

## Effective Management of Active Management in the Third Stage of Childbirth (Literature Review)

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### Abstract

*Maternal mortality is still a global health issue even though it is decreasing every year. In Indonesia, based on the 2015 SUPAS, the maternal mortality rate reached 305 per 100000 live births, this figure is still very far from the SDGs target (Bappenas, 2017). Postpartum hemorrhage or better known as post-partum hemorrhage (HPP) is a cause of maternal death with an incidence of 1%-6% of all deliveries (Wormer et al., 2022). One of the efforts to prevent the occurrence of HPP is by implementing active management in the third stage of labor. This discussion aims to collect and analyze articles to identify the effectiveness of active management as a treatment for the third stage of labor. The results of this discussion show that the management of the third stage of labor with an active management approach reduces the amount of blood loss and shortens the duration of the third stage of labor compared to physiological management. However, these studies have low or even very low quality. Meanwhile, research on the active management measures of the third stage showed insignificant results regarding the main outcome in the form of the amount of bleeding. So that further research is needed regarding the effectiveness of the application of active management in the management of the third stage of labor and whether active management should be carried out in all low-risk and high-risk patients.*

**Keywords:** *active management; third stage of labor; Bleeding;*

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## **Introduction**

Maternal mortality is still a global health issue even though it is decreasing every year. Until 2017, the global maternal mortality rate reached 211 per 100000 live births, which decreased by 38% compared to 2000 when the maternal mortality rate reached 342 per 100000 live births (Spencer, 2021). Meanwhile, the SDGs target that by 2030 the global MMR is less than 70 per 100000 live births. In Indonesia, based on the 2015 SUPAS, the maternal mortality rate reached 305 per 100000 live births, this figure is still very far from the SDGs target (Bappenas, 2017). Meanwhile, according to data from the Ministry of Health, there was an increase in the number of maternal deaths from 2019 numbering 4221 to 4627 deaths in 2020 with the highest cause of death is bleeding, amounting to 1330 cases (Kemenkes RI, 2021).

Of the approximately 140 million deliveries that occur in the world each year, the majority occur without risk factors for complications for both themselves and their babies at the beginning and during childbirth. However, labor is a critical time for the survival of mothers and their babies (WHO, 2018). Bleeding as a cause of maternal death can occur during pregnancy, during delivery, and even after childbirth. Postpartum hemorrhage or better known as post-partum hemorrhage (HPP) is a cause of maternal death with an incidence of 1%-6% of all deliveries (Wormer et al., 2022). HPP is bleeding more than 500 mL in vaginal delivery or bleeding more than 1000 mL in Sectio (SC) delivery (Susilaningrum et al., 2013). Primary postpartum hemorrhage occurs within 24 hours of delivery with 70%-80% of cases caused by uterine atony in the third stage of labor (Susilaningrum et al., 2013; Wormer et al., 2022).

The third stage of labor begins when the baby is born and ends when the placenta comes out (Hutchison et al., 2020). Generally, active management is performed to assist in the expulsion of the placenta. The high maternal mortality rate that occurs due to bleeding is most likely the reason why active management is determined to be the management of the third stage in Indonesia. But what is often a question is how effective the components of active management are in reducing the risk of bleeding. Besides that, there is other management in the management of the third stage of labor that is applied other than in Indonesia. Based on this background, the authors are interested in discussing the effectiveness of the management of the third stage of labor.

## **Method**

The method used in writing this article is a literature review. It is a literature search, both international and national, which is carried out using the EBSCO, ScienceDirect, and Proquest databases. The author navigates to the websites SearchProquest.com and GoogleScholar.com. The researcher writes the keywords according to MESH (Medical Subject Headings).

## **Result and Discussion**

Management of the third stage of labor can be carried out through several management approaches, including active management and expectant or physiological

management. However, there is a third approach that is sometimes used, which is a combination of active management and expectant management, also known as mixed management or combined management. These three approaches are often the subject of several critical reviews.

Expectant management, also known as physiologic or conservative management, is commonly practiced in northern European countries, New Zealand, England, and Ireland in Midwife-led or home deliveries. This management is also commonly practiced when delivery is performed at home in low-income countries. The main principle is “hands-off” where the birth attendant does not intervene, the sign of placental separation is awaited and then the placenta is allowed to deliver spontaneously. In this management, there is no prophylactic uterotonic administration, the umbilical cord is not clamped or cut until the placenta is delivered, the birth attendant at least waits until the umbilical cord pulse is not felt, and the placenta is delivered by itself due to the natural influence of gravity and sometimes assisted by the mother pushing. Some skilled midwives use gentle traction on the umbilical cord when the placenta is visible in the vagina (Begley *et al.*, 2012).

Inactive management, several interventions were carried out, including giving prophylactic uterotonics both before, simultaneously, and immediately after the baby was born. Initial clamping of the cord (either before, concurrently, or immediately after administration of oxytocin, which takes place before the pulsation of the cord stops) and finally followed by controlled cord stretching. Active management has many variations in its implementation. Such as the type of uterotonic given, the time of giving prophylactic uterotonics, the time of clamping and cutting the umbilical cord, the time when the umbilical cord stretches, even according to Gyte (2006) some perform all active management steps after the umbilical cord pulse stops. In addition, some guidelines include uterine massage in the active management of stage 3 (Begley *et al.*, 2019).

Mixed Management or combined management is a combination of the two but not all steps of inactive or physiological management are carried out in this management. Example: giving uterotonic early then clamping the umbilical cord after the pulse is not felt and followed by controlled stretching of the umbilical cord. This variation in management is interesting to discuss given the abundance of evidence regarding the benefits of delayed cord clamping.

**In the following, we will discuss studies that compare the above approaches.**

The first research to be discussed is a research with an RCT (Randomized Control Trial) design conducted by Kashanian *et al* (2010). In their study, Kashanian *et al* (2010) compared the duration of the third stage and the amount of blood lost during the 3rd and 4th stages. The study was conducted on 200 women who gave birth in a maternity service unit in Iran. The sample was divided into 2 groups, 100 people entered the intervention group or in this case, active management was carried out where the sample was injected intramuscularly 10 IU of oxytocin after the anterior shoulder was born, then after clamping and cutting the umbilical cord, the uterus was pushed in a temporary dorso-

cranial direction. The umbilical cord is stretched constantly and intermittently until the placenta is delivered. The control group consisted of 100 people and carried out physiological management in which the placenta was only monitored and then removed with encouragement from the mother (mother straining). Both groups were then estimated how much blood was lost with collection devices such as measuring cups, body coverings, and blood-soaked bed sheets were also measured. The results showed that there was no significant difference in the amount of blood loss between the intervention group and the control group or in other words active management did not reduce the amount of blood lost in the third stage of labor. However, there is a significant difference in the amount of blood lost during the 4th stage, which means that there is a relationship between active management and a decrease in blood loss during the 4th stage. In addition, there is a significant difference in the duration of the 3rd stage between the intervention group and the control group so that it can be concluded that active management reduces the duration of the 3rd stage. In this study, the authors could not confirm which randomization method was used by the investigators. In addition, in a study like this, it is not possible to do blinding because health workers must always provide information for consent to patients before taking action. The author also finds it difficult to ascertain the characteristics of the sample and the confidence interval in the study. It is uncertain whether this study can be applied to the local population due to racial differences and very different political conditions even though they are actually classified as low-income countries.

Another similar study was conducted by Jangsten *et al* (2011). The study was set in 2 delivery units at a university hospital in Sweden. The study population was normal and healthy pregnant women with a gestational age of 34-43 weeks, single, head positioned, and will give birth vaginally. The samples were then divided into an active group and a physiological group. The results showed that bleeding >1000mL occurred in 10% of samples in the active management group, while in the physiological group 16.8% occurred in the physiological management group, this showed a significant difference. In addition, the average blood loss, duration of stage 3, and hemoglobin levels were also significantly different. However, there was no difference in the incidence of retained placenta and blood transfusion in the two groups. It can be concluded that active management of the 3rd stage reduces the amount of blood loss compared to physiological management so the researcher concludes that the management is feasible. This article describes in detail how the randomization process is carried out. In addition, although the researcher was not blind to the intervention to be given, the patient was not told what intervention would be performed. At the beginning of the study, 158 patients from the physiological group were not given any injections, but in the middle of the study later researchers realized that if not injected at all it might affect the experience of giving birth to the mother, so finally it was decided that the physiological group would be injected with NaCl instead of oxytocin, but the function of NaCl here is almost the same as the placebo. Because of these differences, the authors cannot confirm whether the intervention in the previous 158 patients could have influenced the results of this study.

Other research by Yildirim *et al* (2016). In a randomized controlled prospective trial, the investigators compared an active management protocol in women at low risk for postpartum hemorrhage with a physiologic management protocol regarding hematological changes, uterotonic changes, blood transfusion, or other adjunct interventions. The results showed that Hb levels were significantly higher in the active management group and the decline was also significantly lower. A decrease in Hb levels of more than 3 g/dL was not common in the active management group although the difference was not significant. As the study by Kashanian *et al.*, (2010), the duration of the third stage was also significantly shorter in the active management group. There was no significant difference between the two groups with respect to the need for additional uterotonics, uterine atony, blood transfusion, manual placenta, surgical evacuation of the remaining products of conception, and prolonged 3rd stage. In conclusion, it was stated that, although active management of the third stage was associated with high post-partum Hb levels, it did not affect the risk of severe post-partum bleeding in low-risk women. The difference between this study and previous studies is that the researchers directly targeted the intervention only to groups at low risk for postpartum hemorrhage. In this study, the researcher explained in detail the randomization technique used. In addition, the researchers carefully considered the possible losses, so the authors chose to conduct research only in low-risk groups. This study may be applied to the local population with the same conditions that have a low risk of bleeding.

The study by Chandnani dan Sharma (2019) conducted in the department of Obstetrics and Gynecology Shrimati Bhikiben Kanjibhai Shah Medical Institute and Research Center was a prospective comparative study. The sample consisted of 200 mothers who would give birth vaginally. They will then be divided randomly into group A to be intervened with physiological management and group B to be intervened with active management. The progress of labor was monitored with a partograph and all interventions were recorded. The results showed that the average blood loss in group A was more than in group B, in group A there were 12 samples with bleeding >500 mL while in group B there were none. The duration of the 3rd stage also tended to be longer in group A than group B. These differences were statistically significant, so the researchers concluded that active management was associated with reduced blood loss and reduced duration of stage 3. For this study, it is uncertain whether the comparative design These prospective studies are the same as RCTs, so the hierarchy cannot be determined at the level of scientific evidence.

A systematic review of RCTs is evidence with the highest hierarchy in this case found in the Cochrane Database of Systematic Reviews. the review was first conducted in 2010 and then updated several times until the last time was updated in 2019. The aim is to compare the effect of active management with physiological management in the third stage of labor on primary postpartum hemorrhage and other outcomes for mother and baby. . The research selected is a type of research that uses a randomized design quasi and -randomized controlled trials. Two different authors each assessed the research to be included in the review, assessed the risk of bias, performed data extraction, and assessed

the quality of evidence using the GRADE approach. Begley *et al* (2019) concluded that, although the data show that active management reduces the risk of postpartum hemorrhage >1000 mL, this cannot be confirmed because the evidence (in this case the studies included in the review) is evidence of low quality or very high quality low. Active management may reduce the incidence of anemia in postpartum women but also found adverse effects such as hypertension, pain, and repeat visits to health facilities due to bleeding. In women with a low risk for bleeding, it is not certain whether there is a different effect between active management and physiological management. The investigators suggest that it is possible that uterotonics alone can reduce bleeding without the need for other components of active management.

Local policies that stipulate active management as one of the mandatory steps in providing normal delivery care are also an obstacle in implementing other management such as physiological management and combined management which may also benefit the patient.

In Indonesia itself, delivery care follows guidelines from the government, commonly referred to as normal delivery care (APN). In the guideline, it is explained that the management of the 3rd stage is carried out through active management of the 3rd stage. These steps include injection of oxytocin 10 IU IM after the baby is completely born, there are no clear instructions about when to clamp the umbilical cord, after clamping the umbilical cord then cut, then controlled cord stretching and fundal massage as one of the active management steps (Suprapti dan Mansur, 2018)..

In a meta-analysis by Salati *et al* (2020) which is an update from a meta-analysis in 2013, it is stated that the difference between the effects of oxytocin and ergot alkaloids on bleeding rates, the need for additional uterotonics, and blood transfusions cannot be ascertained. Oxytocin may increase the risk of a prolonged third stage of development than ergot alkaloids, although it is uncertain whether the risk of manual placental abruption is also increased. These potential risks must be weighed against the possible increased risk of side effects associated with ergot alkaloids. Oxytocin-ergometrine can reduce the amount of bleeding compared to ergot alkaloids but the certainty of this conclusion is still low.

Cord clamping varies depending on individual policies. Inactive management, clamping is usually done early cord clamping or within the first 60 seconds after the baby is born while delayed cord clamping is done more than one minute after the baby is born when the umbilical cord pulse begins to disappear. A meta-analysis to compare the benefits and harms of the two was carried out by McDonald *et al* (2013) as an update of a meta-analysis in 2008. In the review, it was stated that there was no significant difference between early clamping and delayed clamping for maternal outcomes in the form of postpartum hemorrhage. Maternal Hb levels also did not experience a significant difference.

In infants who underwent delayed umbilical cord clamping, birth weight increased compared to early cord clamping. However, in the group with delayed cord clamping, more phototherapy for jaundice was found. The infant's Hb level during the first 24-48

hours also increased in the group with delayed umbilical cord clamping, but during follow-up assessment, no difference was found between the two. However, it is estimated that infants with early umbilical cord clamping are 2.65 times more likely to develop iron deficiency at 3 to 6 months of age than infants with delayed cord clamping. This may be beneficial for those in areas that are commonly affected by anemia, but it should also be noted that there are health facilities that provide phototherapy that can be easily reached given jaundice caused by delayed cord clamping.

Among the various steps taken during active management of the third stage, what is still controversial is whether uterine massage is effective enough to reduce the risk of bleeding. In some types of active management of the third stage, uterine massage is not even practiced at all. The meta-analysis conducted by Saccone *et al* (2018) states that scientific evidence showing the success of uterine massage to reduce the amount of bleeding is still very limited. All three studies evaluating the outcomes of these interventions were of low quality. Therefore, for now, prophylactic oxytocin, delayed umbilical cord clamping and controlled cord stretching should be the three standard interventions for active management of stage 3. This is not in line with FIGO recommendations that include uterine massage as a component of active management of stage 3.

### **Conclusion**

Several articles discussed above concluded that the management of the third stage of labor with an active management approach reduces the amount of blood loss and shortens the duration of the third stage compared to physiological management. All relevant research has been included in the review, the authors have also fairly objectively assessed the quality of the research, although in the end it was concluded that the research was low or even very low. The authors clearly discuss the differences in the results in the review. It should be underlined that the majority of the studies included in this study researched with a developed country background, so it is not certain whether these things can be applied to the local population.

Meanwhile, research on the active management measures of the third stage showed insignificant results regarding the main outcome in the form of the amount of bleeding. In addition, the wide variety of applications of active management has led to various debates about what steps really have an effect in reducing the risk of third-stage bleeding. So that further research is needed regarding the effectiveness of the application of active management in the management of the third stage of labor and whether active management is necessarily performed on all low-risk and high-risk patients.

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