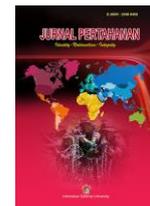




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INDONESIA'S DEFENSE HEALTH PERSPECTIVE

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Abstract

The National Defense System is a systematic and planned concept, structure and organization, fostering the spirit of the universe of the people and nation, to strengthen and defend themselves from various threats, challenges, obstacles and disturbances that break the Indonesian building and network. The concept embodies software that contains the philosophy, purpose, theoretical framework and framework of the concept of national defense, as a soul and heart that moves continuously in the spirit of conscience defending the country. The purpose of this study is to develop a study about the strategic role of defense health as a diversified potential for multifunctional health to guide the national level of resilience. The potential of health in the field of defense with its strategic thinking decomposes the breadth of Indonesia's geographic region, which has distinctive characteristics of health problems based on geomedicine maps. The dynamic stratification of health problems makes geomedicine maps as a measure of defense health policy. The concept proposed in this study is expected to be one of the basic references in forming a defense health study program at Indonesia Defense University. The method, that needs to be developed, is the transformation of the health of Indonesian National Armed Forces (TNI). At this time, it has achieved dynamic values in realizing a broader role, not only in the field of health services and support, but it has begun to expand into the field of research and development (R & D). This development also related to global challenges, where the spread/pandemic of illness becomes an extraordinary homework, especially related to defense health. Defense health is a multiparadigmatic concept with multidisciplinary scientific dimensions and parameters,

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and various multi-approaches (analysis, synthesis, and solution), based on philosophy and history, build a defense health characteristic that has a scientific perspective that has reliability and validity, so th purpose of this study can be obtained.

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INTRODUCTION

The National Defense System is a systematic and planned concept, structure and organization, fostering the spirit of the universe of the people and nation, to strengthen and defend themselves from various threats, challenges, obstacles and disturbances that break the Indonesian building and network (Law of the Republic of Indonesia, 2002). The concept embodies software that contains the philosophy, purpose, theoretical framework and framework of the concept of national defense, as a soul and heart that moves continuously in the spirit of conscience defending the country. The national defense system is an effort to maintain state sovereignty, the territorial integrity of the Unitary State of the Republic of Indonesia (NKRI), and the safety of the whole nation from threats and disruptions to the integrity of the nation and state. This universal defense system involves citizens, territories and other national resources, and is prepared early by the government and held in total, integrated, directed manner, in order to maintain territorial integrity through strategic activities and policies which include planning, implementation, supervision and control of national defense (Law of the Republic of Indonesia, 2002).

The structure and organization of national defense is a hardware that is ordered in command and collaborates in carrying out the functions of fortresses, by utilizing various elements of the nation and the power of self-help, which will unite and lead to the universal unity of the people, for the sake of defense of the nation (Ministry of Defense, 2014).

Stratification and classification of knowledge about national defense consists of a variety of sciences that develop according to the demands of the times, interpreting a national defense in a global situation with asymmetric threats, even with multi-complex threats, namely military threats, non-military threats and actual and perceived hybrid threats (Ministry of Defense, 2014).

Universitas Pertahanan or Indonesia Defense University (Unhan) is a university that organizes academic education and vocational education in a number of fields of science, technology, and/or art, and if it meets the requirements, it can organize professional education in accordance with statutory provisions. Based on the Unhan statute, Unhan implements the Tridharma of higher education as a guideline for planning, developing and organizing programs and activities in accordance with Unhan's vision and mission (Minister of Education and Culture, 2014).

Indonesia Defense University with the motto "Identity, Nationalism, and Integrity" means a dynamic national identity, with the highest loyalty to the state and nation and a commitment that exudes authority and honesty with reference to Pancasila and the 1945 Constitution and the Unitary State of the Republic of Indonesia (Minister of Education and Culture, 2014).³ Indonesia Defense University is a higher education institution that carries a mission to develop national defense concepts, strategies, policies and scientific networks, through a tiered and sustainable education process, in the hope of building a scientific innovation in the field of defense through a growing scientific network, one of which is

developing defense health education (Minister of Education and Culture, 2014).³

Defense health is a science that has a strategic role to support the national resilience order of various TCOD (Threat-Challenges-Obstacles-Disturbance), as in the scope of the archipelago's level of insight that we must protect. The potential of health in the field of defense with its strategic thinking parses the breadth of Indonesia's geographic region with distinctive characteristics and characteristics of health problems, based on geomedicine maps. There is a dynamic stratification of health problems, making geomedicine maps a measure of defense health policy. In addition, defense health strengthens the strategic role that rests on community self-reliance as part of Hankamrata (Minister of Education and Culture, 2014; Lardo, 2018).

Defense health education is a combination of strategic scientific aspects of health and defense. This education program aims to synergize the scientific potential that has been scattered in various fields of health policy and application, which is manifested in various activities and simulations in facing the dimensions of the pandemic and disaster, as a global health threat. This condition, of course, is a scientific movement to develop defense health as an educational program, which can summarize scientific integrity and collaboration, bridge the synergy of defense policies and health applications in the community (WHO, 1998).

Defense health education consists of scientific components, namely methods of education, curriculum, subject matter, scientific validation taught, and has multisectoral, multi-synthesis and multi-solution roles.

RESEARCH METHOD

The method, that needs to be developed, is the transformation of the health of Indonesian National Armed Forces (TNI). At this time, it has achieved dynamic values in realizing a broader role, not only in the

field of health services and support, but it has begun to expand into the field of research and development (R & D). This development also related to global challenges, where the spread/pandemic of illness becomes an extraordinary homework, especially related to defense health.

RESULTS AND DISCUSSION

History of Defense Health

The history of defense health is inseparable from the history of world war and the war of independence. The battle that took place through the two historical processes, contained various dimensions that preceded a scientific value of defense health (Ministry of Defense, 2014). Physical fighting is a struggle between two or several countries to maintain the existence of their nation. Meaningfully, the battle strategy fosters social philosophy and ideas to build a better civilization of life (Ministry of Defense, 2014).

The journey of the history of Indonesian independence contains the values of a broad-based struggle, retracing the sky with the prayers of the clerics and tracing the earth through the unyielding spirit of its fighters. The scientific dimension of the history of independence has been much reviewed by experts focusing on the struggle for independence. The dimensions associated with defense health are a closed cup that needs to be opened, particularly regarding the role of the TNI in the health aspect in supporting the nation's struggle. The perspective of the role of defense health includes the existence of scientific limitations that have an impact on the development of the next periodic defense health science. The perspective of defense health history in Indonesia has a very broad link through two approaches that are currently developing, namely inherent approaches and coherent approaches (Ministry of Defense, 2014).

The inherent approach contains the journey of the history of independence

which cannot be separated from the formation of the TNI, where the military medical personnel is an important component. So far, the role and fostering of the TNI at that stage, both in preparation for guerrilla warfare and city battles, the military medical personnel have been encouraged to foster self-defense and improve the ability of support and health services of soldiers in the battle areas. The passion forged in the military medical personnel is to maintain independence (Ministry of Defense, 2014).

The concept of guerrilla warfare which was carried out during the upheaval of independence was the starting point of the military medical personnel carrying out service activities to soldiers and the community at every point of movement of the troops. The limitations of medical personnel and equipment did not decrease the hard work in order to support the availability of human resources and personnel/soldiers in the health sector, becoming one of the priorities for the success of the struggle in combat. With the expansion of the battle area, the recruitment of health personnel not only required a certain quantity, but also the quality related to handling capabilities in the field of health supported by simple training activities (Directorate of Army Health, 2010; Army Mental Development Service, 2008).

A coherent approach to defense health is the conceptual realization of a military health service organization that begins with the Medical Office, mainly the Army Medical Office. The organization became an important vehicle for the transformation of the structure, organization, human resources, and education as well as training systems within the health workforce (doctors and other personnel), in realizing the post-independence Army medical format. This approach is more focused on forming the Army medical identity, as the main foundation of its role at that time, namely health care and support. This pattern continues to develop in accordance with the demands of the times, along with

the dynamics of political and defense policies in each regime (Directorate of Army Health, 2010; Army Mental Development Service, 2008).

The current TNI health transformation has achieved dynamic values in realizing a broader role, not only in the field of health services and support, but has begun to expand into the field of research and development (R & D), related to global challenges, where a pandemic disease, being an extraordinary homework, related to defense health (S. Lardo, 2014).

The current history of the TNI has demanded the culmination of scientific reforms, which are conceptualized and become educational curricula, considering that so far as the implementation of "science" has been so extensive, from various military medical scientific activities both in national and international level (Army Mental Development Service, 2008).

This scientific concept needs to be realized as a paradigmatic model of defense health, in the form of a defense health study program, and it is hoped that this concept will emerge as an education curriculum in stages, such as the opening of a Pandora's box of flowers that will bloom. The aim of defense health science is to develop new paradigms that contribute to National Resilience Science. It aims to become a military health measuring instrument based on science in carrying out functions in the fields of service, support, and R & D. While its function is to become a bridge to the synergy of the health policies of three dimensions under the auspices of the national security system.

Defense Health Policy

Defense health policy based on Republic of Indonesia Minister of Defense Regulation number 20 of 2014 concerning the National Defense health System, is a regulation of the role of the TNI as an NKRI guard from various threats, challenges, obstacles, and disturbances. This condition is manifested as a state responsibility, as outlined by the

government through national defense policies, where national defense competencies are based on an awareness of facing global challenges. Defense health policy contains the authority and role of health, as part and scope of national resilience. The role of health includes strategic, political and cultural roles (Ministry of Defense, 2014).

The strategic role of defense health is the diversification potential of health multifunction to guide the national level of resilience. The potential of health in the field of defense with its strategic thinking parses the breadth of Indonesia's geographic region with distinctive characteristics and characteristics of health problems, based on geomedicine maps. There is a dynamic stratification of health problems, making geomedicine maps a measure of defense health policy (Ministry of Defense, 2014).

The strategic role of defense health politics is an important link, opening up national security politics outlining the functions of state power to support government politics, related to the defense policy function. Defense health develops an innovation of resilience perspective, which is based on the utilization of various components of society as a mean of defending the state, towards capabilities in specificity that support maximizing political defense of the fortress of the NKRI (Ministry of Defense, 2014).

The strategic role of defense health culture rests on community self-reliance, as part of Hankamrata. Although Hankamrata is a product and conception of the nation that underlies the flow and work of state defense policies and systems, currently it is still relevant to develop cultural strength and the spirit of defense health, as a dominant part in filling defense health policy movements (Ministry of Defense, 2014).

Contextual defense health by itself is one of the main keys to open up any national security disturbances that links organizational rigging, structure, work systems and networks as a strong knot. This

mechanism would ideally safeguard the noble values of defense health and national security values, which in reality tread and set foot at the point of weakness of the nation and the world towards the Global Health Security Agenda (GHSA). These weaknesses become witnesses to be strengthened by scientific nodes which become national resilience running on the track, through the support and conception of defense health (National Invasive Species Council, 2003; Katz, Sorrell, Kornblat, 2014).

The Global Health Security Agenda is a current global challenge that is of major concern to the world. GHSA is a pendulum of tugging the world's health security problems, which has penetrated the national and regional dimensions of each country. This condition requires a new spirit for each country, to redefine the role and function of its national resilience in the health sector. GHSA is not only engaged in the field of infection but also in the global situation of politics, economy, migration and climate change coloring the world health security structure. So that every country seeks and reformulates the functions of rapid, detection, prevention and response based on the characteristics of the geomedicine map and the strength of its community participation as a force for national resilience (National Invasive Species Council, 2003).

The occurrence of an outbreak, not only in the local dimension, but also be able to extend beyond national borders, given that the rapid transportation technology supports the movement between people, which is certainly in certain conditions the "carriers" bring the source of infection potentially as a source of transmission (S. Lardo, 2018).

The epidemiological principle in GHSA is a large cup that accommodates the concepts of thinking and acting from Rapid-Detect-Response and Prevents, as scientific vehicles that move forward and sturdy pillars of defense health education homes. This scientific principle is to knit the

phenomenon of mapping and data collection of public health problems, which are summarized in the analysis of the defense context with the aim of forming new building construction, as an epidemiological approach characterized by defense studies (National Invasive Species Council, 2003; Katz, Sorrell, Kornblet, 2014).

Rapid is a quick and dynamic step to unravel the threat of an outbreak. Rapid dimension contains values and spirits that flow in the body by carrying various components of the body's energy (which have been through the formation of energy cycles), nuanced as fast-moving body manifestations, anticipating and cracking down on invasive problems or invasive species that have risk effects in spreading and formation of permanent invasive species. The pattern developed by Rapid is the timely connection of information so that decisions can be made that can guide the next management of an outbreak (National Invasive Species Council, 2003; Katz, Sorrell, Kornblet, 2014).

Detect is a divergent mechanism of fluorescent eyes against an outbreak invasion that appears. Detect contains several capabilities for breaking out the tangled string knots of outbreak into straight-line rigging, then marked as detection straps dipped in SOP as an outbreak management pathway. Some principles in detect are (1) record potential threats and time to implement risk mitigation steps, (2) detection of new invasive species (influenza pandemics) as a basis for decisions that are efficient and environmentally friendly, (3) prevent the spread and formation of permanent invasive species, (4) putting information as management decisions and feedback used to guide current and future efforts (National Invasive Species Council, 2003; Katz, Sorrell, Kornblet, 2014).

Respond is the nature and spirit in facing and anticipating an outbreak. Respond manifests as an authorization mechanism that contains planning, coordination,

identification of high priority species and risk locations, monitoring certain areas for prevention, monitoring the interaction of agent and host environment systems, detecting and collecting and processing data. Through responding, localization of the potential of an outbreak can be carried out and determines the relative risks associated with prioritizing resources across jurisdictional boundaries, treatment, analyzing the affected populations, recovering habitats, coordinating public communications and training volunteers in the techniques of detection, identification, monitoring, and field policy (National Invasive Species Council, 2003; Katz, Sorrell, Kornblet, 2014).

Prevent is a policy contained in the Global Health Security Agenda (GHSA) and International Health Regulation (IHR) consisting of several priority aspects:

1. Prevention of Antibiotic Resistance, by reducing the factors that can cause antibiotic resistance. These efforts include the use of appropriate and responsible antibiotics, surveillance systems to prevent the transmission of organisms that cause antibiotic resistance, with controlled infection prevention and control within a preventive framework of AMR (Antimicrobial Resistance).
2. Prevention of the spread of zoonotic diseases that arise by reducing the factors that can cause re-emergence of zoonotic diseases through emerging and reemerging infectious diseases, increasing supervision for new zoonotic diseases and promoting safe practices in livestock production and animal marketing.
3. Promoting national biosafety and biosecurity by developing a multisectoral approach to managing biological materials, including identifying, securing, monitoring and storing hazardous pathogens in a minimum amount in facilities, with a framework to advance safe and responsible research behavior.

4. Reducing the number and magnitude of infectious disease outbreaks by establishing effective programs to vaccinate epidemic susceptible diseases and nosocomial infection control as functional capabilities of infection control.
5. Detecting the Early Threats of the GHSA, calls on countries to develop capacities for early detection, characterization and reporting of biologically transparent threats, by strengthening and linking global networks for real-time 'biosurveillance', and strengthening global norms to be fast and transparent.

Policies need to be built in the face of GHSA and outbreaks are global social perspectives, global environmental perspectives, perspectives on environmental interrelation and spread of infections and micro-environmental-clinical diseases perspectives, as mechanisms for the spread of infections related to microbiology-immunology and gene mutations (S. Lardo, 2018).

The global social policy follows contextual social reality with various regional ideologies and interests, moves with a vision and mission to defend each country. Interaction and interrelation of these various interests will lead to the achievement of the synergy of social values of each country, whether it can be united in building regional social participation, or otherwise compete to influence each other through various channels of multidimensional cooperation (intelligence, economic and political) interventions (National Invasive Species Council, 2003; Katz, Sorrell, Kornblet, 2014).

Global environmental policies open the

ideals of togetherness to face global climate change, as a joint problem that must be sought for solutions in a multi-sectoral manner. Climate change is a lateral dimension based on a series of measures, which is influenced by the balance of environmental factors (vectors, spread of

diseases and greenhouses), so that it requires a predictive parameter to assess and maintain a proportional environment to serve the needs of humans and other earth creatures (National Invasive Species Council, 2003; Katz, Sorrell, Kornblet, 2014).

The policy of environmental interrelation and spread of infection contains determinant factors that play a role in determining the environment moving in the vision of sustainability. Two important factors keep this perspective in the corridor. The first is the internal factors, which fill the potential of environmental health enzymes so that energy is formed to maintain environmental balance. The external factors are the space and dimensions that influence the environment to move forward, facing various global challenges that arise. The factors are the political, economic and social spaces that are siding with the environment independently, develop their own potential (S. Lardo, 2018).

Microenvironmental policy-clinical disease is an environmental chain, as an important part of the development of disease with local static or dynamic endemic manifestations. This pattern contains the spread of infection mediated by the environment through vectors and breeding, potentially for the occurrence of an outbreak. This approach has the priority of environmental health perspective in specific areas that have the potential to spread disease. Emerging difficulties in managing the spread of infection occur, require a special approach in the field of immunology, microbiology and seeing potential outbreaks of gene mutations (S. Lardo, 2018).

Determinant Analysis

Defense health has some characteristics in determining the ground of scientific motion. The breadth of knowledge currently interrelated with defense health becomes a large container that needs to be accommodated as part of the family of

defense health science clusters (Ministry of Defense, 2014). The cluster of defense health science needs to be analyzed based on scientific principles based on Evidence Base Medicine (EBM), with clear and precise benchmarks. The purpose of this analysis is to determine the priority scale and sorting of the scientific fields included in the defense health rules categorization.

Defense health rules are health values that are the basic guideline for developing a national defense system based on continuous competitive testing, so the sciences that will be developed include a study of philosophical science, which includes the ontological, epistemological and axiological aspects. The developing terminology is the formation of a comprehensive scientific format (Ministry of Defense, 2014).

Scientific determination requires several requirements that are the basic rules for the process of selectivity in the scientific field, as a defense health study program. The determination requirements are carried out with several considerations, namely: (1) Dynamic national security policy, (2) National Health System (SKN) policy, and (3) Public participation policy (S. B. W. Lardo, 2019).

The concept of national resilience, which is a reference for the independence of the nation, has the value of flexibility in determining any threat to national sovereignty. The policies contained in the SKN are the main parameters. The scientific field supports integrated national health strategic concepts to form a strong national health organization and network. This fulfillment is included in the strategy of the Movement for Healthy Living Society (*Gerakan Masyarakat Hidup Sehat* or *Germas*), in simultaneously moving various basic elements of health in one spear of struggle. The policy of public participation is a means to strengthen the role and potential of community dynamics with various stratifications, becoming a potential for self-reliance which characterizes the creation of awareness of

healthy living as a form of national security. The defense health policy analysis rests on a basic understanding of the totality of human resources, facilities, and infrastructure to support the implementation of national security. This analysis becomes a guideline in formulating and formatting the power of defense health energy, integrating the potential and elements of health in an integrated network (Lardo, 2019).

Integration is one of the dimensions of policy to formulate the field of defense health as a manifestation of national strength. Based on Ministry of Defense Regulation, the National Defense health System (SKN) has important components that need to be parsed into the defense health education system, namely: (1) Geomedicine Information System, (2) Health Human Resources, (3) Health Material, (4) Health Facilities and Infrastructure, (5) Health and Natural Resources Technology and (6) Health Efforts (Lardo, 2019).

Geomedicine Information System (GIS) is an important parameter, the extent to which information systems and data processing that contains geomedicine conditions are embedded in the policy level from the village to the central level. Geomedics is the core of information on health problems related to multidimensional social, then examined as the initial data on the factual picture of health in the field, manifested into accurate data through parameters that bridge the factual field - statistics - epidemiological conditions, as data integration. Through analysis of evidence-based surveillance, this system becomes the material for determining defense health policies planned for the country's direction. One of the highlights in improving the ability of this GIS is the use of territorial commission (plus) which has multifunctional competencies as a territorial defense force but has knowledge as an 'epidemiological investigator' (Lardo, 2019).

Human Resources Health (HRH) is an important dimension in planning a defense health education program. HRH will determine the characteristics and categorization of the organization of the education program formed. These characteristics contain the identity developed, as a basic physical and psychological feature of defense health education. The physical consists of education level, scientific field, level of expertise and accreditation of peer group/societal organizations. Psychological values contain the energy of mind and heart, global assessment thinking and sustainability of innovation (innovative sustainable). This categorization reveals the roles and functions of each human resources to place its duties and responsibilities, which need to be implemented in the form of a bureaucratic system and participation system, related to interactions with students.

Health Material is an important part of the defense health education program. Understanding of health material is a teaching material prepared as a manifestation of historical conditions, current and future perspectives of defense health science. Health material provides a teaching material that is able to fill various components and elements of scientific support, which are interwoven like chromosome structures in genes, describing one scientific field with other scientific interrelations.

Health facilities and infrastructure are parts of hardware that support the creation of a concept of thought that continues to grow, in the preparation of the scientific system of defense health study programs to run continuously. The facilities and infrastructure are in the form of a mode for the continuity of learning by looking at current and future needs.

Health technology and natural resources are technological/digital devices developed in defense health study programs, taking into account the principle of educational objectives oriented to the global

understanding of health security as a mindset policy, but having the ability to think and to implement systems in managing an emergency (outbreak or emerging) by utilizing technology with natural resources owned, and several important aspects, namely medical intelligence, and digital use to address global health emergency conditions (S. B. W. Lardo, 2019).

Health efforts are an important part related to Community Responsibility from the Defense health Study Program. Health efforts become one of the important links and networking developed, related to the role and function of defense health in empowering health in the community. Health efforts take a number of aspects that are concerns of the Ministry of Health as part of filling in intersections with the Ministry of Defense.

The concepts developed from health efforts are: (1) The National Health Policy developed by the Ministry of Health is one of the policy strategies that need to get support and be developed by the concepts of Defense health that have a dimension to Global Risk Health Assessment. One of them is putting the concept of medical intelligence policy in SKN. (2) Empowerment of health facilities from the community health center (*Pusat Kesehatan Masyarakat* or *Puskesmas*) level to the Referral Hospital as the strength of the organization, in addition to services, education and a little research, was developed as a parameter and measure of preparedness and alertness in the face of a disaster/outbreak and how the system can run on its path. (3) Strengthening the participation of village health posts (*Pos Pelayanan Terpadu* or *Posyandu*) as part of community participation efforts, which currently are factually one of the social forces for preventive and promotive programs. Strengthening *Posyandu* with the empowerment of territorial non-commissioned officers is one of the sub-subjects that can be developed in this education program.

Looking at the explanation above, the analysis and determinants of defense health are the important links of this Study Program to be reviewed based on scientific evidence, referring to several parameters related to organizational structure, HR, strengthening of digital information systems and empowerment of community power (S. B. W. Lardo, 2019).

Philosophy of Defense Health

The philosophy of defense health education breaks down the mindset and process of education that is realized by the application of science. Defense health science is a stream of deductive and inductive travel, revealing the characteristics of science as part of the educational process. The education philosophy is transformed as a science that reveals a usefulness, with the development of inherent dimensions of resilience in scientific interaction within the scope of the Global Health Security Agenda (GHSA) (WHO, 1998; National Invasive Species Council, 2003; Rebecca Katz, Erin M. Sorrell, Sarah A. Kornblet, 2014).

Defense health education develops this interaction on an ongoing basis, builds internalization of patterns and new interactions to form a scientific paradigm. The scientific paradigm develops the resilience dimension of the nation and the national health system as an important part and spearheading towards better change (WHO, 1998).

The transformation of defense health education is a science that goes through several stages in the development of scientific national security. The transformation refers to scientific processes and learning, linked to the dynamics of national and global defense. Its future manifestations and actions cannot be separated from the scientific aspects that influence it, such as history, politics, culture, economics, public health sciences and exact sciences (Science and technology) (WHO, 1998).

Links built will be intertwined and need each other to influence the transformation

of levels in society. Intersections incorporated from defense health education and technology education are dynamic interactions and have the potential to strengthen or weaken each other. Inequality in one of the two scientific layers of balance (social and technological) will trigger an imbalance between health and technology to the level of life (WHO, 1998).

This imbalance will reduce one of the scientific dimensions so that a society that glorifies one of the scientific fields is built. The impact that arises is the formation of inconsistencies in patterns and movements of society in carrying out the functions of the health and technology fields, with further consequences will endanger the sustainability of civilization (WHO, 1998).

Defense and technology health education is expected to bridge the balance that can uncover the synergy of health and technology, with the main goal of establishing harmonization of civilization life, which supports safety, community control and continuity of motion to continue to build a better life (sustainability of healthy living) (S. B. W. Lardo, 2019). The philosophy of defense health education is actually a continuous continuity of the spirit and process of education that is carried out. The education philosophy is an input that declares values to start an educational process, by strengthening agreed education policies (WHO, 1998).

Defense health education is an application of health science based on the science of national resilience. The philosophy that is built is system integration and community health thinking, namely the ability to analyze health determinants in society, defense health diagnostics, understanding pathomechanism of extraordinary events (disaster), strengthening community health science and technology (digital), and upgrading geomedicine control in defense health sciences as surveillance and qualitative studies, mapping and application of geomedicine instruments, understanding interaction of local community cases as

potential outbreaks, preparedness of health disaster alertness parameter devices, as indicators of the severity of community conditions (morbidity and mortality), determination of defense health application quality index in the community and monitoring special conditions in an area (disaster prone / infection outbreak), as a defense health science program (S. Lardo, 2018).

The philosophy of defense health education developed is to internalize the contextual values of defense health ideals by prioritizing the "one health – one security" approach, as the opening gate of defense health science in touching community values (WHO, 1998).

Defense health Sciences, initiates a scientific and moral movement spirit, both at the level of changing the people's mindset towards national security roles and needs to maintain national sovereignty, and build a culture of survival for healthy "together with defense health" that is internalized as a daily culture. The culture of innovation in quality of life as values of public health is an important related dimension for the realization of defense health science, which needs to be reconstructed by involving various scientific disciplines (S. B. W. Lardo, 2019).

A Perspective of Defense Health

National defense health has emerged as the totality of health sector resources in the territory of the Republic of Indonesia by utilizing all potential personnel, means, facilities, and infrastructure of health services, to support the task of administering national security. Through the National Defense health System (Siskeshanneg), bringing together the order and efforts of various elements of the nation, by carrying out the functions of inventory, identification, guidance and development, mobilization and demobilization of health in a comprehensive and mutually supportive manner, to ensure the achievement of a formidable national defense. Thus, creating

a system that is integrated and mutually supportive, making all elements of health able to provide health support for the implementation of national defense efforts (Ministry of Defense, 2014; S. B. W. Lardo, 2019).

Defense health governance is part of the National Health System. In addition to aiming to improve the welfare of the community based on the 1945 Constitution, by combining all the potential and elements of the nation, defense health is the unifier of the way of implementing national health development (Ministry of Defense, 2014).

The Defense health Perspective consists of two important elements, namely the upstream defense health perspective, and the downstream defense health perspective. The upstream perspective is a treetop with branches and stalks that break down various leaves and flowers. This perspective contains ways of thinking based on the principle of divergence by breaking down the basic concepts, pathogenesis and pathophysiology, predictive and scoring parameters and diagnostic approaches to defense health (S. B. W. Lardo, 2019).

The basic concept of defense health, as stated earlier, is a basis that is strengthened by the principles of national resilience, namely the insights of NKRI as the main foundation. It is clear, in the field application, how to realize the nation's geographical conditions so broadly, moving as a geomedicine map based on the characteristics and potential strength of the health network. An example that can be revealed is how the role of territorial non-commissioned officers uses their area as a part of their health security (S. B. W. Lardo, 2019).

Pathogenesis of defense health is a defense anatomical pattern as a body map that can break down biochemical and enzymatic mechanisms so that a nation's energy resistance is formed. The resources built strengthen parts of the body's organs with their specifications, moving as a special force to assess and observe every

form of threat, and move that energy as a guardian of defense (S. B. W. Lardo, 2019).

Pathophysiology of defense health is a pattern of defense physiology as a body pathway that manages bodily functions in a state of wakefulness, related to its mechanical functions and metabolism, so that a pathomechanical condition that occurs in the body (infectious agent/tumor agent) has an acute and chronic inflammatory process which can be eliminated through empowering the body's immune system (S. B. W. Lardo, 2019).

Defense health prediction and scoring parameters are clinical and community measurement tools in assessing the factors that play a role in the course of the disease, whether towards a heavier complexity or prevention efforts can be made through several scoring values that have been tested in a study. This prediction parameter becomes a measure of management optimization towards the progression of a disease and pattern of reduction to minimize the vulnerability of the host to overcome disease (S. B. W. Lardo, 2019).

The defense health diagnostic approach is the use of technology as a tool to trace the source of the disease and monitor the anatomical patterns in the body, describing the situation and condition of organs, related to body abnormalities. In the context of defense health, diagnostic maps and anatomical geomedicine potential become the main picture of analysis and potential measuring instruments for medical situations in the region as glasses in determining defense health policy (S. B. W. Lardo, 2019).

The downstream perspective of defense health is an understanding of the journey of the disease community pattern, the flow of spread and expectations through the geomedicine area. Tearing off the geomedicine area will cause the pattern of the safety of the population in the

community to break down by forming an epicenter for the location of the spread of infection. This spread needs monitoring to see the interaction mechanism between the spread of disease and the vulnerability of the population at a later stage, causing community imbalance. Community imbalance at a certain point can go to the nadir if no predictive assessment is taken based on changes and resilience performance of the population as the main force to face the next outbreak event (S. B. W. Lardo, 2019).

The upstream perspective includes the output of the disease, the flow of worsening of the disease and target organs, the level of management based on patient safety (patient safety), and predictive values that affect life performance. The course of the disease is a mechanism of interaction between virulence and host interactions that are woven into the body's immunological balance. The flow of the worsening of disease and target organs is a pathomechanism of increased infiltration of germs that emits various toxins (cytokines) that damage the tissue. The next stage will be a Multi-Organ Dysfunction Syndrome (MODS), as a terminal marker of disease. Predictive value is a clinical policy approach, a laboratory supported by diagnostics, containing quantitative values that describe patient forecasting that is managed qualitatively, such as weighting or protective functions (S. B. W. Lardo, 2019).

Epidemiology and Defense Health Surveillance

Epidemiology of defense health is part of scientific stratification to provide an epidemiological understanding and approach in the context of national defense. The stratification includes a historical approach, epidemiological philosophy (which has been stated in defense philosophy), surveillance of potential

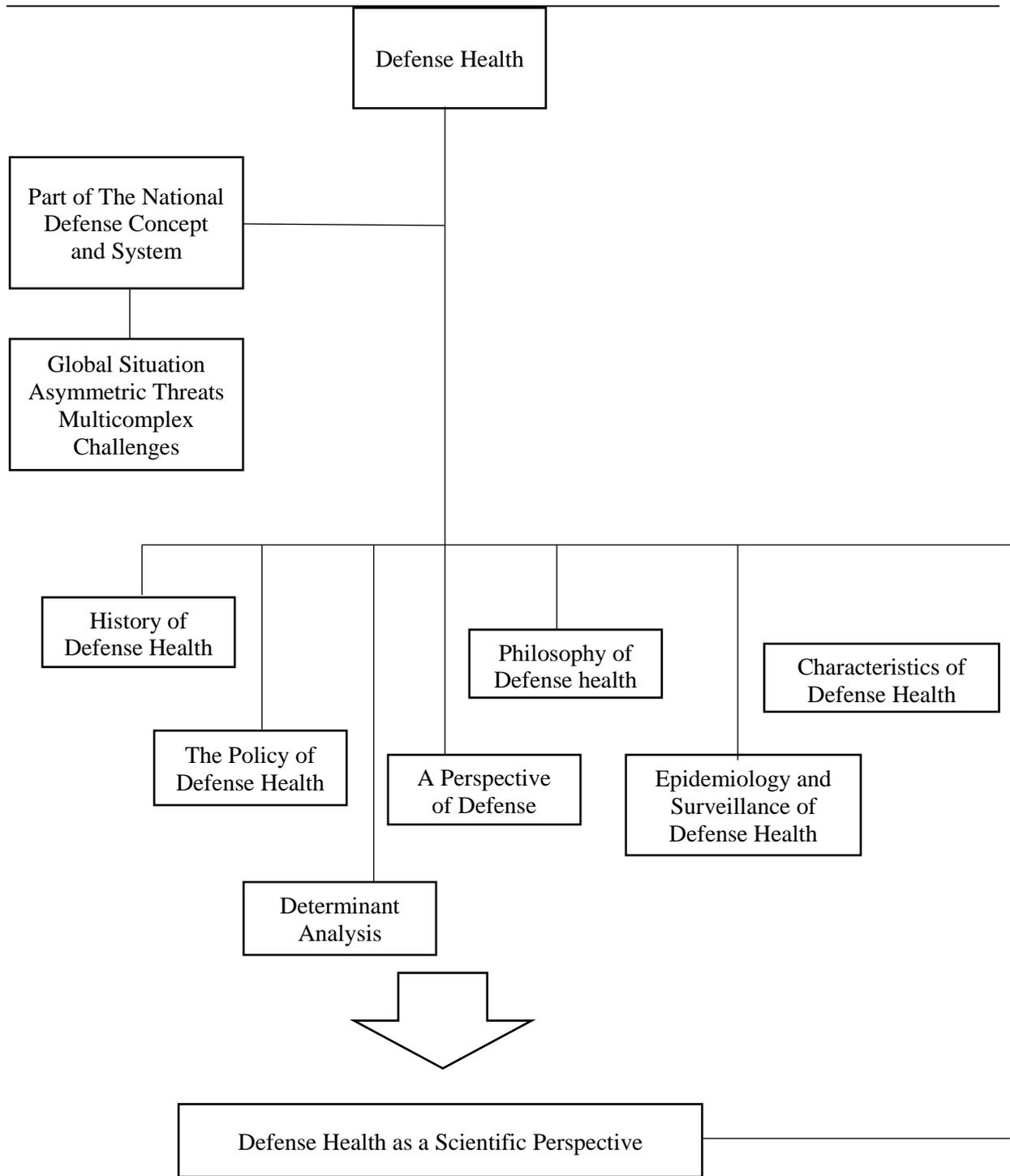


Figure 1. Defense Health Perspective Algorithm
Source: Author, 2019.

defense health (HR and territorial health parameters), geomedicine maps and GPS (Global Positioning System) as a measure of predictions and prognostic distribution of health problems in each regional region, dimensions of mapping and determination of health policy as part of national defense (AA, 2012).

One of the problems of defense health is that re-emerging and emerging infectious diseases is a long journey of infectious diseases. In the period, the problem is not just disease, but several factors related to disease processes (weighting and pathogenesis), the ability of the body (host) and the influence of the environment (environment / global change) also become the foundation for the sustainability of the scientific process defense health epidemiology (S. Lardo, 2018).

Defense health epidemiology is one of the patterns of education that can be developed as a reference to see the process of red thread at the level of remote fields (territorial health) - community - and hospitals, in the ability to improve management and governance in the field of defense health. It is expected that in the future, understanding defense health epidemiology will become a bridge to support and sharpen the nation's resilience strategy (AA, 2012).

Defense health surveillance is one of the references to the movement of epidemiological patterns and thought lines. Through surveillance, a number of steps ahead of geomedicine data collection have become the key and heart of defense health policy that will be issued. Surveillance in developing its activities relies on previous scientific studies. The surveillance perspective is determined by several important aspects, namely: (1) Philosophy of scientific studies, (2) Community epidemiology, (3) Effect of ecological systems, (4) Predictive shock power, and (5) Management patterns (outbreaks) based on surveillance data (S. B. W. Lardo, 2019; AA, 2012).

The philosophy of scientific studies is the main foundation for good surveillance. This concept encompasses basic scientific principles that contain ontological, epistemological and axiological, as dimensions that attach scientific surveillance to a boundary/guideline, method, and surveillance system that reveals the pathomechanism of data collection in the community under the conditions of the reality of research. The further phase of the reality of the research becomes a scope for the extent to which methods and systems of surveillance (ideality) bridge into useful scientific studies (S. B. W. Lardo, 2019).

Early detection networks can be done with active detection and passive detection. Active detection is generally if the availability of Human Resources (HR) is limited, but aimed at high priority targets such as high-risk locations, the reliability of important resources and pathways of populations and species of special concern. Passive detection networks are organizations/individuals involved in passive detection when carrying out other activities, as important means to support active detection. Passive detection has advantages related to research and parameters to the perimeter of risk. Research is needed to determine risk parameters or to develop modeling of the factors that play a role in early detection, such as climate conditions, ecosystem disturbance patterns, and changes in land use. Basic research is needed to determine whether a species is new in an area and to detect changes in pathways. Strong scientific information is very important for targeting detection programs (S. B. W. Lardo, 2019). The defense health perspective algorithm proposed in this paper can be seen in Figure 1.

CONCLUSION

Defense health is a multiparadigmatic concept with multidisciplinary scientific dimensions and parameters, and various

multi-approaches (analysis, synthesis, and solution). It based on philosophy and history and was built its characteristic based on scientific perspective that has reliability and validity. Defense health perspective is strongly needed in Indonesia's Defense System. Therefore, its study needs to further elaborate by Indonesia Defense University by establishing Defense Health Program Study.

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