are likely those that control Salmonella in the value chain, before it reaches consumers (Toan 2013).

Definitions

Hazards are things that have potential to cause harm. In the context of food safety, a hazard can be classified as a substance or an agent (i.e. biological: virus, bacteria, and parasites; chemical: growth promoters, antibiotics, pesticide residues; or physical) present in food that has the ability or the potential to cause an adverse health effect in consumers.

Risk is the chance that a person might be harmed if exposed to a given hazard. Risks in food safety are usually referred to as short- or long-term effects on human health.

Food safety describes activities along the value chain – during handling, preparation, and storage of food – that prevent food-borne illnesses.

Informal markets refer to unregulated economic enterprises or activities where there is no effective food safety regulation.

Hung Nguyen-Viet, PhD
Center for Public Health and Ecosystem Research (CENPHER)
HSPH, Vietnam
Swiss TPH and ILRI
hung.nguyen@unibas.ch

Delia Grace, PhD
Program Leader, Food Safety and Zoonoses, ILRI
Nairobi, Kenya
Theme Leader, Prevention and Control of Agriculture-Associated Diseases,
CGIAR Research Program on Agriculture for Nutrition and Health
d.grace@cgiar.org

Tran Thi Tuyet Hanh, MPH
Lecturer, Department of Environmental Health, HSPH
Principle Researcher, Dioxin intervention programs,
Vietnam Public Health Association
tth2@hsph.edu.vn

Pham Duc Phuc, MD, PhD
Researcher, CENPHER, HSPH
pdp@hsph.edu.vn

Prof. Dr. Marcel Tanner
Director, Swiss TPH, ex officio
marcel.tanner@unibas.ch

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Policy implications of NCCR North-South research

- Risk Assessment has great potential to improve food safety in Vietnam and similar countries. But local technical capacity and human resources for implementing must be increased. More pilot projects are needed to determine the best ways of applying RA in informal markets.
- Establishment of an RA Task Force in Vietnam is strengthening local capacity. It brings relevant government agencies and RA experts together, consolidating human resources on behalf of food safety risk management and implementation of Vietnam's Food Safety Law.
- Additional research is needed to quantify the risks to human health from different foods and to assess how these can be managed. More evidence is needed to identify better ways of risk management and the effectiveness, costs vs. benefits, and feasibility of these approaches.

Further reading

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Regional Coordination Office
Thammarat Koottatep, PhD
Asian Institute of Technology
P.O. Box 4 Klong Laung
Pathumthani 12120, Thailand
thamarat@ait.ac.th
www.serd.ait.ac.th

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