Early Resuscitation for Obstetric Hemorrhage in the Setting with Geographical Challenges

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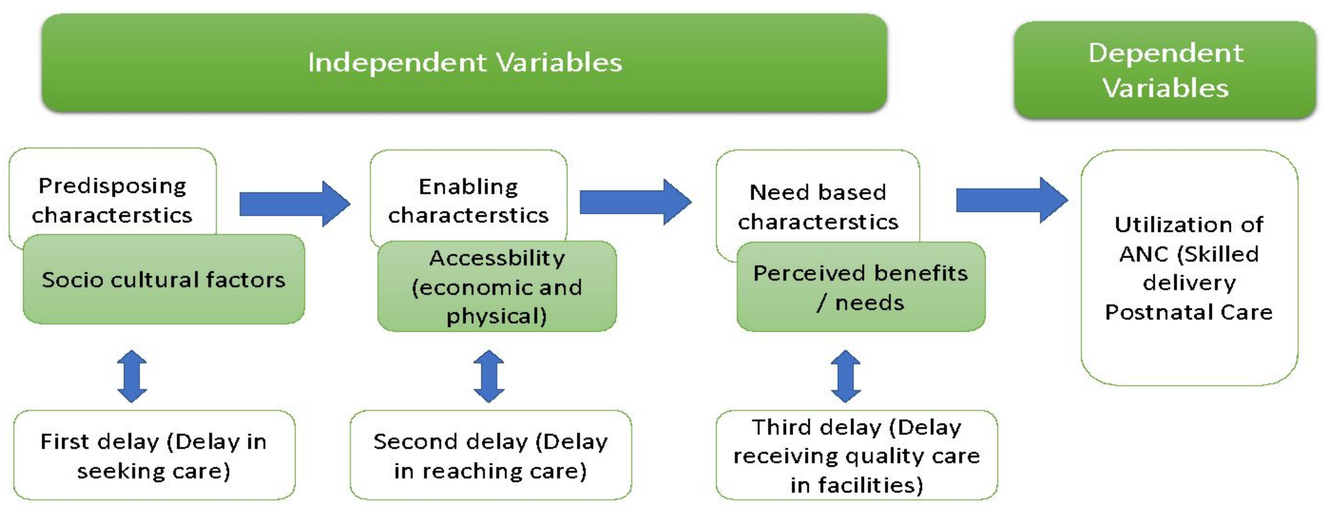
Background

Maternal mortality rate in Indonesia is 359 per 100,000 live births. This number is higher than ones in other developing countries with similar level of development. Obstetric hemorrhage is one of the highest causes of preventable maternal deaths.[1] Thaddeus and Maine's Three Delays Model (Figure 1) describes three factors contributing to maternal mortality in obstetric case (delay to seek care, to reach care, and to get care from health providers).[2] Many regions in Indonesia still have geographical challenges contributing to the delay in phase I and II. Therefore, once patient has reached a health care center, delay in phase III should be avoided. We aimed to describe early resuscitation of health provider in Puskesmas could avoid delay in phase III.

Figure 1. Thaddeus and Maine's Three delays model[1]



Method

The cases described two cases of obstetric hemorrhage in a Puskesmas with low resource setting in a remote area in Central Kalimantan. We discussed early resuscitation from physician in this Puskesmas to reduce delay in phase III

Cases

Puskesmas Tumbang Miri is the only health center in the subdistrict of Kahayan Hulu Utara, Central Kalimantan. It serves 8333 population spreading in an area of 1.589 km^2. The distance to the closest hospital is 66 km. "Kholotok" (Figure 2) is a common river transportation. Main roads are also very difficult to access (Figure 3). Two cases of obstetric hemorrhage are presented in Table 1.

Figure 2. Kholotok

Figure 3. Geographical Challenges of the Main Roads

Table 1. Case description

	Case 1	Case 2
Age (years)	29	37
Diagnosis	P3A0 with retained placenta for 8 hours and hemorrhage	G4P3A0 with incomplete abortion and hemorrhage
Distance from patient's village to puskesmas	41 KM	18 KM
Vital sign when arrived at Puskesmas		
• GCS	13	12
• Blood pressure	80/60	70/pulse
• Breathe	25x/minutes	28x per minutes
• Pulse	120xper minutes	55x per minutes
• Temperature	36,4℃	37,7 ℃
• Capillary refill time	>2 second	>2 second
• Hb sahli	10 gr/dl	8 gr/dl
• Urine output	10cc	0cc
Class of hemorrhage	**Class II**	**Class III**
Early resuscitation	Two IV lines 2L crystalloid followed by maintenance during referral	Two IV lines 4,5 L crystalloid and still ongoing during referral
Vital Sign when arrived at Hospital		
GCS	14	13
Blood pressure	100/60	93/51
Pulse	98x per minutes	79x per minutes
Breathe	20x per minutes	25x per minutes
Temperature	36,4℃	37,3℃
Capillary refill time	<2 second	3 second
Hb	8,9 g/dl	5,8 g/dl
Urine output	50 ml/kgbb/jam	20 ml/kgbb/jam

Discussion

In Puskesmas in remote area, there are limited equipments to support diagnosis in obstetric emergency. For example, as there is no adequate clinical laboratorium, the method to measure haemoglobin is the Sahli method. Blood transfusion is not available. To estimate blood loss and define intervention, physician should classify the degree of haemorrhage based on the patient sign and symptoms[3] (Table 2) and the result of Sahli method.

Table 2. Clinical Classification of Maternal Hemorrhage[3]

Class	Blood Loss (ml)	Signs and symptons
I	≤ 1000	Orthostatic tachycardia (↑ 20 bpm)
II	1001-1500	↑ HR 100-120 bpm Orthostatic changes (↓ 15 mmHg) Capillary refill >2 sec Mental changes
III	1501-2500	↑ HR (120-160) Supine ↓ BP ↑ RR (30-50 rpm) Oliguria
IV	>2500	Obtundation Oliguria-anuria CV collapse

Modified from:: Roberts S. Hypovolemic and Cardiac Shock. In : Saade G, Foley M, Phelan J, Dildy G, editors. Critical Care Obstetrics. United Kingdom. Wiley-BlackWell;2010.p. 559-570

Conclusion

Geographical challenges in a remote area in Central Kalimantan cause delay in phase I and II in two patients with obstetric haemorrhage. To avoid delay in phase III, health professionals in Puskesmas should be able to recognize shock, estimate blood loss, conduct vigilant monitoring and early resuscitation to minimize serious sequele of haemorrhage before transferring to the hospital.

References

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