

Preparation for introducing initial risk assessment into infectious disease surveillance in Indonesia: insights from a pilot implementation, 2024–2025

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Risk assessment (RA) is an integral component of overall risk management, serving as a systematic process for gathering, evaluating and documenting information to determine risk levels and guide evidence-based public health actions.^{1,2} The International Health Regulations (2005) (IHR) require Member States to develop RA capacities at both national and subnational levels.^{1,3} The 2023 World Health Organization (WHO) joint external evaluation of Indonesia's IHR core capacities acknowledged the country's capability to conduct rapid RAs (RRAs) for major public health events at the central level.⁴ However, some challenges remain regarding regular RA activities, especially at the subnational level, partly due to the lack of a uniform RA framework. For example, RAs are not always conducted systematically because they are not standardized, often relying on an individual's skills and judgement. Thus, priorities may vary for disease and response actions, posing challenges to achieving a shared understanding of risk among stakeholders. Therefore, there is an expectation among stakeholders that initial RAs (IRAs) must be integrated into regular surveillance activities.

In 2024, representatives from the Indonesian Ministry of Health (MOH), in collaboration with the WHO Representative Office for Indonesia and the Japan International Cooperation Agency (JICA), initiated efforts to strengthen RA capacities at both national and subnational levels. Indonesia's RA guidelines integrate methodologies from three documents: existing standard operating procedures (SOPs) developed by the MOH's Public Health Emergency Operations Center (PHEOC)

(Ministry of Health, unpublished documents, 2017 [in Indonesian]), the *Interim guide for using initial risk assessment algorithm, version 2.5* (WHO Regional Office for South-East Asia, unpublished guide, 2023), and WHO's guidelines for RRAs.¹ The operational workflow begins with the collection of signals from multiple sources, followed by their screening, selection and verification (triage) using criteria based on the SOPs and pertinent literature (**Fig. 1**).^{5,6} Selected signals undergo an IRA using an algorithm outlined in the interim IRA guide, which incorporates questions across five domains: high-threat pathogens, exposure, severity, spread potential and capacity. Subsequently, the risk level is categorized into five grades – very low, low, moderate, high and very high – each accompanied by a level of confidence. The assessment is summarized in a predefined format. Based on the RA, recommended actions are implemented, and an RRA may be conducted. Lists of high-threat pathogens and corresponding actions have been contextualized for Indonesia. Core elements of WHO's interim IRA and RRA guidelines have been integrated into Indonesia's RA guidelines.

Additionally, supporting materials have been developed to facilitate IRA implementation. A fact sheet was developed to summarize the characteristics of 36 prioritized infectious diseases in Indonesia. This table is a quick reference tool, covering key epidemiological, clinical and preventive aspects of these diseases. It enables users to efficiently review essential information about each disease. Two tutorial videos were developed detailing the RA process and the contents of the fact sheet, providing

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Table 1. Agenda of 2-day workshop on enhancing risk assessment capacity, Indonesia, September 2024

Day	Time	Topic	Training method
Day 1	Morning	Pre-test	Online timed test
		Introduction to initial risk assessment	Lecture
		Utilization of supporting materials for initial risk assessment	Lecture
	Afternoon	Group exercise for initial risk assessment	• Small-group project • Presentation
		7-1-7 target ^a for early detection and response to infectious disease threats	Lecture
Day 2	Morning	Risk communication	Lecture
		Introduction to hazard calendar	Lecture
	Afternoon	Group exercise for hazard calendar	• Small-group project • Presentation
		Post-test	Online timed test

^a 7-1-7 target: 7 days to detect, 1 day to notify, 7 days to respond.

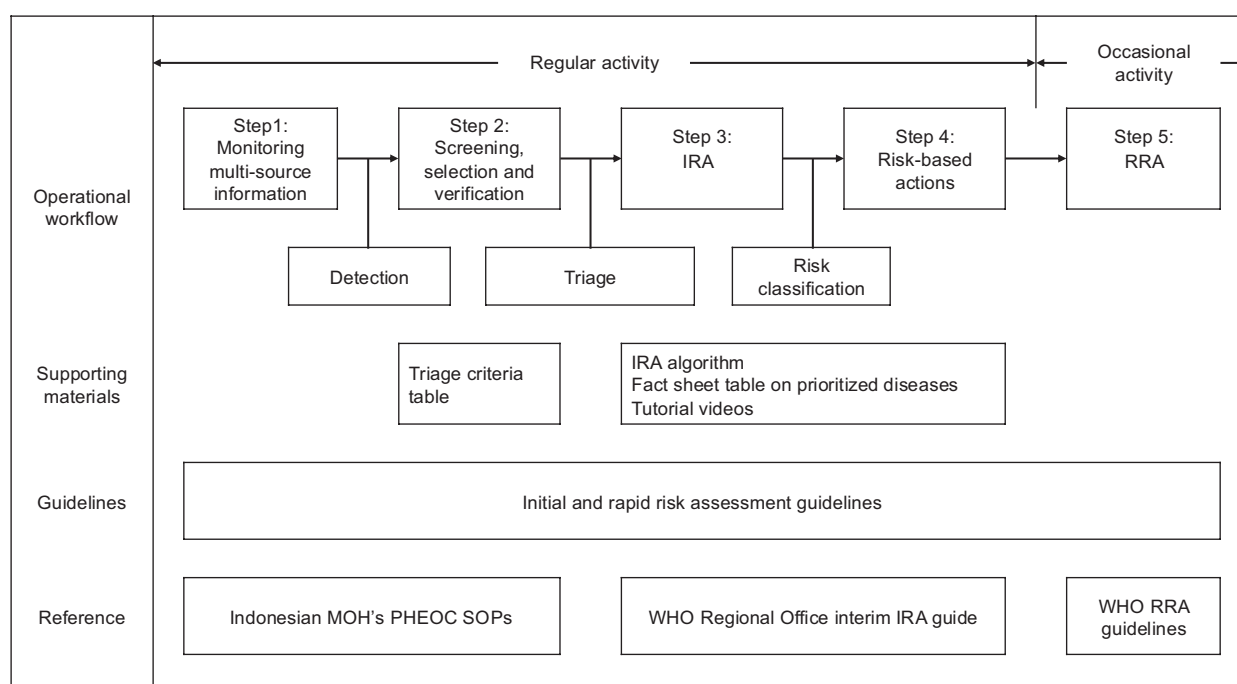
practical guidance on the conduct of an IRA through a scenario-based case study.

Workshops on implementing IRAs were conducted in combination with a hazard calendar activity that integrates data on diseases prone to outbreaks with information on potential natural hazards, enabling authorities to anticipate a wide range of threats.⁷ These workshops were a collaborative effort among representatives of the Indonesian MOH, the WHO Representative Office for Indonesia and JICA to enhance all-hazard emergency prevention, preparedness and response. The first 2-day workshop took place in September 2024, involving over 20 participants from the Surveillance Unit, the PHEOC and other disease-specific programmes within the MOH (Table 1). The second workshop, held in January 2025, engaged 36 representatives from provincial and district health offices, focusing on piloting subnational implementation.

Participants attended lectures and completed practical exercises about IRAs and hazard calendars, along with additional sessions covering risk communication and the 7-1-7 evaluation framework.⁸ During these exercises, participants conducted simulated IRAs and developed hazard calendars using real data from specific diseases. The second workshop's exercises were facilitated by representatives who had participated in the first workshop, exemplifying effective knowledge transfer and in-house capacity-building. Overall, the participants' understanding of RAs was enhanced through the subnational workshop, as demonstrated by an increase in average test scores from 53% (pre-test) to 81% (post-test).

Based on the results of the workshops, all materials were finalized, and both national and subnational guidelines were published in July 2025.⁹ A new trial commenced in 2025 aimed at integrating IRAs into activities at both the central and subnational levels. Since then, PHEOC officers have regularly conducted IRAs in line with the workflow (Fig. 1) and, in cooperation with representatives from the WHO Representative Office for Indonesia, prepared summary documents in the predefined format. Some of the surveyed provincial and district health offices reported that they had incorporated IRA reports into their weekly bulletins. At both levels, IRA summaries are shared with relevant sectors across programmes and departments. It is planned to provide technical support from the national to provincial level and from the provincial to district level.

The introduction of the IRA received positive feedback from surveillance officers; for example, some officers reported that IRA tools enable them to conduct systematic analyses and assessments instead of relying on subjective individual skills. By following the algorithm, officers can collect focused information leading to in-depth analyses, precise risk estimates and evidence-based conclusions. As a result, clear guidance for further actions based on the assessed risk levels enhances the prioritization of responses and facilitates prompt, structured and targeted interventions. Additionally, the IRA summaries help foster a common understanding of disease events among relevant stakeholders, promoting cross-sector coordination. Moreover, these documents would provide compelling data when advocating with decision-makers.

Fig. 1. Initial risk assessment surveillance operational workflow and relevant reference materials, Indonesia, 2024

IRA: initial risk assessment; PHEOC: Public Health Emergency Operations Center; RRA: rapid risk assessment; SOP: standard operating procedure; WHO: World Health Organization.

While integrating IRAs into routine surveillance operations can enhance response capacity, their implementation presented several main challenges. First, they impose an additional workload on surveillance officers. The organization of an IRA can be time-consuming and a burden on the resources of the implementers. Some health offices have begun addressing this by implementing IRAs on a trial basis, by adjusting the frequency of assessments or the number of events documented in IRA summaries or by focusing on events with higher potential impacts. Second, it may take time for implementers to adapt to cross-sector coordination. Some facilities have promoted awareness of IRAs and aligned risk perceptions among stakeholders by actively sharing information through group communication channels. Third, algorithm-based RAs may be new to subnational officers with less experience, posing technical difficulties. Although the flowchart is standardized and straightforward, conclusions regarding risk and levels of confidence vary among officers. IRAs require skills to manage uncertainty when there is insufficient information to reach conclusions. However, the effective use of supporting materials and the implementation of additional IRAs, combined with technical support and feedback, can facilitate officers' development and optimize IRA practices. Fourth, the establishment of

an effective knowledge transfer scheme is essential for expanding capacity. Thus, it is vital to foster facilitators who promote horizontal knowledge transfer among subnational officers for long-term success. Lastly, the monitoring of responses to health emergencies is crucial for evaluating the initiative's impact. Improvements in participants' knowledge of RAs and constructive operational changes were observed during the workshops and in their subsequent activities. However, ongoing monitoring through evaluation schemes, such as the WHO-recommended 7-1-7 framework, is the next step in assessing practical enhancements.⁸

In summary, efforts to enhance RA capacity through piloting IRA implementation have commenced in Indonesia. The standardized and systematic assessment process will facilitate a risk-based approach that supports evidence-based decision-making and proportionate public health responses. Moreover, it could contribute to regional capacity-building, providing practical insights and serving as a model for similar initiatives in other countries.

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Conflicts of interest

The authors have no conflicts of interest to declare.

Ethics statement

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