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EA 7425

SEVERE POSTPARTUM HEMORRHAGE AFTER VAGINAL DELIVERY: COULD THE RATE BE REDUCED?

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Hospices Civils de Lyon

HESPER EA 7425

under the supervision of Corinne DUPONT



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European Board & College of Obstetrics and Gynaecology

March 8-10, 2018



Disclosure Statement of Financial Interests

Speaker's name : Laurent, GAUCHER, Lyon

I do not have any potential conflict of interest

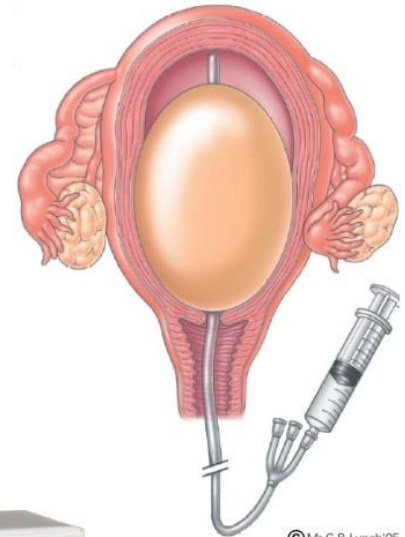
I'm French – Sorry xD



4 midwives + 1 surgeon
4'863 live births

126 PPH > 1 litre (2,9%)

What we are NOT going to talk about



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What we are going to talk about




PRISMA
TRANSPARENT REPORTING
of SYSTEMATIC REVIEWS
and META-ANALYSES

Identification



Pub Med
National Library of Medicine
NLM

n=227



Cochrane

n=0



n=7



Identified publications after removing duplicates
n=228

Screening



Publications screened by title and abstract
(n=228)

EXCLUDED (n=187)

- Letters to editor (n=2)
- Editorials (n=2)
- Journal articles (n=6)
- Home birth (n=1)
- No intervention (n=119)
- Intervention without evaluation (n=2)
- Evaluation without PPH (n=55)



Eligibility



Publications eligibility assessment by full-text reading (n=41)

EXCLUDED (n=22)

- Comment (n=1)
- Protocol (n=1)
- No intervention (n=4)
- Intervention without evaluation (n=1)
- Evaluation without PPH (n=12)
- Evaluation without statistical test (n=2)
- Evaluation without group control (n=1)



INCLUDED

- Additional publications identified through snowballing (n=4)



Included



Included studies (total n=23)

Randomized controlled trials (n=4)
Before-and-after studies (n=19)

- 10 studies without significant results
- 2 studies with a significant increase of PPH
- 9 studies with a significant reduction of PPH
 - 4 intervention methods
 - Audit feedback
 - Training
 - Simulation
 - Multifaceted



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Audit and feedback

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Severe postpartum haemorrhage after vaginal delivery: a statistical process control chart to report seven years of continuous quality improvement

Corinne Dupont ^{a,*}, Pauline Occelli ^b, Catherine Deneux- Tharaux ^c, Sandrine Touzet ^b, Antoine Duclos ^b, Marie- Hélène Bouvier-Colle ^c, René-Charles Rudigoz ^a, Cyril Huissoud ^d

N° of records :

Date :

Postpartum Haemorrhage

1. Risk factors

PRE PARTUM	
Placenta praevia, accreta	<input type="checkbox"/> Yes <input type="checkbox"/> No
Macrosomia > 4 000 g	<input type="checkbox"/> Yes <input type="checkbox"/> No
Multiple pregnancy	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fibroma	<input type="checkbox"/> Yes <input type="checkbox"/> No
Previous PPH	<input type="checkbox"/> Yes <input type="checkbox"/> No
Bleeding disorder	<input type="checkbox"/> Yes <input type="checkbox"/> No
Stillbirth	<input type="checkbox"/> Yes <input type="checkbox"/> No
Previous caesarean	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hypertension	<input type="checkbox"/> Yes <input type="checkbox"/> No

Labor / Delivery	
Spontaneous labor	<input type="checkbox"/> Yes <input type="checkbox"/> No
Induction of labor	<input type="checkbox"/> Yes <input type="checkbox"/> No
Spontaneous vaginal delivery	<input type="checkbox"/> Yes <input type="checkbox"/> No
Instrumental delivery	<input type="checkbox"/> Yes <input type="checkbox"/> No
Prophylactic caesarean	<input type="checkbox"/> Yes <input type="checkbox"/> No
Caesarean during labor	<input type="checkbox"/> Yes <input type="checkbox"/> No

PER PARTUM

Hyperthermia	<input type="checkbox"/> Yes <input type="checkbox"/> No
Labor > 12hours	<input type="checkbox"/> Yes <input type="checkbox"/> No

Time of PPH (hours):
 < 2 h 2 to 12 h > 12 h

2. Management

Prophylactic administration of oxytocin	<input type="checkbox"/> Yes <input type="checkbox"/> No
PPH Identification	<input type="checkbox"/> Yes <input type="checkbox"/> No
Call to the senior physician < 10 min	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NS*
Manual uterine examination or manual removal of the placenta < 15 min	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NS*
Administration of oxytocin	<input type="checkbox"/> Yes <input type="checkbox"/> No
Suture with no delay of perineal tears	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NS*
Examination of the lower genital tract	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NS*
Sulprostone < 30 min	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NS
Exacyl IV	<input type="checkbox"/> Yes <input type="checkbox"/> No
Bakri Balloon	<input type="checkbox"/> Yes <input type="checkbox"/> No
Embolisation	<input type="checkbox"/> Yes <input type="checkbox"/> No
Surgical procedure	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NS*

* NS : not suited

3. VOLUME mL

500 à 999 mL	<input type="checkbox"/> Yes <input type="checkbox"/> No
1 000 à 1 499 mL	<input type="checkbox"/> Yes <input type="checkbox"/> No
≥ 1 500 mL	<input type="checkbox"/> Yes <input type="checkbox"/> No

4. TRANSFUSION

Fibrinogen	<input type="checkbox"/> Yes <input type="checkbox"/> No
Packed red blood cells	<input type="checkbox"/> Yes <input type="checkbox"/> No

5. AETIOLOGY

Atony	<input type="checkbox"/> Yes <input type="checkbox"/> No
surgical, hysterotomy	<input type="checkbox"/> Yes <input type="checkbox"/> No
Surgical (other cause)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Retained placenta	<input type="checkbox"/> Yes <input type="checkbox"/> No
Perineal tears	<input type="checkbox"/> Yes <input type="checkbox"/> No
Uterine Rupture	<input type="checkbox"/> Yes <input type="checkbox"/> No
Bleeding disorder	<input type="checkbox"/> Yes <input type="checkbox"/> No
Placenta praevia ou accreta	<input type="checkbox"/> Yes <input type="checkbox"/> No
Unclear	<input type="checkbox"/> Yes <input type="checkbox"/> No

6. File

Card of blood group available	<input type="checkbox"/> Yes <input type="checkbox"/> No
Clotting test	<input type="checkbox"/> Yes <input type="checkbox"/> No

7. POST PARTUM DIAGNOSTIC

Haemoglobin loss of 4 g/dL or more	<input type="checkbox"/> Yes <input type="checkbox"/> No
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8. SYNTHESIS

Predictable	<input type="checkbox"/> Yes <input type="checkbox"/> No
Avoidable	<input type="checkbox"/> Yes <input type="checkbox"/> No
-	<input type="checkbox"/> optimal <input type="checkbox"/> sub optimal

IMPERFECTION

Midwife	<input type="checkbox"/> Yes <input type="checkbox"/> No
Junior Obs.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Senior Obs.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Autre	<input type="checkbox"/> Yes <input type="checkbox"/> No
Junior Anaest.	<input type="checkbox"/> Ou <input type="checkbox"/> No
Senior Anaest.	<input type="checkbox"/> Yes <input type="checkbox"/> No

IMPERFECTION :

La Croix-Rouge hospital



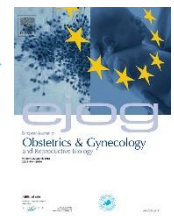
G. Dubernard

R.-C. Rudigoz

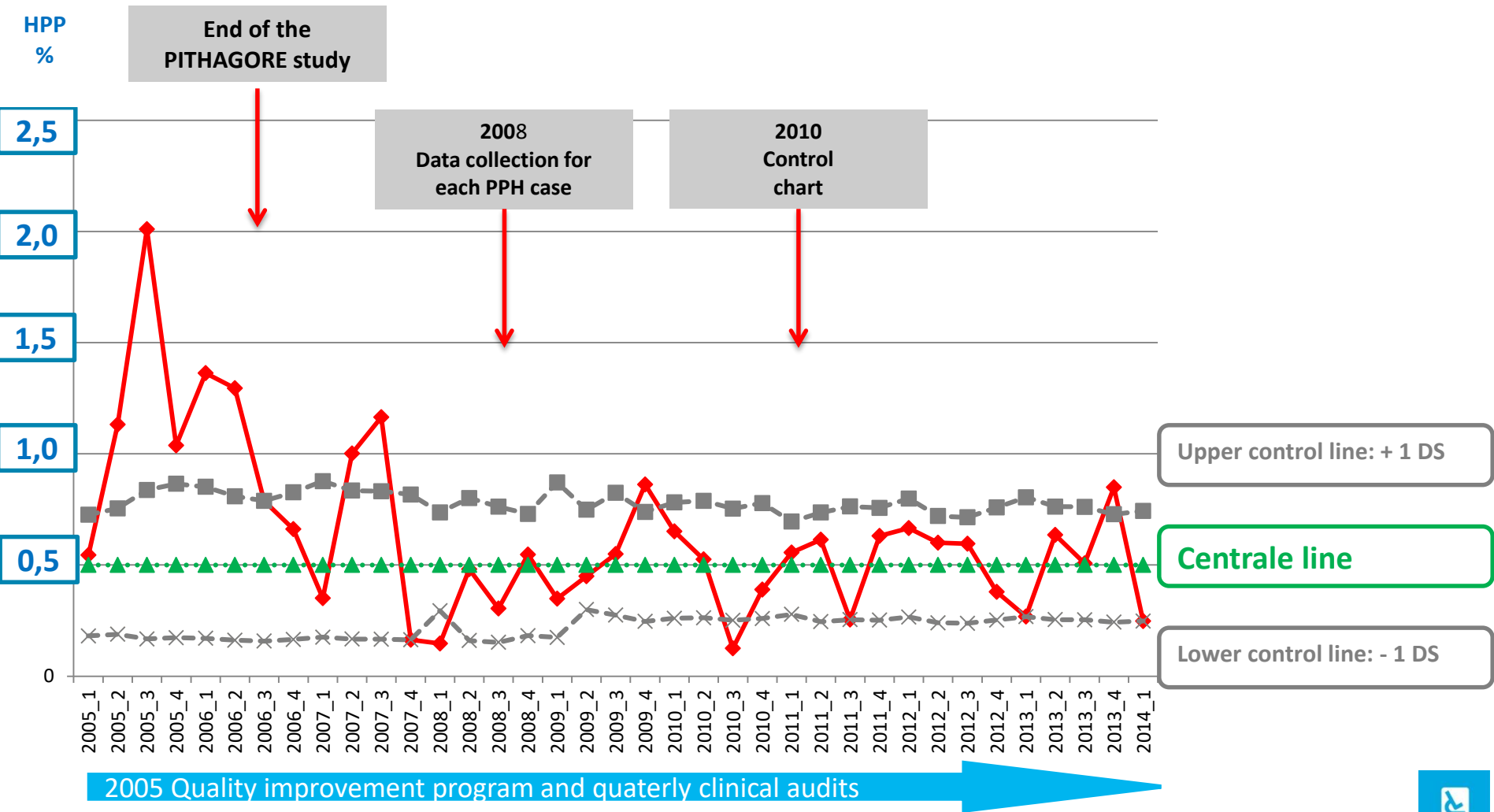
C. Huissoud



Severe postpartum haemorrhage after vaginal delivery: a statistical process control chart to report seven years of continuous quality improvement



Corinne Dupont ^{a,*}, Pauline Occelli ^b, Catherine Deneux- Tharaux ^c, Sandrine Touzet ^b, Antoine Duclos ^b, Marie- H el ene Bouvier-Colle ^c, Ren -Charles Rudigoz ^a, Cyril Huissoud ^d





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Training

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An Education and Motivation Intervention to Change Clinical Management of the Third Stage of Labor —The GIRMMAHP Initiative

Albert Figueras, MD, Edgar Narváez, MD, Mabel Valsecía, DD, Susana Vásquez, PharmD, Germán Rojas, PharmD, Angiolina Camilo, MD, José-María del Valle, MD, and Cristina Aguilera, MD

Table 1. The Four Consecutive Stages of the GIRMMAHP Initiative (<http://www.girmmahp.net>)

Stage	Objectives	Duration (Months)	Accumulated Time (Months)
1	Observational study to characterize delivery care	1 each hospital	1
2	Intervention To discuss the results of the observational study To compare evidence-based CPGs with current practice To stimulate the demand for CPGs Knowledge transference process including topics such as evidence-based medicine and theory about CPGs Workshop to adapt a CPG for the obstetrics department of each participant hospital	3	4
3	Short-term postintervention observational study 3 mo after the implementation of the CPGs	0.5 each hospital	7.5
4	Long-term postintervention observational study 12 mo after the implementation of the CPGs	1 each hospital	17

CPGs = clinical practice guidelines.

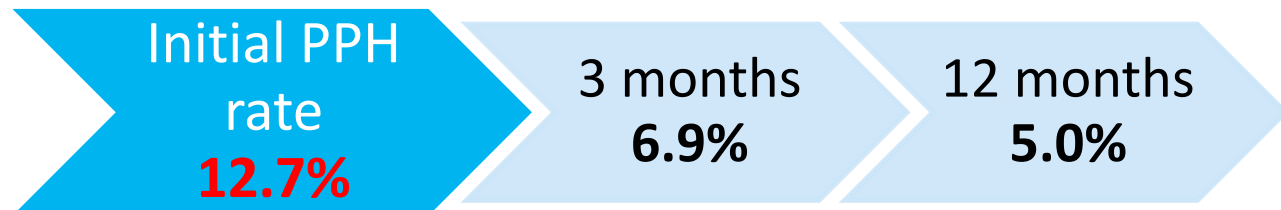
Training

An Education and Motivation Intervention to Change Clinical Management of the Third Stage of Labor —The GIRMMAHP Initiative

*Albert Figueras, MD, Edgar Narváez, MD, Mabel Valsecía, DD, Susana Vásquez, PharmD,
Germán Rojas, PharmD, Angiolina Camilo, MD, José-María del Valle, MD, and
Cristina Aguilera, MD*

- Period: 2003 and 2005
- Study design: Before-after study
- Number of maternity units: 17
- Number of women: 2247
- Outcome: PPH
- Results:

$p < 0.05$





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Simulation

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Simulation

Comprehensive maternal hemorrhage protocols improve patient safety and reduce utilization of blood products

Laurence E. Shields, MD; Kathy Smalarz, RN; Lester Reffigee, MD;
Sandra Mugg, RN; Theodore J. Burdumy, MD; Marilyn Propst, RN

« There were 3 main phases of preparation prior to protocol initiation: development, education, and team training/simulation. » and ... cf. Crofts et al.

Crofts *et al.*

Table 1. Description of training inventions

	Local hospital course	Simulation centre course
Trainers	Local obstetricians, midwives and anaesthetists	Obstetricians, midwives and anaesthetists from the South West region of the UK
Mannequins	Locally available low-fidelity mannequins and training aids	Computer-controlled high-fidelity mannequins, which respond to treatment
Location	Local hospital	Simulation centre—a distance of 5–170 miles from local hospitals
Content	Identical	Identical
Course manual	Identical	Identical
Training drills	Conducted in a local delivery suite room	Conducted within a simulated clinical environment
Participants	Six participants in each local hospital per course	Eighteen participants; three teams of six from three hospitals per course
Cost of training venue	Free of charge	£1500 per day
	No teamwork training course	Teamwork training course
Content	Clinical	Clinical plus teamwork training
Length	1 day	2 days
Course manual	No teamwork chapter	Teamwork chapter
Participants per course	One team of six or three teams of six dependant on course location	One team of six or three teams of six dependant on course location





Simulation

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■ Results

TABLE 4
Changes in stage of hemorrhage before and after protocol initiation

Stage	Preprotocol	Post-period 1	Post-period 4	Post-period 3
1 ^a	35% (22) ^b	51% (25)	69% (27)	82% (49)
2 ^a	53% (33)	45% (22)	18% (7)	8% (5)
3	11% (7)	4% (2)	13% (5)	10% (6)

^a $P = .02$; ^b Numbers in parenthesis are total patients at that stage in that time period.

Shields. *Maternal hemorrhage protocol. Am J Obstet Gynecol* 2011.

Increase of simple HPP (better diagnosis)

Reduce the 2nd stage of PPH

No change on severe PPH rate

■ Improve team work

■ Call

■ Lack of a detailed description of simulation

■ Lack of improvement of clinical endpoint

I AM MULTIFACETED.



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Multifaceted intervention

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Multifaceted intervention

Does a postpartum hemorrhage patient safety program result in sustained changes in management and outcomes?

Brett D. Einerson, MD, MPH; Emily S. Miller, MD, MPH; William A. Grobman, MD, MBA

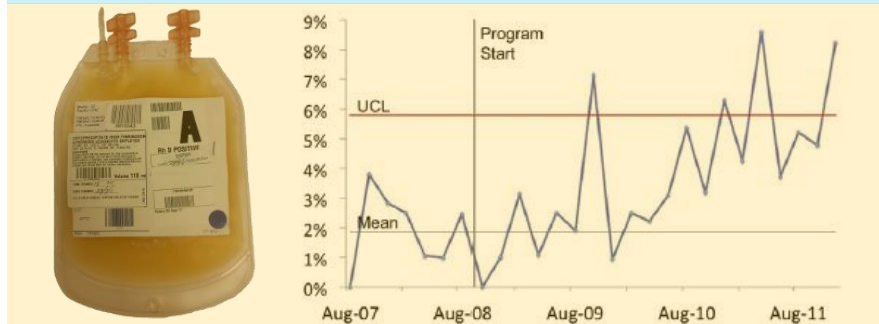
TABLE 2
Interventions and outcomes before and after postpartum hemorrhage protocol

Patient characteristics	Pre protocol n = 592	Post protocol n = 2513	P value
Estimated blood loss			
Clinical blood loss, mL	1168 ± 688	1265 ± 905	.014
>1500 mL	12 (21.5)	69 (26.6)	.010
Transfusions			
Packed red cells	63 (10.6)	314 (12.5)	.214
Fresh frozen plasma	18 (3.0)	64 (2.6)	.500
Cryoprecipitate	11 (1.9)	94 (3.8)	.022
Platelets	7 (1.2)	39 (1.6)	.503
>2 U PRBC	27 (4.6)	113 (4.5)	.944
>2 U fresh frozen plasma	9 (1.5)	36 (1.4)	.872
>2 U cryoprecipitate	1 (0.2)	22 (0.9)	.071
>2 U platelets	1 (0.2)	11 (0.4)	.343
≥4 U total blood products	22 (3.7)	106 (4.2)	.582
Uterotonics used			
PGE1	278 (47.0)	1628 (64.8)	< .001
Methylergonovine	160 (27.5)	1042 (41.5)	< .001
PGF2-alpha	128 (21.6)	900 (35.8)	< .001
>2 uterotonics	125 (21.1)	1064 (42.3)	< .001
Intrauterine balloon tamponade	17 (2.9)	155 (6.2)	.002
B-Lynch suture	23 (3.9)	151 (6.0)	.042
Embolization via interventional radiology	4 (0.7)	45 (1.8)	.050
Curettage	29 (4.9)	127 (5.1)	.875
Gynecologic oncology present	6 (1.0)	30 (1.2)	.712
Postpartum hysterectomy	7 (1.2)	43 (1.7)	.357
ICU admission	14 (2.4)	57 (2.3)	.926

All values presented as mean ± SD or n (%).

ICU, intensive care unit; PGE1, prostaglandin E1; PGF2-alpha, prostaglandin F2-alpha; PRBC, packed red blood cells.

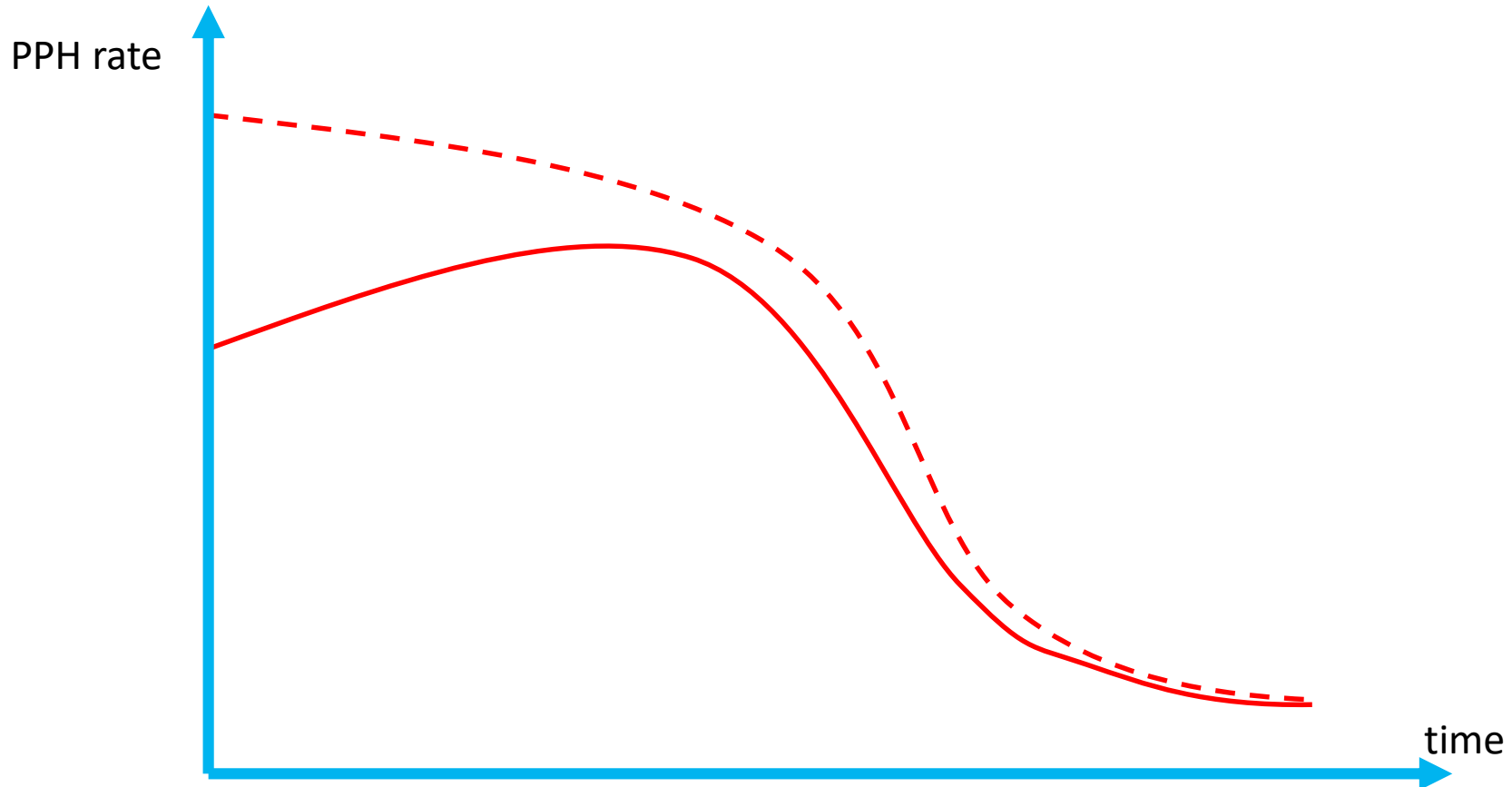
Einerson. Postpartum hemorrhage safety program. *Am J Obstet Gynecol* 2015.



Multifaceted intervention

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Conclusion

- Audit feedback: 3/3 effective NP4 (before-and-after)
 - Training: 2/3 effective
 - Simulation: 1/3 effective
 - Multifaceted: 5/10 effective
-
- Low-level evidence (before-and-after study)
 - Interventions are poorly described
-
- Implementation time
 - Local context +++

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