MEAT INSPECTION

Pork safety assessment and first results from pilot interventions targeting slaughter and retail in selected provinces of Northern Vietnam

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Introduction

Pork constitutes 75% of the meat consumed in Vietnam with 80% of pork products produced by smallholders, slaughtered in small scale facilities and sold in traditional markets. Food safety is one of the most pressing concerns of Vietnamese consumers. In this research programme we address whether pork in Vietnam is safe to consume and investigate what mitigation options are feasible, acceptable and effective.

Methods and Methods

Research conducted since 2013 includes risk profiling, risk assessment for biological hazards, a cost of illness study and food safety performance assessment of a range of current pork value chains in 4 provinces of Northern Vietnam. The pork value chains studied include different production systems as well as modern and traditional retail, 'organic' food shops and pork originated from indigenous pigs. Data collection spanned the entire pork value chain using focus group discussions, key informant interviews, observations and biological sampling for *Salmonella* using a probabilistic sampling design.

Potential interventions focus on technical solutions e.g. use of mini-ozone units complemented by nudging to influence the behaviour of pork value chain actors.

Results

Results show that pork is not safe: 44%-80% of pork sampled was contaminated with *Salmonella*. A quantitative microbial risk assessment indicated that one to two out of 10 pork consumers are at risk of *Salmonella* poisoning annually (Sinh Dang et al. 2017). Meat in both modern and traditional retail was found to be highly contaminated with *Salmonella*. Various approaches to improving pork safety have been tried e.g.: Good Animal Husbandry Practices (GAP), traceability and modernising retail. Despite these efforts production and distribution of safe pork has not yet reached a significant share of the market in Vietnam. The key constraint to uptake was the

Photos 1 and 2: Workers at a pig slaughterhouse in Hung Yen province, Vietnam testing the use of an off-the-ground slaughtering rack, February 2016 (photo credit: Hanoi University of Public Health/Sinh Dang Xuan)

lack of incentives for stakeholders in the chains. We propose gradual improvements to the food system in place. Potential mitigation options in the ongoing pilot testing phase are iron grids to avoid floor slaughter. A previous pilot trial has demonstrated that a tailored iron grid can reduce contamination but must go along with behaviour change (see *pilot trial example* and Photos 1 and 2) and explanations. Other mitigations are mini-ozone units to decontaminate surfaces, antimicrobial cutting boards or clothes at retail. Potential behavioural nudges are being explored to support technical interventions and behaviour change. First results from the nudge study indicate that value chain actors such as slaughter house workers or retailers consider the effect of colour on salience differently; e.g. red was considered dirtiest while blue the cleanest colours, respectively.

Pilot trial example:

The introduction of a low-cost, off-the-ground slaughtering rack (designed with the slaughterhouse owner) and other measures to reduce contamination in the treatment group ($n = 10$) significantly improved slaughter hygiene compared to the control using a business-as-usual approach ($n = 10$). The improvement in hygiene was indicated by lower coliform load ($p = 0.002$) on the carcass surface compared to the control. The pilot trial also demonstrated that technical solutions must go along with behavior change of butchers (Photos 1 and 2) (ACIAR, 2019).

Discussion and Conclusion

Pork was found not safe and public health implications for consumers have been quantified. Potential mitigations, currently piloted, require incentives and behaviour change of value chain actors.

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Oral Presentations