

THE APPLICATION OF MODEL INFANT IMMUNIZATION MONITORING POST BIRTH-BASED WEB AND SMS GATEWAY

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ABSTRACT

The more advanced the development of information technology will bring extensive impact for any kind of fulfillment of human life without real fulfillment form except human life. The development of information technology also brings positive impact on the field of health information technology that was developed mainly in the activities of treatment and health therapy. This research aims to create an application that is able to access through the web and sms gateway to monitor and monitor the process of kontinyuitas immunization of infants on every post birth, especially in certain regions that are still hard adequate health services, with the availability of this application surely results achieved was the appearance of ease for the handling of immunization in infants especially for post-war birth mothers in obtaining their infant immunization services continuous range in the specified time. Forward with this application will be in getting the condition i.e., the decrease in the rate of infant mortality caused by ignorance of mothers in fulfilling the purposes of their infant immunization.

Keywords: immunization, birth, web and sms gateway

INTRODUCTION

Background Research

The development of smartphones has now mushroomed in the community greatly, ranging from small children up to adults often have activity with the name smarphone. At the end of 2017 is estimated to be approximately 84 million smartphone users in Indonesia. While the total penetration of pertumbuhanya reached 41.8 percent. The activity of people on any smartphone range of games up to business affairs. According to research Google along with TNS Australia found 71 percent of smartphone owners, in Indonesia makes that device as the main, including telecommunications equipment to access the internet. The process of the development of the world of digital technology has affected many areas. One of the central areas experience penetration of digitization technology is in the area of health. One of the influences that add to the health field is medium with a large number of emerging health applications that can be easily accessed via a smartphone or tablet device. For example, in developed countries currently process health examination the ear or hearing children have can be done using your smartphone. Through the device doctor can diagnose the infection and prepare the proper

treatment for his patients. Growing number of mobile applications in the health field will certainly ease the course of patient care.

One of the aspects in the eHealth Technology emphasized the use of the mobile device (mobile) for health services. With the use of mobile devices, such as Smartphones, medical services can reach better on areas, communities, and health practitioners that were previously restricted. Maternal and child health (MCH) in ground water has always been a strange problem that the situation never improved. Improving the quality of maternal and child health services is believed to be the social and political conditions require, law and culture that is conducive.

Based on Demographic and Health Survey Indonesia (SDKI) maternal mortality 2007 year in Indonesia are still at the number 228 per 100,000 live births. Despite numerous attempts of repair as well as handling has been done, but still needed to realize a wide range of support. KIA'S program aims to improve the degree of health maternal and child health in particular optimally. One of the essential elements to support these goals is the availability of data and information that is useful in planning, implementation, monitoring, and evaluation of the results of the health service. Most of the maternal and child health programs in health institutions are not yet supported by adequate information systems both in the recording, processing, and analysis as well as the interpretation and reporting.

LITERATURE REVIEW

The Role Of Immunization To Health Infants

In the article Carla (2018) explained that the development of the medical world that is increasingly sophisticated, the granting of immunization for infants should remain in effect despite giving away a baby make sampinya so cold. There are a lot of immunization to provide to infants to prevent diseases that harm the baby and provides many benefits for the baby itself. Below we've summarize the some the immunization should be given to a baby with full benefits and the granting of immunization time. Kinds and forms of immunization of infants who can string together into a form in the application of information technology is:

Mandatory Immunization

The main compulsory immunisations given to post-war baby birth can be specified as follows:

1. BCG vaccine can be provided when newborn and child time repeat the age of 5 years and 10 years with how to inject at the upper arm. This is very important to prevent the disease tuberculosis (TB) which attacked the lungs due to transmission via a splash of saliva when coughing, sneezing, talking, and respiratory.
2. Measles is a disease that Looks or transmitted through respiratory patients are on the mark with the onset of red spots and high body heat. A disease that can cause diarrhea, encephalitis, seizures due to high heat, and pneumonia is very dangerous for children and babies. The granting of these measles vaccine in children ages 9 do when up to 14 months and on repeat with additional vaccine MMR vaccine (Measles, Rubella/Measles, In Germany). Measles is a disease that Looks or transmitted through respiratory patients are on the mark with the onset of red spots and high body heat. A disease that can cause diarrhea, encephalitis, seizures due to high heat, and pneumonia is very dangerous for children and babies. The granting of these measles vaccine in children ages 9 do when up to 14 months and on repeat with additional vaccine MMR vaccine (Measles, Rubella/Measles, In Germany).
3. DPT vaccine can be given via an injection in the thigh in children aged 3 months to repeat every 5 years. The DPT itself is an abbreviation for Diphtheria, Tetanus, and Petutis the infectious via salivary spark when sneezing, talking or through towels, handkerchiefs, and Dinnerware this virus infected.

4. Hepatitis. This is a heavy disease due to an infectious virus through needle like syringes and needles tatto, can infectious through saliva, sweat, insects such as mosquitoes, and cuts the body of infected objects touched by hepatitis b. diseases that do not yet exist This medicine is very dangerous because its victims will only be given treatment to prevent complications. Administering hepatitis B vaccine it can be done since the baby to protect up to 96% in the past 5 years and can give additional power to extend vaccine lindungnya.
5. Administering the polio vaccine could in two ways, namely the OPV vaccine in doing with shed the vaccine through the mouth or in the oral vaccine and the second is IPV given via injection. These vaccines can be done since the age of 1 week and new baby in doing routine 1 year all children until the age of 5 years. Polio itself has the full name of the Poliomyelitis attacked the nervous muscles to muscles become small and occur in paralysis for the sufferer, meskipun can heal, it still leaves the mark i.e. sufferers a limp all his life. The virus is transmitted through food or drink that is exposed to the polio virus and splashing saliva of people suffering from polio.

Additional Immunization

In addition to several types of immunization at the top, in maintaining the health of the baby is still a need for additional immunization, immunization in the form of not just the obligatory immunization should be given to the child or baby to us, there are also additional immunization must be in give to prevent many diseases like Hib vaccine, Influenza, MMR, PVC, Rota, and Varicella that has many health benefits for infants and children.

The Role Of Information Technology In The Field Of Immunization

Posyandu is an activity information system input, process, and output will be the data that exists in the basic data such as posyandu posyandu, posyandu services activities, data user and the attendant hospital. The hospital information system initially in the form of paper based need to be developed into a computerised based using the software. Computer-based Information System for the Posyandu once evaluated the results better than the manual or paper-based. It's just that this time, the development of information systems in UKBM (Efforts of community-based Health) new developed at the hospital which goal is to pregnant women, infants, children and toddlers as well as fertile age couples. Whereas, like other UKBM posbindu where the goal is a ripe old age that the number is growing also requires information systems that are not only pretty, but also manual developed into computer-based (Erlinawati, 2011).

The Benefits Of Immunization In Infants

According to Nainggolan (2013) are the benefits of immunization is so much functionality for the health and growth of the development of the our children in the future at a later. Because when the newborn is should get the vaccination immunization for infants. For that reason the importance we know will be various types of vaccination and immunization vaccination also benefits for infants toddlers fruit our hearts each. The purpose of the granting of the full basic immunization by the time baby will hopefully provide functionality as well as the benefits in terms of protecting the baby body immunity levels are still very vulnerable from a disease that could and can cause pain, disability or even the death of the baby. Immunization is is part of administering the vaccine (inactivated virus) into the body of someone to give immunity to a particular disease type. Immunization is an immune system that is given to humans with the purpose of protecting the individual from a disease that can harm the soul children-naka kita. That is what is meant by the definition as well as the understanding of immunization we give to the baby. The principle of granting of immunization in this case is to enter a germ that has weakened into a body that functions to ward off disease. The way of granting this immunization is through injections or oral (through the mouth). Through immunization, some diseases can

disappear just as the smallpox disease in the year 1970. History has been noted, that immunization saves many generations and prolong one's life chances. In Indonesia, the immunization was introduced in 1956 began.

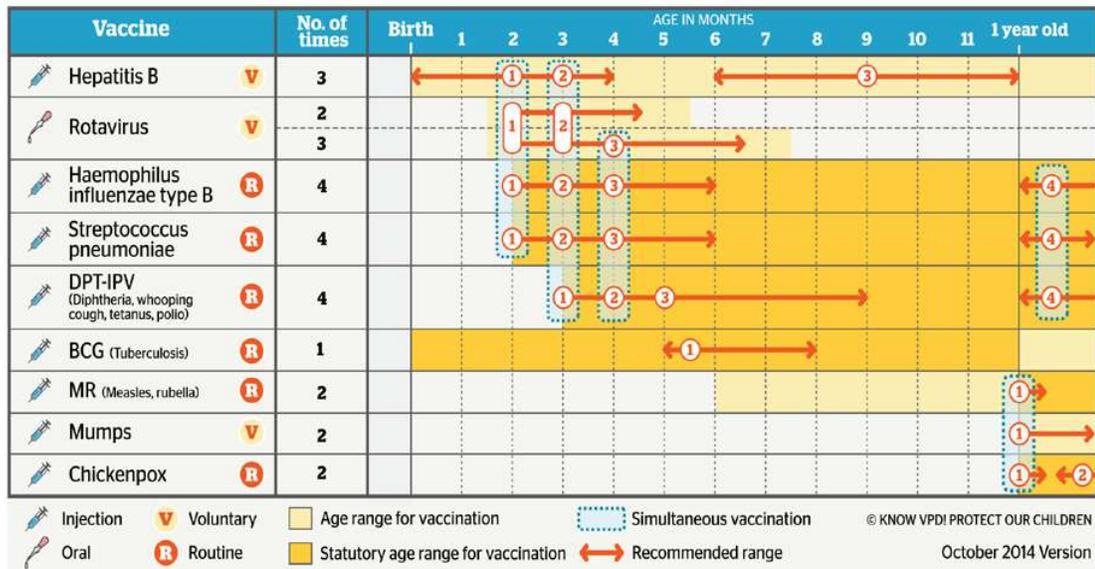


Figure 1. Sustainable Immunization Process
 Source: Calyn G, Ostrowski M., Greene Margaret., (2011)

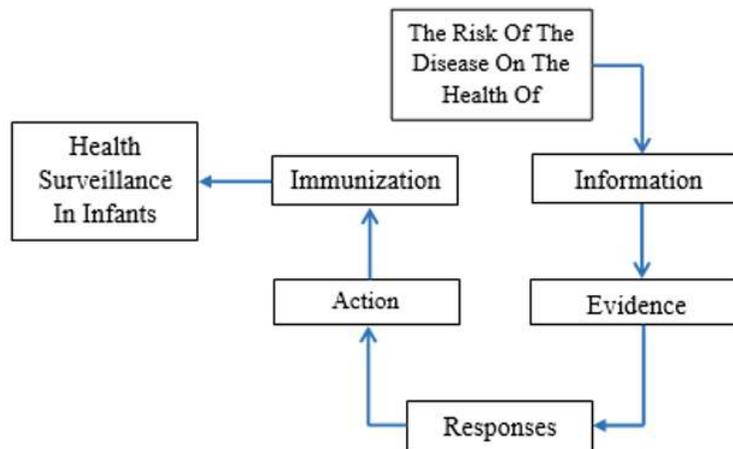


Figure 2. The Mechanism Of Monitoring Immunization In Infants Through Web & SMS Gateway
 Source: Lisnawati (2011). *Generasi Sehat Melalui Imunisasi*. Jakarta: Trans Info Media.

Immunization Activities Detection Post Birth

Dompas (2013) explains in his book, baby's protection activities related to immunization activities actually has to be done early as of zero day old baby up to the age of a certain

boundaries with immunization activities, this was done until the baby was 9 (nine) months, known as the basic immunization. In Indonesia, the country where most of its area consists of plain countryside sometimes still not enough good health services are mainly related to the handling of the health of the baby in terms of immunization activities.

The Five Mandatory Immunization

According to the explanation Hakim (2014) immunization efforts in Indonesia have been conducted since the year 1970-80s in infants and children. Appropriate Government immunization programs, there are five types of immunization that must be given to infants aged 0-11 months, i.e. BCG, polio, hepatitis B, DPT, measles. As for the recommended immunization is MMR, Hib, typhoid, hepatitis A, varicella, pneumococcal, and PPV (IPD). Some of the benefits of immunization among other mandatory hepatitis B vaccine prevents infection with hepatitis B, BCG vaccine in order to avoid severe tuberculosis, DPT vaccine to prevent diphtheria, whooping cough (pertussis) and tetanus. As for the polio vaccine to avoid the disease polio. Mandatory immunization coverage, however, decreased in recent years compared to 10 years ago. For example, immunization coverage of DPT year 1997 nationwide achieve 100 percent or more, while the year 2008 coverage dropped to 91.6 percent. With the target of immunization of infants of around 5 million, 420,000 babies don't get vaccines DPT. These conditions led to a number of infectious diseases in children toddlers can not be resolved until there is no longer the case. For example, the number of measles cases year 2007 totalled 18,488 people. Polio comes up year 2005 after not found since 1995, despite successful national immunization after being eliminated.

Prevent Health Disorders In The Form Of Infection.

So far, the deaths of children under one year in Indonesia is very high. According to the Demographic and Health Survey Indonesia, infant mortality year 2007 was 34 per 1,000 live births. "Infant mortality in Indonesia the highest among the ASEAN countries," said Sri Hadinegoro, Chairman of the S Provision task force on immunization IDAI. About 75 percent of deaths of infants under 1 year due to acute respiratory tract infections (RESPIRATORY), perinatal complications (infants aged 0-28 days), and diarrhea. Therefore, efforts addressing the third leading cause of pain and death must take precedence. Many RESPIRATORY related diseases could be prevented by immunization, measles, pertussis, Hib, pneumococcal and. Hepatitis B immunization in infants can also prevent future liver cancer at the age of productive, because 90 percent of infants born of mothers with hepatitis B infection would be infected with a virus that, 95 percent of them develop into chronic and liver cancer. Administering vaccines can protect children from attacks of various infectious diseases that can cause death and disability. Immunization inducing immunological system of the body to form antibodies specific so that it can protect the body from the attack of the disease (team IDAI, 2014).

RESEARCH METHODS

Location Research

Research places located at Griya Husada hospital Surabaya, directly in the path of the host Fern II/110 Surabaya, media Ministry granted the hospital one is activity immunization in infants. The contribution we will provide is developing hospital services to areas that can be reached through the application of web-based information systems and the sms gateway to serve important information to moms post-birth in their infant immunization activities through a mobile device that is easily operated and used to get the correct information related immunization activities.

The Process Of Collecting Data And Samples.

Applications built to reach health services immunization in infants up to the age of nine months, so the mother who gave birth to a time-out will get accurate information on when their baby should get immunizations are scheduled are informed through web-based devices and sms gateway. Of course the data we collect is information on babies born and haven't even aged nine months to become the subject of research in the process of gathering research data.

Rapid Assessment Procedure

Observational research evaluative in nature with the draft cross-sectional and quantitative and qualitative approach will be undertaken to support the achievement of the objectives of this research. Quantitative data that will be collected is related to the implementation of the system of maternal health, including the monitoring of input, process and output. Input related to resources and means of supporting infrastructure available. The process of with regards to how the maternal health surveillance system implemented. While the output related to the availability of data/information that is valid as a result of monitoring and utilization data for decision making. Qualitative data will also be collected to support and deepen the studies related to program performance and linkages to other sectors.

THE RESULTS OF THE RESEARCH AND THE DISCUSSION

The Application Of The Mechanism Of Early Warning To Immunization Of Infants

As explained earlier, that the main purpose of establishing this application is to detect early any kind of disturbance that may arise if the infant immunization is not done on a regular basis. With an application that can be run online at the mobile mobile device via sms gateway and path or use the web-based media then any kind of information can be received and distributed to mothers who have baby maximum until the age of nine months. The main outputs that will be generated through the implementation of this application is (Lisnawati, 2011).

1. Implementation of a monitoring activity of health immunization of infants who are able to generate output data that is valid for the clinic or hospital immunization providers.
2. Baby health monitoring activities that will be capable of detecting high risk baby's health problems early, in the region that are able to reach by web service clinics.
3. Data and informasi yang successfully collected from monitoring activities health disorders babies used for decision making by health care givers in anticipation of performing the required actions.

In order for this application to run successfully, then the clinic or hospital venue should do the phases of activity in its region in focus and periodically in the form of.

1. Implementation of the system of Early Warning of environmental puskesmas in infant immunization or hospital providers.
2. Development and Maintenance System of Early Warning activities of infant immunization.
3. Dissemination system of Early Warning for the immunization of infants in Clinics or hospital providers.

Interested parties in the implementation of this application is actually puskesmas or hospital in Surabaya, where territory when the application is implemented in a spearhead into the collecting data was the Organizer. Object data collection is the condition of the baby started born up to the age of nine months. Implementing data entry which became about everything related to the health of pregnant women is the appropriate experts or understand the medical world about the health of the baby. The data collected by them is about the number of babies aged 0-9 months, all types of illnesses suffered by babies baby birth or frequency. The process of collecting data on everything from the level of the RT, and RW up to the level of the village in the region of Surabaya. Through the charging of such data will be monitored and known early, the kind of health problems in infants such as what to get the handling of early. Because

data through sms gateway will certainly save time and become much more quickly and efficiently. Output results data is conducted will provide a signal and input to the health center Kepanjen which can be used as consideration in making decisions about the handling of priority health problems in babies soon and this condition will provide emergency response speed on the grant of the Ministry of public health. So that the desired impact, health disorders will not lead to a dangerous condition for the condition of the babies as early as possible. The flow of data from field implementations done by health workers of clinics can be seen in Figure 2 above. All the data that has been collected in the main server can be important information for health centers and hospital organizers in monitor and improve health services usia 0-9 months baby. The process of early detection, early warning systems could become a foothold for clinics in conducting early action before interference suffered by infants health is getting worse. With the presence of this application allows local governments in this regard health services can be more intensive in the monitor and trace the whereabouts of the baby who suffered health problems.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. The application of these applications bring benefits for the two sides, namely the parties concerned provide immunization, health centers or hospitals designated.
2. Application of early warning is very beneficial to moms who have babies and are still far from the reach of health services adequately.
3. Should the application of these models can be developed in many places, especially in serving the needs for the mother after childbirth and baby care in the healthily.
4. Community service will be the health needs of developing various types of application that facilitates the dissemination of information and data accurately all the time.

Recommendations.

1. Application of early warning of immunization services should continue to be developed to optimize the health service for the health of infants.
2. Any clinic or hospital designated, certainly have long-term interests against the application, necessitating an integrated national programme for mensukseskannya.
3. Application development and web-based early warning smsgateway can certainly be tried for other health services such as communities increasingly are met so that the BPJS would better service as the development of information technology services.

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