



OPERATIONS RESEARCH SUMMARY

Quality Assurance Project II

Do Case Management Maps Improve Pre-eclampsia and Postpartum Hemorrhage Care in Uganda?

Pregnancy-induced hypertensive disorders (PIH) such as eclampsia, and postpartum hemorrhage (PPH) are major threats to safe childbirth in Uganda. For example, of 57 pregnant women admitted to Uganda's Jinja Hospital with pre-eclampsia in 1998, five who died likely would have lived with proper care.

Case Management Maps (CMM) – a job aid on a pre-printed page that health workers fill out in the course of providing care and informs the workers what care to provide and when – were developed for PIH and PPH at Jinja Hospital.¹ The efficacy of the two job aids was tested at the hospital, by comparing the care provided with the CMMs to care in the prior year (before the job aids were introduced), and to care provided for a control condition – pelvic inflammatory disease (PID) for which no CMM was used. Key indicators of the quality of care (Table 1) were measured for each condition before and after the introduction of CMMs. As seen in Figure 1, the quality of care for PIH cases increased significantly and considerably, while the corresponding trend for PPH cases was upward but neither as pronounced nor statistically significant. Meanwhile, performance for PID barely increased.

Figure 1. Percentage of management tasks performed to standard

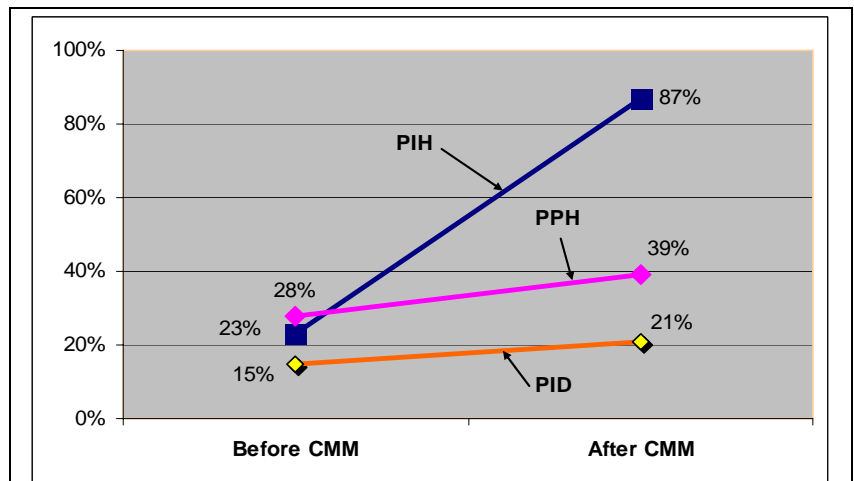


Figure 1 includes indicators of investigation, monitoring and treatment for each condition, but not critical event indicators, as defined in Table 1.

Method

Before designing the maps, the study team analyzed practices at Jinja for PIH and PPH, reviewed care standards recommended by Uganda's Ministry of Health and the World Health Organization, and modified hospital protocols for managing both conditions. The resulting CMM for PIH is shown in Figure 2. To test the maps, three quality indicators were defined and measured for normal management of each condition (investigation, monitoring, and treatment), and one indicator of the management of a critical event (Table 1). Outcome indicators were also defined and measured for PIH

Table 1: Indicators of quality of care for each condition

PIH	PPH	Acute PID
<i>Investigation:</i> Proteinuria test on admission	<i>Investigation:</i> Hemoglobin test on admission	<i>Investigation:</i> Complete Blood Count (CBC) on admission
<i>Monitoring:</i> Blood pressure measured three times a day	<i>Monitoring:</i> Vaginal blood loss checked daily	<i>Monitoring:</i> Temperature taken twice a day
<i>Treatment:</i> Propanolol prescribed on admission, given twice a day for at least 2 days	<i>Treatment:</i> Iron and Folic Acid (or Infeon®) prescribed during stay	<i>Treatment:</i> Three antibiotics prescribed concurrently during stay (Gentamycin, Metronidazole, and Ampicillin or Penicillin)
<i>Critical event:</i> Magnesium sulfate given in case of convulsion	<i>Critical event:</i> Transfusion given (or prescribed) if Hb<5g/l or shock	<i>Critical event:</i> Laparotomy performed in case of peritonitis, pelvic abscess

and PPH. Hospital staff was trained during two one-day sessions. Because several changes were made in hospital practices as recommended by the team (standardizing drugs, closely monitoring blood pressure and fetal heart rate, timing convulsions, testing urine protein, insuring needed equipment was available, and recording all actions taken), the objective of the study was to measure the *efficacy* of the CMMs, not effectiveness. The PIH map was introduced several months before the PPH map. The number of cases (sample size) before and after CMM were: PIH (36/50), PPH (20/10), PID (37/29). In addition, a few patients left the hospital before delivery or discharge who are not included in the sample.

Results

Quality of Care: Substantial impact on the quality of normal PIH care was observed, and possible impact in normal PPH care, as described above. But no patterns of impact on critical event care were observed, possibly due to small samples.

Patient outcomes: The study found small improvements in PIH outcomes (progression to eclampsia, maternal deaths, stillbirths), but PPH maternal case fatality rose after the CMM was introduced. Case-by-case analysis provided no insight into this inconclusive finding.

Provider attitudes: A survey of staff attitudes towards the CMMs found that staff felt very positively about them even though they sometimes caused them more work.

Limitations: The large increase in the quality of normal care for pre-eclampsia could be due to several factors. One is the CMM itself, which staff said made a difference. Another is improvements made to the protocols for managing care, including updating medicines for treating pre-eclampsia, which may have improved outcomes and encouraged staff. Finally, the process of developing the CMM caused staff to solve related problems on their own, such as insuring that medicine and supplies were available. Another issue is whether the use of a CMM is better suited to PIH, with its staged progression over time, than to PPH, an emergency condition with multiple causes. Since all of the noted limitations that might have influenced the performance of PIH and PPH care (CMM, protocols, availability of medicines and supplies, knowledgeable and motivated staff) were present for both conditions, it may be that the substantial increase in PIH performance compared to PPH was due to the better suitability of the CMM to PIH, and most of the differential impact on PIH due to the CMM. Before widespread adoption of the CMMs, the authors of the study report recommend that these issues be investigated.

Figure 2. Case Management Map for PIH (Pre-eclampsia)

Case Management Map (CMM)

Pregnancy Induced Hypertensive Disorders

Name _____

Date of admission ____/____/____

Referred yes no

Identification number: _____

Serial / IP number: _____

Starting Page

	Date ____/____/____				Date ____/____/____				Date ____/____/____				Date ____/____/____			
	D	E	N		D	E	N		D	E	N		D	E	N	
Check 3x/day																
Blood Pressure																
Systolic	200				200				200				200			
Diastolic	130				130				130				130			
90	150				150				150				150			
100	140				140				140				140			
120	120				120				120				120			
100	100				100				100				100			
80	80				80				80				80			
60	60				60				60				60			
Fetal Heart Rate																
170	170				170				170				170			
160	160				160				160				160			
150	150				150				150				150			
140	140				140				140				140			
130	130				130				130				130			
120	120				120				120				120			
110	110				110				110				110			
100	100				100				100				100			
Convulsions*																
Ari/Arts ->																
Check 1x/day																
Edema	Result	Intst	Result	Intst	Result	Intst	Result	Intst	Result	Intst	Result	Intst	Result	Intst	Result	Intst
Weight	High				High				High				High			
Hyperreflexia	High				High				High				High			
Proteinuria	Pos				Pos				Pos				Pos			
Give																
Inderal 80 mg BC	Int				Int				Int				Int			
Aldomet 250(-500 mg) tds	Alt				Alt				Alt				Alt			
Diazepam 5 mg tds	Diap				Diap				Diap				Diap			
Counsel																
Restricted salt	ResP				ResP				ResP				ResP			
Bedrest left side	BedP				BedP				BedP				BedP			
Check Newborn Breastfeed*	BNP				BNP				BNP				BNP			

* or ☐ = Possibility of critical event

Jinja Hospital - Maternity - 1999

¹ This summary is based on: Kerstiens B, Akii A, Mbona N, Zziwaa A, and Edson WN. 2004. Improving the Management of Obstetric Emergencies in Uganda through Case Management Maps. *Operations Research Results*. Published for USAID by the Quality Assurance Project, University Research Co., LLC, Bethesda, MD. QAP publications are available at www.qaproject.org.

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