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Hemoglobin Color Scale and Peripheral blood smears as a tool to detect anemia and some hematologic abnormalities in peripheral laboratories

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Many small peripheral health facilities, especially in the developing countries do not have the needed facilities, equipment or technician to do a sophisticated laboratory test to detect hematologic abnormalities such as anemia that is still a major health problem in many countries. One of the task of a peripheral health center is to detect abnormalities in the patients, manage the treatment or refer them to bigger facilities if needed. Most rural laboratories have only limited ability to do simple laboratory test, such as the Talqvist paper method for hemoglobin measurement and blood smear to detect other abnormalities. It is important that they should be able to differentiate condition that needed further treatment. Recently the World Health Organization (WHO) has introduced a new simple method to estimate hemoglobin concentration based on standardized paper color scale. This is a very simple test that do not need sophisticated equipments and can be easily be used as a screening tool for detecting anemia or monitoring its treatment. The aim of this study is to evaluate the WHO hemoglobin color scale as a tool to detect anemia in

pregnant women and to measure the ability of the laboratory to detect abnormal white blood cells (WBC) such as immature form to detect leukemia.

Material and method. For the WHO hemoglobin color scale method, blood were obtained from pregnant women undergoing antenatal examination in a small health center in East Jakarta. The color scale method were compared to the hemiglobincyanide method for the ability to detect anemia. For the blood smear study, data were taken from the trials of the Indonesia National External Quality Assurance Program The result of blood smear evaluation sent to participating laboratories were evaluated for the ability to detect immature and abnormal WBC.

Results. The sensitivity and specificity of the WHO hemoglobin color scale to differentiate anemic and non anemic subjects were 86% and 100% respectively. From the blood smear survey it was found that the rate for detection of chronoc lymphocytic leukemia, acute leukemia and blastic crisis were 16%, 62.9-81.5% and 62.7% respectively.