

Indonesian Government's Strategy in Dealing with the Development of Biological Threat in Indonesia by Utilizing the Role of Intelligence

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ABSTRACT

Indonesia faces increasing challenges from evolving biological threats, which have the potential to escalate into biological weapons with wide-ranging impacts on national security, the economy, and socio-cultural stability. This research evaluates Indonesia's strategic response to these threats through the lens of intelligence operations. It highlights a significant shift in the concept of national defence, where threats are no longer limited to conventional warfare but encompass complex, multidimensional risks, including bioterrorism, bio-crime, and pandemics such as COVID-19. The study emphasises the critical role of integrating medical intelligence and biodefence strategies, supported by cross-sector collaboration among the Ministry of Defence, the Indonesian National Armed Forces (TNI), the State Intelligence Agency (BIN), and civilian health institutions. Key priorities include enhancing early detection capabilities, strengthening biosafety protocols, and developing centralised biodefence infrastructure, particularly BSL-3 and BSL-4 laboratories, to bolster national preparedness and resilience.

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INTRODUCTION

Having borders with various countries will, of course, have an impact on Indonesia. The positive impact is that Indonesia is able to easily collaborate in all fields with countries that border Indonesia (Chairil Nur Siregar, 2019). However, the negative impact is that the large number of border areas means that Indonesia must also be able to carefully guard and protect its borders from unexpected things. Border areas tend to easily trigger conflicts or even territorial disputes between countries (Chairil Nur Siregar, 2019). The negative impacts of these threats must be anticipated to reduce the risks that may arise from these negative impacts. The development of today's dynamic strategic environment influences the implementation of national defence. Dynamics that need to be monitored in the next five years include economic growth, which has implications for the development of military power, especially in the Asia Pacific region. This dynamic greatly influences the patterns and forms of threats that are increasingly complex and multidimensional, in the form of military threats, non-military threats and hybrid threats, which can be categorised into real and unreal threats. These threats include terrorism and radicalism, separatism and armed rebellion, natural disasters, violations of border areas, piracy and theft of natural resources, disease outbreaks, cyberattacks and espionage, drug trafficking and abuse, as well as open conflict or conventional war. Domestic conditions cannot be separated from the influence of the strategic environment, which is triggered by ideological, political, economic, socio-cultural and security factors. This development is a challenge that has an impact on the implementation of national defence in Indonesia (Ryacudu, 2015:1). The world is still facing epidemics of several dangerous infectious diseases in humans. The World Health Organisation (WHO) continues to warn the world that infectious diseases dangerous to humanity have not yet been completely overcome, and in fact, their spread tends to become more widespread (Ryacudu, 2015:18).

In facing threats that exist in Indonesia, Indonesia implements a defence system called Sishankamrata. Sishankamrata is a universal defence system that involves all citizens, territories and other national resources, and is prepared early by the government and implemented in a total, integrated, directed and continuous manner to uphold state sovereignty, territorial integrity and the safety of the entire nation from all threats (Pariyatman, Madjid, Santoso, Widodo, & Saragih, 2023). Thus, Sishankamrata, in facing military and non-military threats, is by utilising all components of the nation, the involvement of every citizen and the involvement of the TNI are the determining factors. In dealing with biological threats, there needs to be coordination between each Ministry and Institution. Following Presidential Decree Number 8 of 2021, the implementation of non-military defence of the nation belongs to all components of the nation. The problems faced by defence policy are only at the centre; there are no regional defence implementers and coordinators. Based on the previous description, it is necessary to increase the knowledge of Ministries and Institutions outside of defence at the regional level regarding non-military defence.

One form of threat from non-military defence is biological threats. Biological threats are a type of threat that has an impact on public safety and disrupts the lives of the wider community (M Rifqi Romadhona, 2021). Biological threats are related to Public Health problems, namely emerging diseases and biodefense. Biological accidents are biological hazards in various forms, including biological weapons, biocrime, natural events, lab accidents, pandemic hoaxes and grey area incidents. Sociologically, it is important because making biological weapons is very easy for ordinary people, and opportunities can occur anywhere. Researchers can create new creatures by combining several genetic traits. Emerging Infectious Diseases (EIDs) are diseases caused by infectious pathogens that have recently evolved and entered a particular population for the first time, or diseases that have occurred before but whose incidence, impact and/or geographic reach have increased or are expected to increase over a certain period (Kate E. Jones, 2008). EID (Emerging Infectious Disease) is caused in various ways by the emergence of new microbes, long extinct ones, then reappearing in new places where they previously existed. Examples: West Nile Virus, SARS, Avian Influenza, XDR TB, Zika and Nipah Virus (a very deadly one has been found in Malaysia). Public Health Emergency of International Concern (PHEIC) is an extraordinary event that is of international health concern with serious implications that suddenly appear and become international attention, namely H1N1, Ebola, Zika and Covid-19. Factors that encourage EID: microbes adapting to become infectious, social activities (population movements), environmental changes (global warming), human behaviour, food products, health facilities and the environment. There are two main ways that infectious diseases emerge: through changes in their geographic range and through adaptive emergence, which is a genetic change in a microorganism that results in the microorganism being able to invade a new niche, often by jumping to a new host species such as an infectious disease. as human. Diseases can just appear because we can detect and diagnose them. Management of EID events plays an important role in public health globally and represents a major challenge in clinical care (NH Ogden, 2017).

The movement of viruses in the world is very fast, and there is no need for a license to move. The threat to the future of synthetic genomics, namely the ability to create synthetic genomics, is posed by combining viruses or combining strains. For example, the kitchen can become a place to produce dangerous microbes (biological weapons). The extraordinary capacity of some viruses to adapt to new hosts and environments depends largely on their ability to generate *de novo* diversity in a short time (Rafael Sanjuán, 2016). Based on the background presented by the researcher, the problem formulation in this research is as follows:

“How to increase the knowledge of Ministries and Institutions outside of defence at the regional level regarding non-military defence using the role of Intelligence”. This research aims to examine the Indonesian government's strategy in facing the threat of developing biological threats in Indonesia by utilising the role of intelligence. This goal is achieved by:

“Analysing How to increase the knowledge of Ministries and Institutions outside of defence at the regional level regarding non-military defence using the role of Intelligence”

It is hoped that this research can be theoretically useful, namely that it can contribute to knowledge in the fields of defence and intelligence to face threats that exist in Indonesia, especially biological threats, by utilising the role of intelligence.

METHODS

In this research, researchers use descriptive qualitative research methods. Qualitative research is research that begins with the use of a theoretical interpretive framework and assumptions that influence or shape the study of research problems related to the meaning that individuals or groups impose on a social or human problem. Meanwhile, what is meant by descriptive analysis is looking for information that happened in detail that describes an event, identifying applicable problems with a continuous theory, so that conclusions can then be drawn from the phenomenon and provide an evaluation. This research was carried out by collecting data, then grouping it based on the discussion material. After that, the relationship between one data set and another data set is looked for and analysed using theory to find answers to research questions. The data utilised in this study were obtained from previous research, books, websites, as well as interviews with the Head of the RSDC Secretariat and the Indonesian National Armed Forces Health Centre. The results of the research are drawn into a conclusion (John W. Creswell, 2018). Descriptive research aims to describe the nature of something that is taking place when the research is carried out and examine the causes of certain symptoms (Umar, 2011). Qualitative research design is used with the aim of explaining existing phenomena, both natural and artificial, by paying more attention to the characteristics, quality and relationships between activities (Sukmadinata, 2011).

RESULTS AND DISCUSSION

RI Defence Law no. 3 of 2002 states that the components of the Armed Forces are grouped into three components. The TNI is the main component that is ready to be mobilised to carry out national defence functions. Reserve components are non-TNI and POLRI national resources that can be mobilised to increase and strengthen the strength and capabilities of the main components and supporting components that can be utilised to support the strengths and capabilities of the main components and reserve components. The utilisation of each component of national resources is universal and relies on the Indonesian National Army as the main component. The Reserve and Support Components then play a role as support lines for the main components in their function of carrying out national defence functions (Indonesian Defence Law No. 3 of 2002).

Sishankamrata is a state defence and security system that has universal characteristics and is based on the people. Populist, that is, the administration of state defence and security is carried out by the people and carried out to safeguard the interests of all the people (Suwito, 2017). Universality, namely, having the characteristic of using all national resources for national defence efforts. Regionality can be seen through the level of defence forces held in accordance with the geographical conditions of the Republic of Indonesia, as an archipelagic country spread throughout the region. This distribution of power in relation to defence and security is operationalised in relation to a highly dynamic global strategic environment and changing threat patterns. Threats to defence and security do not only threaten things related to the military. It is based on this phenomenon that the meaning of security and defence is expanded. The main actor in defence issues is no longer the central government and the military alone. In the discovery of this phenomenon, the state is no longer used as the main actor in defence (Fauzi, 2021).

Article 4 of the National Defence Law states that the aim of national defence is to maintain and protect the sovereignty of the country, the territorial integrity of the country and the safety of the entire nation from all forms of threats (Article 4 of Law Number 3 of 2002 concerning National Defence). To manage border areas, the Government has established the National Border Management Agency (BNPP) on January 28 2010, through Presidential Regulation (Perpres) No. 12 of 2010, and followed up with Minister of Home Affairs Regulation (Permendagri) No. 31 of 2010 concerning Organisation and Work Procedures of BNPP. This is a follow-up to Law Number 43 of 2008 concerning State Territories, which mandates that to manage state territorial boundaries and manage border areas at the central and regional levels, the national government and regional governments form National Management Bodies and Regional Management Bodies (Sarosa, 2011).

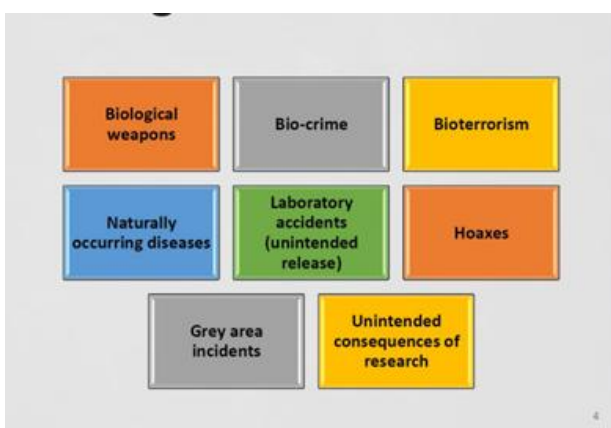
The development of today's dynamic strategic environment influences the implementation of national defence. Dynamics that need to be monitored in the next five years include economic growth, which has implications for the development of military power, especially in the Asia Pacific region. This dynamic greatly influences the patterns and

forms of threats that are increasingly complex and multidimensional, in the form of military threats, non-military threats and hybrid threats, which can be categorised into real and unreal threats. These threats include terrorism and radicalism, separatism and armed rebellion, natural disasters, violations of border areas, piracy and theft of natural resources, disease outbreaks, cyber attacks and espionage, drug trafficking and abuse, as well as open conflict or conventional war. Domestic conditions cannot be separated from the influence of the strategic environment, which is triggered by ideological, political, economic, socio-cultural and security factors. This development is a challenge that has an impact on the implementation of national defence in Indonesia (Ryacudu, 2015:1).

The dynamics of the development of the power of the Asia Pacific major powers indicate that there are new powers that will play a major role in the Asia Pacific in the next decade. There is a dramatic power shift in East Asia with continued US supremacy, the rise of China and India, the presence of Japan and the return of Russia. Urgency is needed to redesign (new arrangement) the pillars of Indonesia's foreign policy as a form of elaborative action on the dynamics of this constellation (Yani, 2014). Furthermore, the most important thing is that internally, Indonesia needs to immediately accelerate the achievement of the minimum essential force (MEF) development plan by building a defence system that has standard deterrence (Ryacudu, 2015:38-39).

The regulations underlying the involvement of citizens in the state defence system as intended in the 1945 Constitution of the Republic of Indonesia Article 30 Paragraphs (1) and (2) and Article 9 Paragraph (1) of Law Number 3 of 2002 concerning National Defence which states that every citizen has the right and obligation to participate in national defence efforts. The involvement of citizens in national defence efforts is realised in the formation of a reserve component in 2021 by appointing 3,103 reserve component members. In 2022, there will be 2,974 reserve component members, and in 2023, the recruitment process will still be in progress. The formation of the reserve component in Indonesia was established during the time Prabowo Subianto served as Minister of Defence (Puteri Puslatpur, 2023).

One of the main steps in Indonesia's defence strategy is the modernisation of defence equipment. This modernisation program includes the procurement of fighter aircraft, warships, submarines and other combat vehicles. With this modernisation, Indonesia is trying to adapt to developments in global military technology and strengthen its deterrent power. The TNI AD as part of the TNI has outlined a pattern of building its strength with the modernization of Alutsista (Main Weapon System Equipment) as a necessity, considering the phenomenon of budget limitations, the modernization of Alutsista within the TNI AD is carried out gradually, for the short term the target of achieving strength development in order to achieve MEF (Minimum Essential Force) is the level of strength that is able to guarantee the strategic importance of land aspect defence, achieving the readiness of Alutsista on average 45% of the ideal size that must be had (Siagian, 2012). One of the types of non-military threats is biological threats. Biological threats have many advantages compared to other threats, such as high production capabilities, ease of storage, potential for proliferation, difficulty in tracking individuals or groups who use them, and very broad impacts on humans to the livestock and agricultural sectors (Davis Jim A, 2004). Biological threats can develop into potential biological weapons because the impact of biological weapons threats is mass and can affect various aspects of a nation's life, both from economic, socio-cultural and defence and security aspects.



Picture 1: Biological Incidents

Poppy Setiawati Nurisnaeny (2023) [source]

A biological incident is an event where a biological material harms or threatens humans, livestock, agriculture or economic assets. A biological incident refers to the occurrence of individual cases or outbreaks involving infectious pathogens affecting humans, regardless of whether the event occurred naturally or intentionally. Biological incidents, which often result in the declaration of a public health emergency, can occur anywhere and sometimes impact multiple geographic areas simultaneously. Greater movement of people, animals, and goods across local, state, territorial, and international borders increases the risk of exposure to health threats originating from within and outside the US. Widespread and inappropriate use of antimicrobial treatments (such as antibiotics) and other MCMs also accelerates the emergence of drug-resistant pathogens (FEMA, 2018).

A biological weapon is a device or agent used to intentionally spread disease or infection to cause harm or death to humans, animals, or plants. These weapons usually contain microorganisms (such as bacteria, viruses, or fungi) or toxins derived from living organisms. The use of biological weapons in conflict or terrorism aims to exploit disease as a means to achieve political or military goals (Centers for Disease Control and Prevention, 2021). Biological weapons are organisms or toxins that can be used to cause disease and death in humans, animals, or plants as an act of war or terrorism (World Health Organization, 2022).

Bio Crime is a term used to refer to crimes involving biological materials or biological methods. This includes the use of biological agents, such as bacteria, viruses, or toxins, with the intent to commit criminal acts such as biological terrorism, biopiracy, and the intentional spread of disease. BioCrime also includes the theft or misuse of biomedical and genetic data, as well as sabotage of biological research or biotechnology infrastructure (Hugh-Jones M.E, 2010). BioCrime refers to criminal activity involving biological agents or methods for harmful purposes. This includes the use of pathogens, toxins, or other biological agents to harm individuals or groups, often motivated by personal reasons such as revenge or blackmail. It also includes the intentional release of a biological agent to cause widespread disease, death, or fear, similar to bioterrorism, but usually on a smaller scale or with more specific targets.

The CDC describes bioterrorism as the intentional release of viruses, bacteria, or other germs (agents) used to cause disease or death in humans, animals, or plants. These agents are usually found in nature, but can sometimes be modified to increase their ability to cause disease, make them resistant to existing drugs, or to increase their ability to spread into the environment (Centers for Disease Control and Prevention, 2018). The use of biological agents to achieve political goals by instilling fear, causing illness or death, and disrupting social and economic structures (Henderson DA, 1999). The complexity of bioterrorism, considering that bioterrorism not only involves the use of biological agents to cause harm but also includes the psychological and economic impacts that such attacks can have on society (Tucker, 2000).

The intentional use of biological agents for criminal purposes can blur the lines between a public health emergency and a criminal investigation, requiring coordinated efforts between law enforcement and health authorities to effectively manage and mitigate this threat. The biological agents most commonly used as biological weapons are microorganisms and their toxins, which can be used to cause disease or death in populations, animals and even plants. Polluting agents can be released into the air, water or food. Microbes used in bioterrorism are more popular in the mass media as biological weapons (biological weapons or bioweapons). Biological weapons are used by spreading pathogenic organisms and toxins to cause illness or death in human, animal and plant populations. Poison generally needs to be distributed in aerosol form to be effective as a murder weapon. Both aerosol toxins and microorganisms are odourless, tasteless and invisible. The effects of biological attacks can vary; the most terrifying is that one biological weapon attack can kill thousands of people if directed directly at a large population (Astuti LP, 2019).

Bioterrorism is nothing new; at least hundreds of bioterrorism incidents have occurred in more than 30 countries. Biological weapons are used by spreading pathogenic organisms and toxins to cause illness or death in human, animal and plant populations. Poison generally needs to be distributed in aerosol form to be effective as a murder weapon. Both aerosol toxins and microorganisms are odourless, tasteless and invisible. The effects of biological attacks can vary; the most terrible is that one biological weapon attack can kill thousands of people if directed directly at a large population indoors (Revaz, 2007).

One example of a biological threat that has an impact on human health and livelihoods is Anthrax and the Monkeypox Virus, which are also zoonotic and can be transmitted from human to human. WHO has classified biological materials that are considered dangerous into three categories, namely biological agents type A, B, and C. One of the type A biological agents, which is dangerous if misused as a biological weapon, is Anthrax. Anthrax is a zoonotic disease, originating from the bacterium *Bacillus anthracis*, which can spread to the human population through direct contact with livestock infected with Anthrax either through touch, or consumption of meat, skin and bone products from animals infected with *Bacillus anthracis*, which forms spores that can be aerosolised and sprayed. To spread disease, the potential use of these bacteria as bioterrorism agents has long been discussed. The events of 2001 also confirmed that bioterrorism was no longer a threat, but a reality. Due to its highly pathogenic nature and ability to form spores, *B. anthracis* is considered one of the most important agents in biological warfare (Cambodia A, 2008).

Monitoring the phenomenon of the rapid spread of infectious diseases, developing efforts to prevent infectious diseases, integrating health and security systems for biological agents as an effective biodefence system, identifying biological agents that have the potential to become bioweapons and their distribution mechanisms to prepare effective countermeasures from the national health resistance system (Bako, 2021). Biodefence primarily provides risk awareness as basic information for decision-making and policy-making in all areas of biological defence. Ensure the ability of biological defence devices (biodefence) to prevent and strive for preparedness to reduce the impact of biological incidents. Enables rapid response to limit the impact of biological incidents and facilitates recovery to restore the condition of communities, affected economic conditions, and the environment after a bio-incident occurs (US Public Health Emergency, 2021).

Research in biological warfare agents (BWA) and their applications in biological defence has attracted worldwide attention, filled the literature and energised military and civilian authorities and planners over the past decade. This excessive mobility effort is a result of the increasing frequency of bioterrorism threats and the risk of intentional deployment of BWA. On the other hand, the biosafety requirements for biodefence research, as well as the nature of the BWA result, by default, result in additional technical challenges in accelerating the successful response to biological threats (Tegos, 2013).



Picture 2: Intelligence Cycle
CIA Publications (2023) [source]

The Intelligence Cycle is the process of developing raw information into final intelligence for use by policymakers in decision-making and action. There are five steps that constitute the Intelligence Cycle (Central Intelligence Agency, 2022). There are 5 stages in the intelligence cycle. The first is planning and directing. Data needs to provide intelligence products to consumers. It is the beginning and end of the initial cycle because it involves establishing specific collection requirements, and the end because the completed intelligence, which supports policy decisions, results in new requirements. The entire process relies on the guidance of public officials. The President's policymakers, his aides, the National Security Council, and other key government departments and agencies initiate intelligence requests (Central Intelligence Agency, 2022). Direction and Planning is the initial stage in the intelligence cycle, which is very important

to ensure that all intelligence activities are carried out in accordance with the needs and priorities of the organisation or entity that requires intelligence information. This stage involves several key steps (Lowenthal, 2017):

- a. Identification of Intelligence Needs: In this stage, decision makers and intelligence analysts work together to identify and define specific information needs necessary to support strategic and operational decisions. Coordination between the Ministry of Health and the regional military health organisations, including military hospitals and military clinics (Poli TNI), continues to be carried out—not only during the COVID-19 pandemic, but also in response to other biological threat programs. Despite the differences in language and terminology between civilian and military institutions, these can be harmonised. One approach undertaken to enhance the capacity of military health organisations is the provision of scholarships by the Indonesian National Armed Forces (TNI), aimed at supporting personnel in pursuing epidemiology education at various universities. Epidemiology education strengthens the capacity of TNI health organisations in managing pandemic situations such as COVID-19. It equips them with knowledge on how to identify, assess, and address public health problems, and provides essential skills in collecting, analysing, and interpreting epidemiological data.
- b. Priority Setting: Once intelligence needs are identified, priorities are set based on the urgency and importance of the information needed. This helps in allocating resources effectively and efficiently. In one documented case involving the TNI Health Organisation's response to a biological threat—namely, COVID-19—the operational and technical decision-making system was led by the Head of the RSDC Secretariat (informant NR), along with the Operational Coordinator, Medical Services Coordinator, and approximately 30 other coordinators, comprising both military and civilian personnel. Strategic decision-making, such as increasing bed capacity, involved providing recommendations to the TNI Health Centre (Puskes TNI). Final execution, however, would be carried out by the Head of the Health Centre (Kapuskes), who may be required to report to the Commander of the Indonesian National Armed Forces (Panglima TNI).
- c. Collection Planning: This stage involves planning how information will be collected, including data collection methods, sources, and techniques. It also includes identifying required resources, such as personnel, technology, and time.
- d. Coordination and Assignments: Direction and planning also include the coordination of specific assignments to relevant intelligence-gathering units. This ensures that all parties involved understand their roles and responsibilities in the collection process. In addition to guidelines, the TNI Health Organisation also possesses operational directives for responding to biological threats, as outlined in the Decree of the Commander of the Indonesian National Armed Forces Number Kep/1010/XII/2017 concerning the Doctrine of Integrated Joint Operations. The existence of such directives serves to strengthen civil-military cooperation in addressing biological threats.
- e. Monitoring and Adjusting: Throughout the collection process, briefing and planning should be continuously monitored and, if necessary, adjusted based on changing situations and new information as it emerges. The government collaborates with cross-sectoral stakeholders responsible for continuously monitoring every action and emerging biological threat, both domestically and internationally.

Based on Presidential Instruction 4 of 2019 concerning increasing capabilities in preventing, detecting and responding to disease outbreaks, global pandemics and nuclear, biological and chemical emergencies. How to increase readiness to deal with biological threats, the earlier the readiness, the better they will be in responding to threats.

Bio-preparedness activities:

- a. Emergency use, research and development risk research.
- b. Legal protection for MCM manufacturers, stockpile architecture, and planning.
- c. Increasing the ability to predict, detect, prevent and respond.
- d. Forensic Microbiology: must be able to find new viruses, their spread, and their infection in humans.
- e. National Authority Body: formed several centres with the coordination of Institutional Ministries, including Kemehan, TNI and Polri, packaged into one unit.

In terms of Biodefence and Biosecurity aspects in Indonesia and national global challenges: land conversion, disease pandemics. Pandemic Outbreaks of Emerging Diseases, namely: New Emerging, Re-Emerging, Deliberate Emerging (deliberately spread), Gold Diamond Sequencing for surveillance to detect the spread of microbes (to find out about the presence of disease for tomorrow).

Public health emergency preparedness must be preventable; if it cannot be prevented, it must be detectable. So far, Covid-19 has only been seen from its impact, so what needs to be seen is the movement of the virus (Covid-19 by human behaviour, because the virus is spread by humans).

It requires collaboration across disciplines and sectors, biosafety and biosecurity capabilities with early detection in laboratories, and there must be a body that oversees the role of the Ministry of Defence, TNI, and BIN in creating a defence system from biological threats. The role of life sciences laboratories is to develop vaccines and medicines.

The framework for utilising biological laboratories for biotechnology innovation (Lab BSL-3 and BSL-4), it is time for the TNI and BIN to take steps as momentum in increasing the ability to control biological threats. Currently, the US has the Global Virome Project, which collects viral genomes throughout the world (1.67 million viruses in the world) as an early detection of threats. Investments in the public health system are the strongest defence against and in dealing with natural and intentional outbreaks of infectious diseases.

It is very urgent to prepare for a pandemic to create an integrated Biological Threat Control effort without dichotomy between academic institutions in the health sector. In the organisational structure, it is necessary to add medical intelligence. The implementation needs to be coordinated with Ministries/Institutions, and also needs support from Commission I of the DPR, so that the establishment of a biological threat control centre, seen from the perspective of national defence and medical intelligence, is very necessary. The role of national defence, diplomacy, cooperation and providing vaccines, etc., is something that needs to be involved in medical intelligence in dealing with the next wave of the pandemic, and cooperation in ensuring the availability of vaccines.

CONCLUSION

Indonesia's evolving security landscape, shaped by increasingly complex and multidimensional threats, underscores the urgent need for a more adaptive and integrated defence strategy. Biological threats ranging from naturally occurring pandemics to bioterrorism and bio-crime present unique challenges due to their potential for mass impact and the difficulty of early detection. In response, Indonesia has taken important steps through the development of military medical capabilities, updated operational doctrines, and improved civil-military coordination in health security. However, these efforts must be further strengthened through the systematic integration of intelligence into national biodefence planning.

The Intelligence Cycle offers a strategic foundation for anticipating and responding to biological incidents, but its application in Indonesia remains underdeveloped. A whole-of-government approach linking defence, public health, and intelligence agencies is essential to build resilience against future biological threats. Central to this effort is the proposed establishment of a Biological Threat Control Centre, which would unify policy, surveillance, and response functions under a national framework. While this study offers a preliminary evaluation of Indonesia's biodefence strategy, it is limited by the author's scope of expertise in intelligence studies.

Therefore, future research should delve deeper into the operational role and capacity of intelligence institutions in addressing biological threats. Strengthening these areas will be crucial to ensuring Indonesia is not only prepared to respond but also equipped to anticipate and prevent biological crises, thereby safeguarding national sovereignty and public well-being.

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