

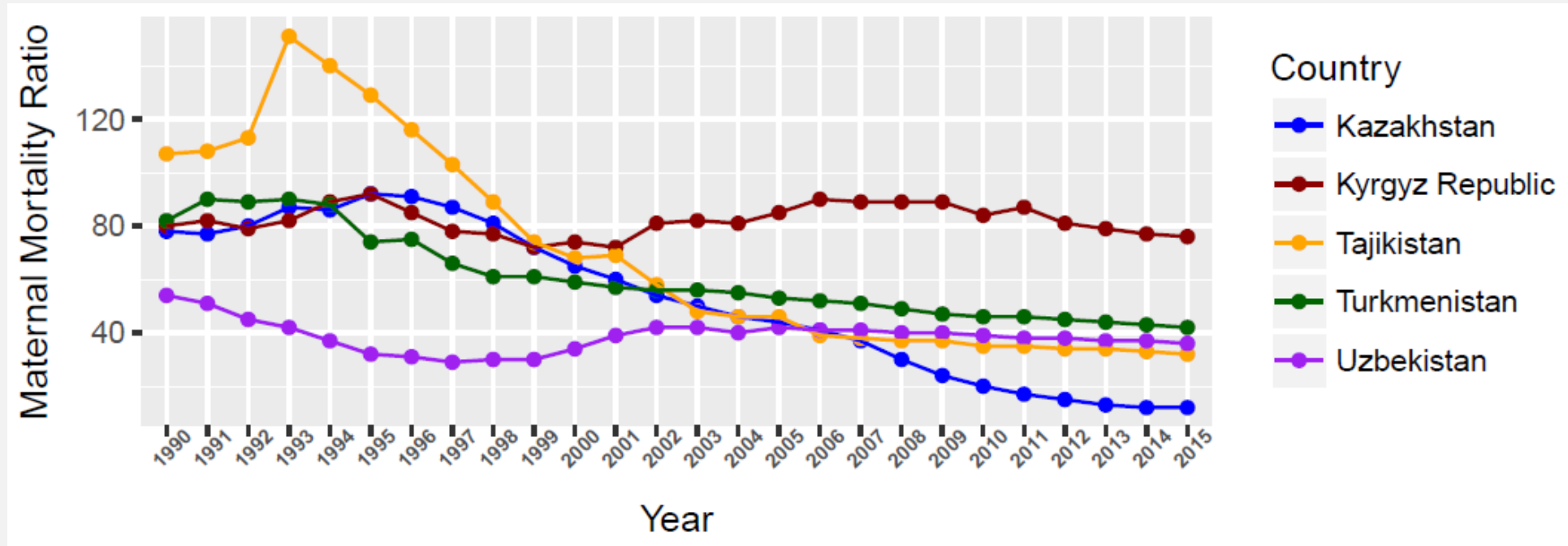
**IMPACT EVALUATION OF THE KYRGYZ REPUBLIC  
QUALITY OF CARE PBF PILOT PROGRAM:  
OVERVIEW AND SUMMARY FINDINGS**

## TEAM(S)

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# SETTING

- Despite near universal obstetric coverage, key health outcomes lagged the region and KG republic missed MDG targets for MMR and IMR



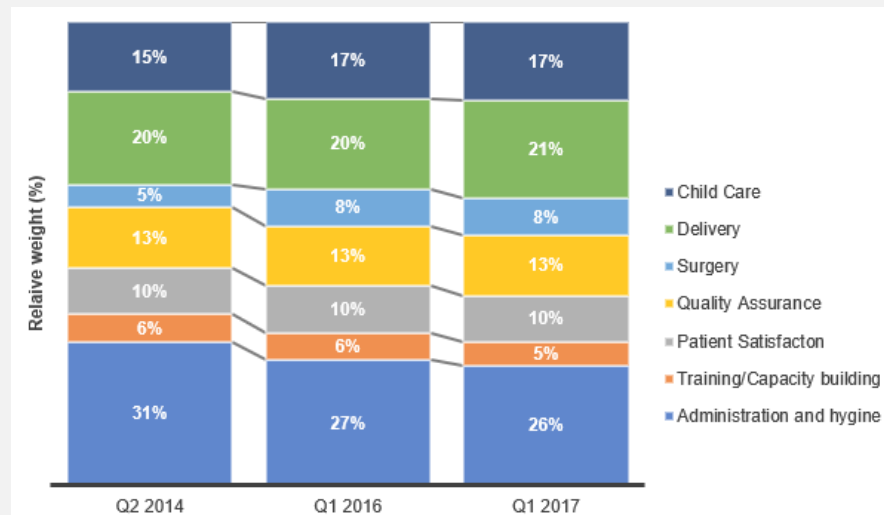
- Financing reforms led to capitation payment at PHC and DRGs for hospitals, but growing interest in addressing quality of care

# PROGRAM DESIGN

- MoH decision to pilot a PBF to hospitals with exclusive focus on quality of maternal and neonatal care
- Program only offered to rayon (district) hospitals and Centers of General Practice due to budget limitations, investment gradient in hospitals vis-à-vis PHCs
- Quality assessed quarterly, through balanced score card (BSC) with rotating peer-observation group (and counter-verified by external experts)
  - Results disseminated and reviewed with expert support
- Payment integrated within existing provider mechanism, made to entire facility, with a recommended 35% of payment to be spent on civil works and up to 50% on performance payment
- Maximum hospital payment can reach 15% of the annual consolidated budget

# BSC CONTENT

- BSC score allocation:
  - 35% structural quality – drugs, blood products, functioning equipment, management processes, etc.
  - 55% process (content of care) – record review focused on clinical protocol adherence, later patient simulations of PPH & newborn resuscitation introduced
  - 10% outcomes (patient satisfaction) – interview of recently discharged OB patients



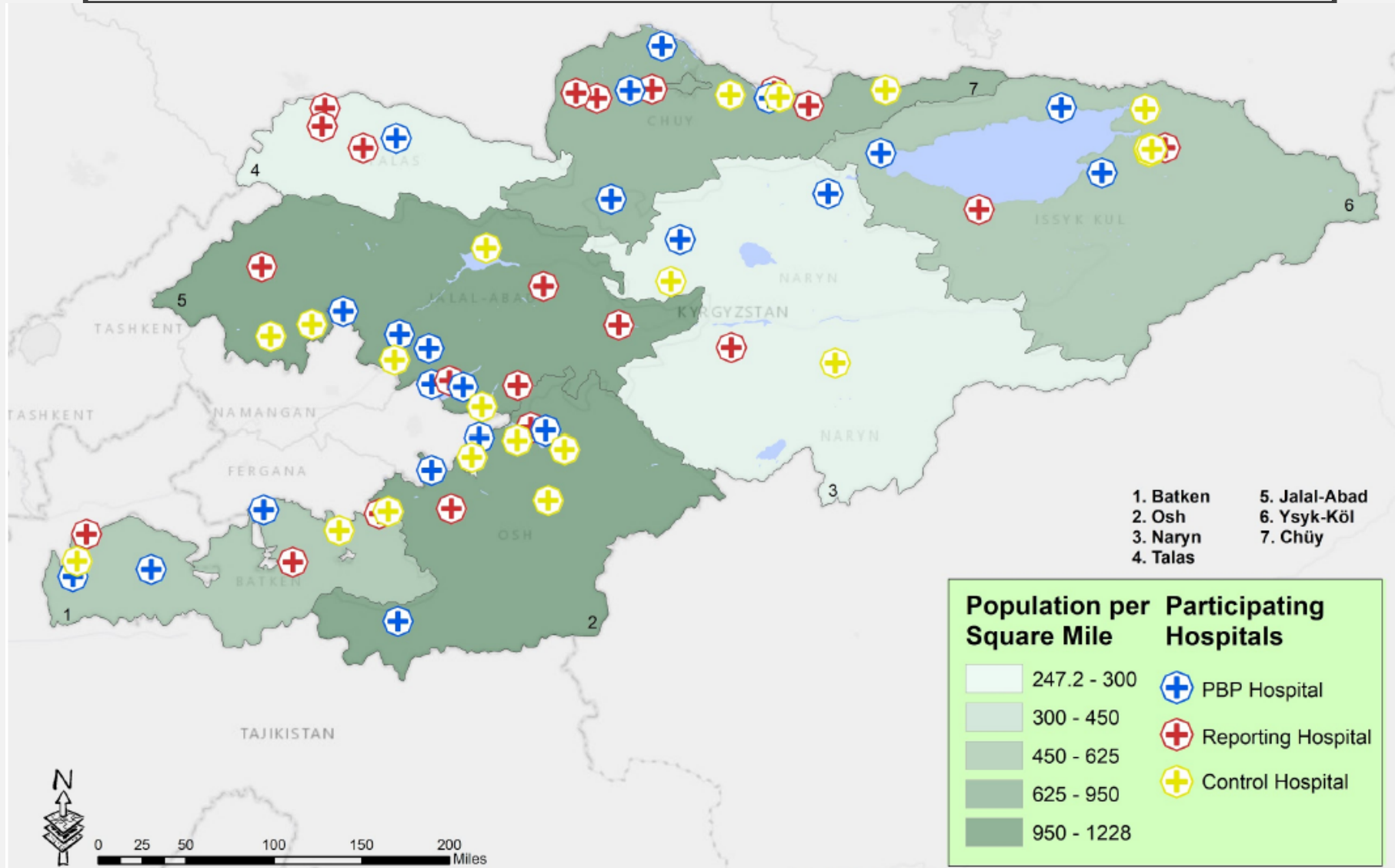
# CHANNELS OF PROGRAM INFLUENCE ON QUALITY OF CARE

- Possible pathways of change for both PBF and ES include
  - Measurement and benchmarking – the BSC quantifies the concept of care quality, facilitates the management of care in the clinic
  - Supportive feedback from assessors – may encourage staff and introduce external accountability
- Possible additional pathways of change for PBF
  - Linking resources to benchmarks may enhance saliency of program emphasis on quality
  - Additional financing enables facilities to invest in structural quality dimensions and procure consumables
  - Performance payments may affect motivation (and effort) of staff to deliver high quality care

# EVALUATION DESIGN

- 63 eligible Rayon hospitals were triplet matched and **randomly assigned (public event)** to one of three groups:
  1. Performance Based Payments package (including enhanced supervision)
  2. Enhanced supervision only, and
  3. Business-as-usual (Control)
- **Differences-in-differences**, with triplet/strata controls, used to make **three** comparisons between start and end of study period:
  1. PBF versus Business-as-usual
  2. Enhanced supervision (ES) versus Business-as-usual
  3. PBF versus enhanced supervision

# GEOGRAPHIC SCOPE





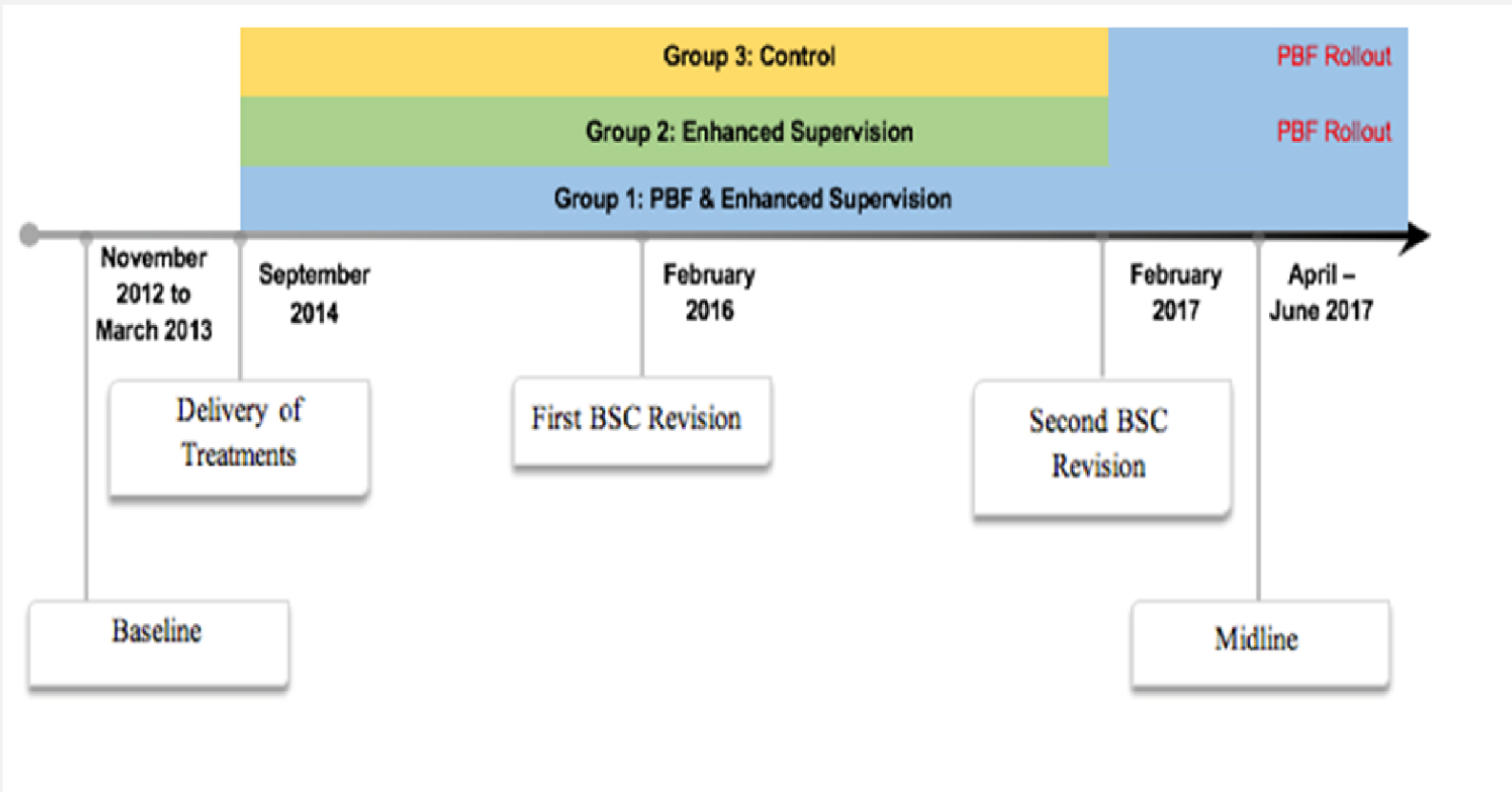
## THREE DATA SOURCES

- **Program data** from the Balanced Score Card used for regular peer verification (also used to assess the business-as-usual group at select times)
  - Begun in Q2 2014 and 14 quarters collected thereafter
- **Newborn Birth Registry Data** covers all institutionalized births in the country from 2013 to 2016, with info on infant deaths, maternal and neonatal complications, APGAR scores, etc.
  - Period: 18 months pre-intervention and 27 months after
- **Baseline and midline surveys** conducted in all 63 Rayon Territorial Hospitals in the Kyrgyz Republic
  - Baseline in Q3 2013 and follow-up in Q2 2017

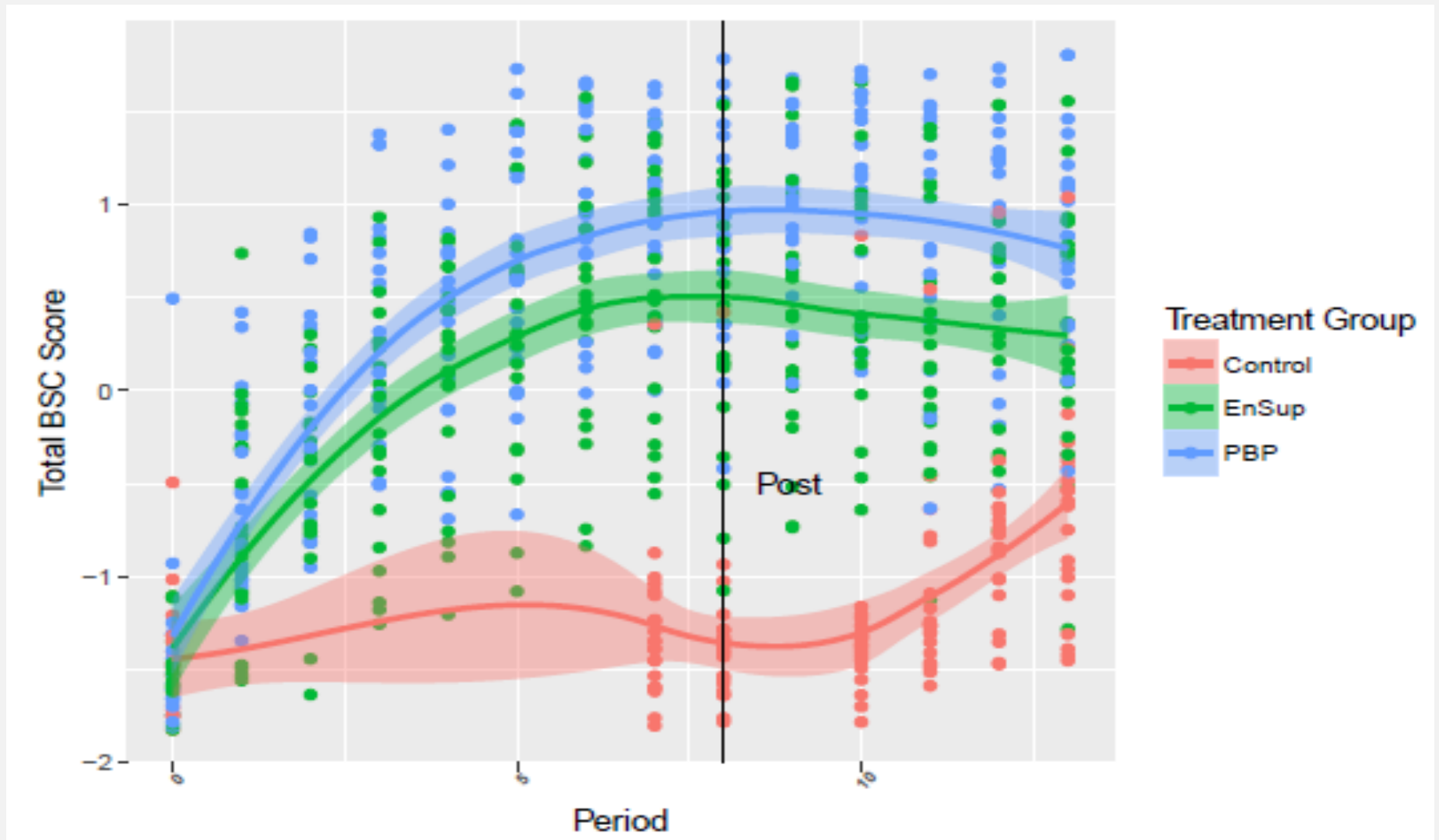
## SURVEY DATA MEASURES

- Instruments included:
  1. Health facility assessments: Hospital assessment and ANC checklist
  2. Interviews with health workers and their patients
  3. Health worker knowledge tests
  4. Simulated patients – mamananatalie and neonatalie
  5. Direct observations of deliveries and antenatal care visits
  6. Clinical record audits
- All components used structured (quantitative) questionnaires or checklists.
- Same tools, methods, training process, and outcomes measured at baseline and follow-up (midline).

# TIMELINE



# THE BSC TALE OF CHANGE



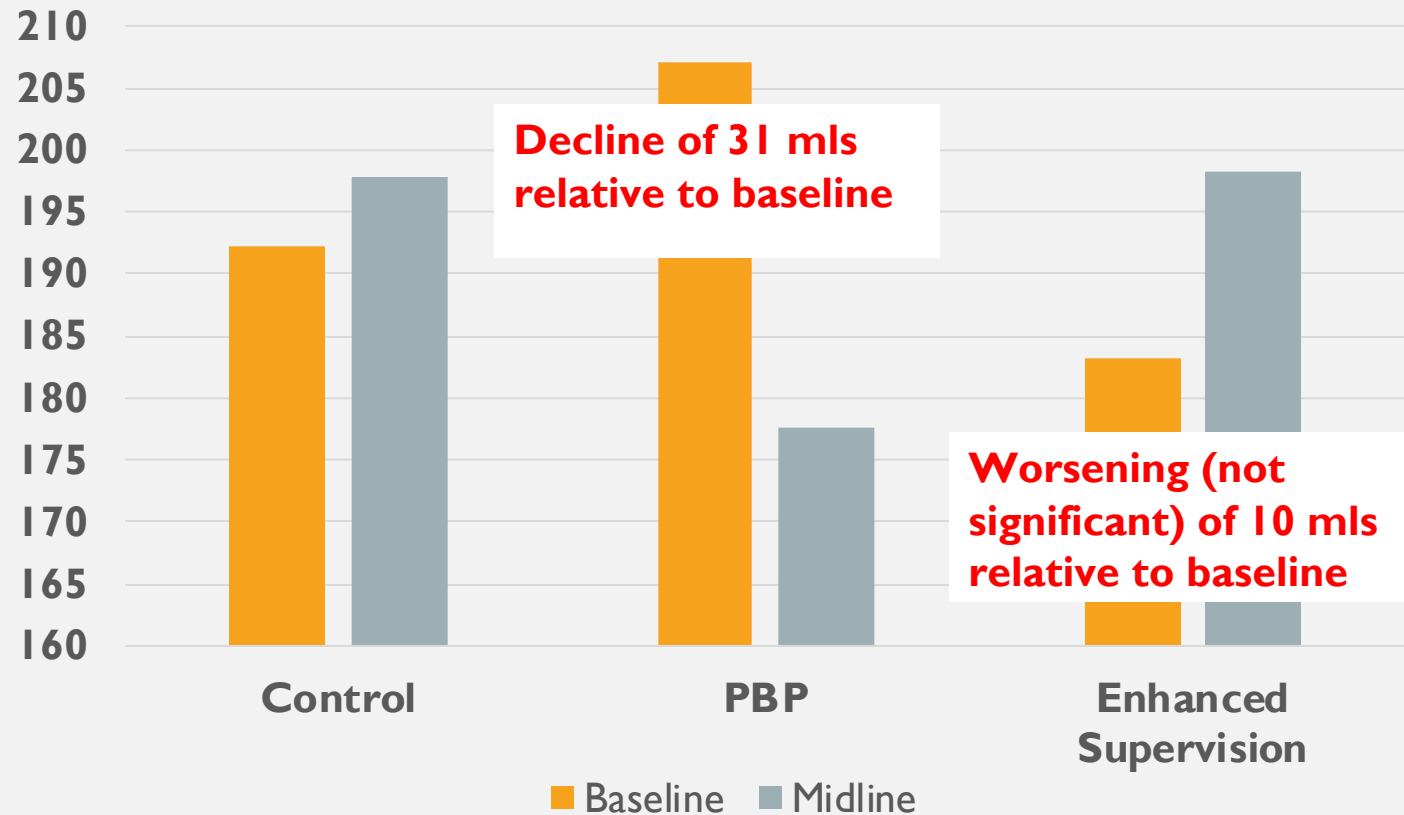
# BSC SCORES BY COMPONENT

	<i>Dependent variable:</i>						
	Management	Learning	Patient Satisfaction	Quality Assurance	Maternal	Neonatal	Total BSC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Reporting	-0.098 (0.180)	-0.055 (0.189)	-0.233 (0.197)	-0.010 (0.183)	-0.122 (0.171)	0.047 (0.172)	-0.094 (0.155)
PBP	-0.003 (0.180)	-0.162 (0.184)	-0.017 (0.197)	0.072 (0.183)	0.059 (0.171)	0.006 (0.172)	0.012 (0.151)
Post	0.237 (0.180)	-0.172 (0.184)	1.296*** (0.197)	-0.051 (0.183)	-0.101 (0.171)	-0.358** (0.172)	0.108 (0.151)
Reporting Post	1.611*** (0.254)	1.322*** (0.264)	1.196*** (0.278)	1.355*** (0.259)	1.978*** (0.242)	1.638*** (0.244)	1.873*** (0.216)
PBP:Post	1.919*** (0.254)	2.266*** (0.261)	1.312*** (0.278)	1.501*** (0.259)	1.890*** (0.242)	1.974*** (0.244)	2.139*** (0.213)
Constant	-1.322*** (0.127)	-0.860*** (0.130)	-2.040*** (0.139)	-0.833*** (0.129)	-1.129*** (0.121)	-1.228*** (0.122)	-1.445*** (0.106)
Observations	126	124	126	126	126	126	124
Log Likelihood	-108.458	-110.074	-120.108	-110.855	-102.462	-103.261	-84.915
Akaike Inf. Crit.	228.916	232.148	252.216	233.710	216.924	218.523	181.829

Note:

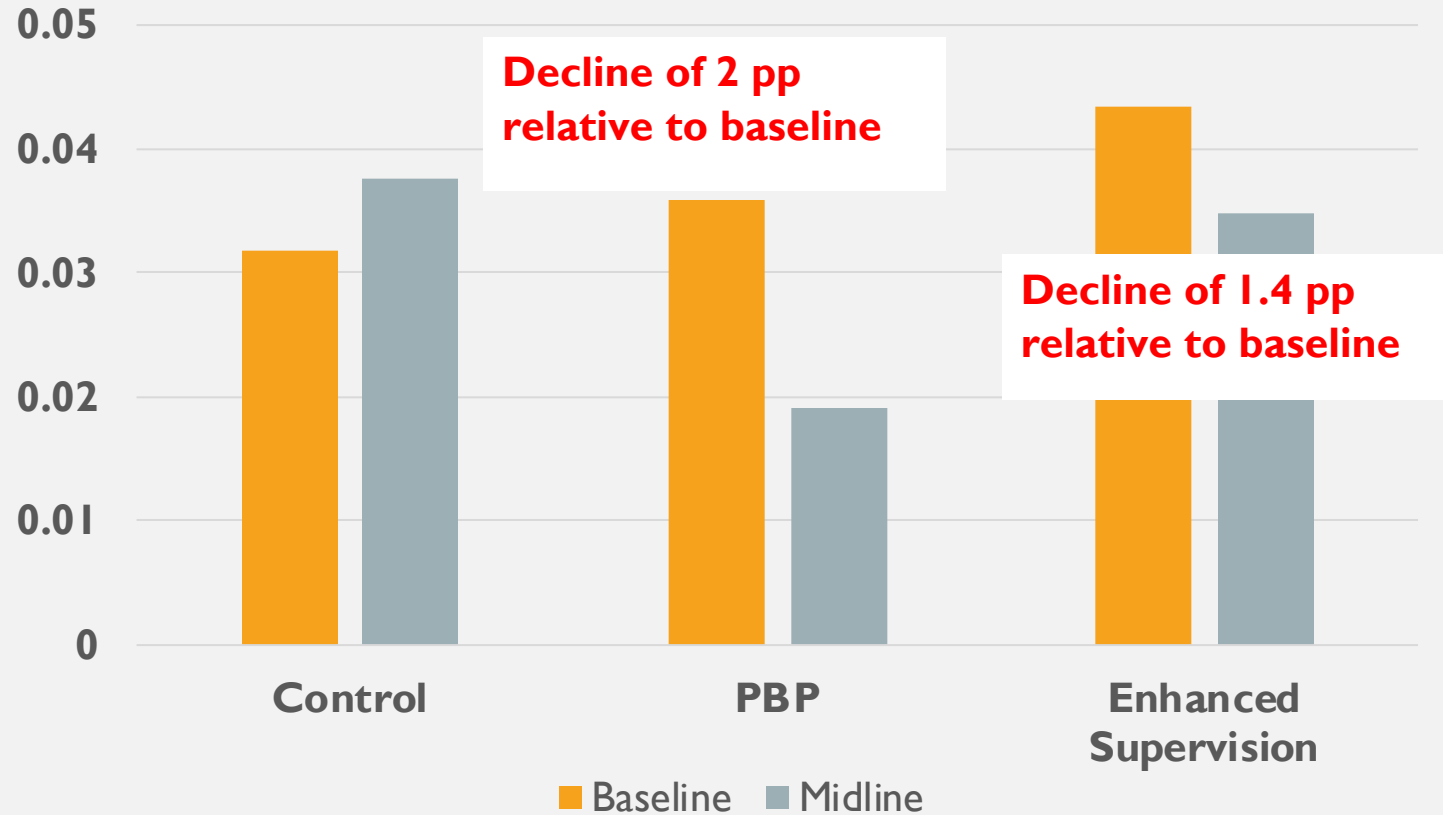
\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## OUTCOMES: BLOOD LOSS (IN MLS)



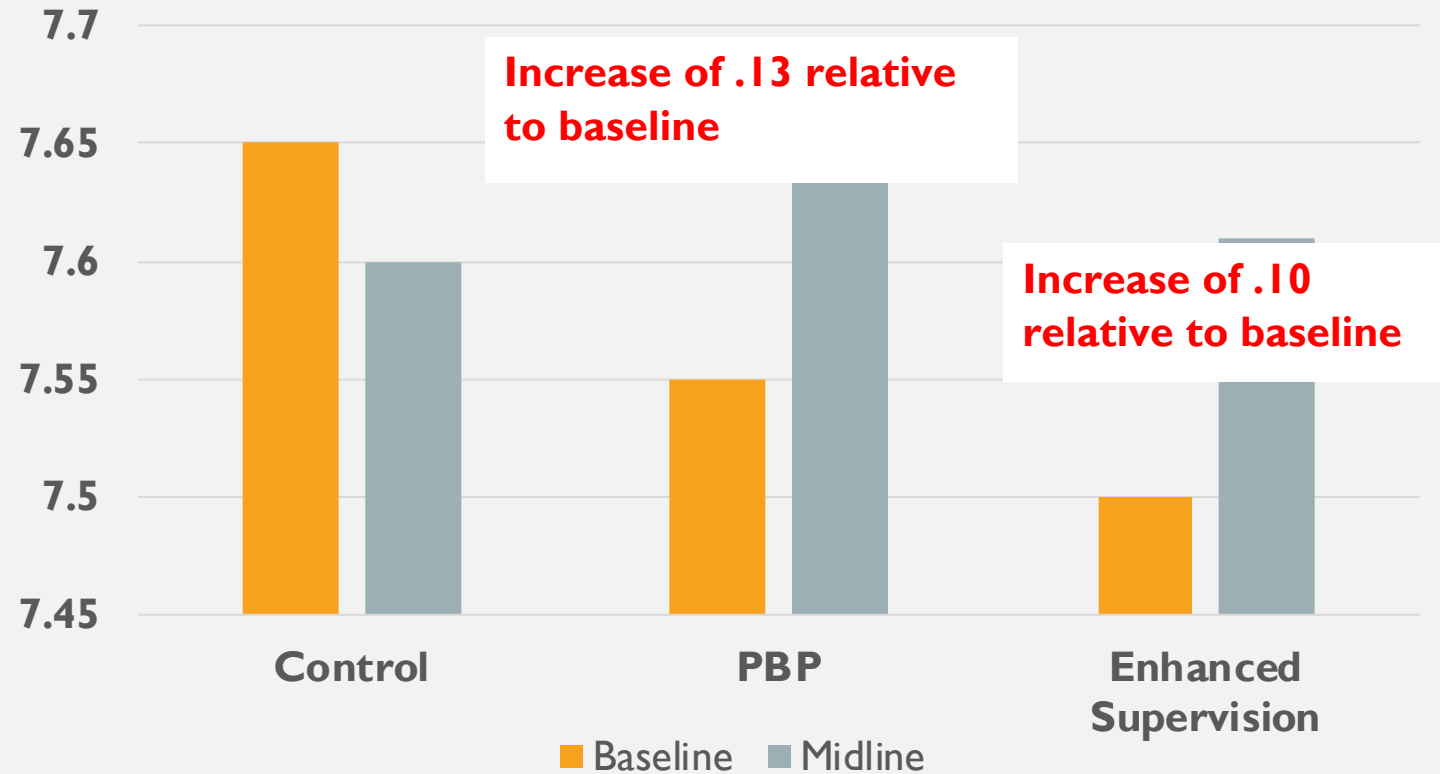
- **Significant decrease in volume of blood loss during delivery for PBF arm**

## OUTCOMES: BLOOD LOSS > 1000 ML



- **Significant decrease in rate of PPH for PBF arm**

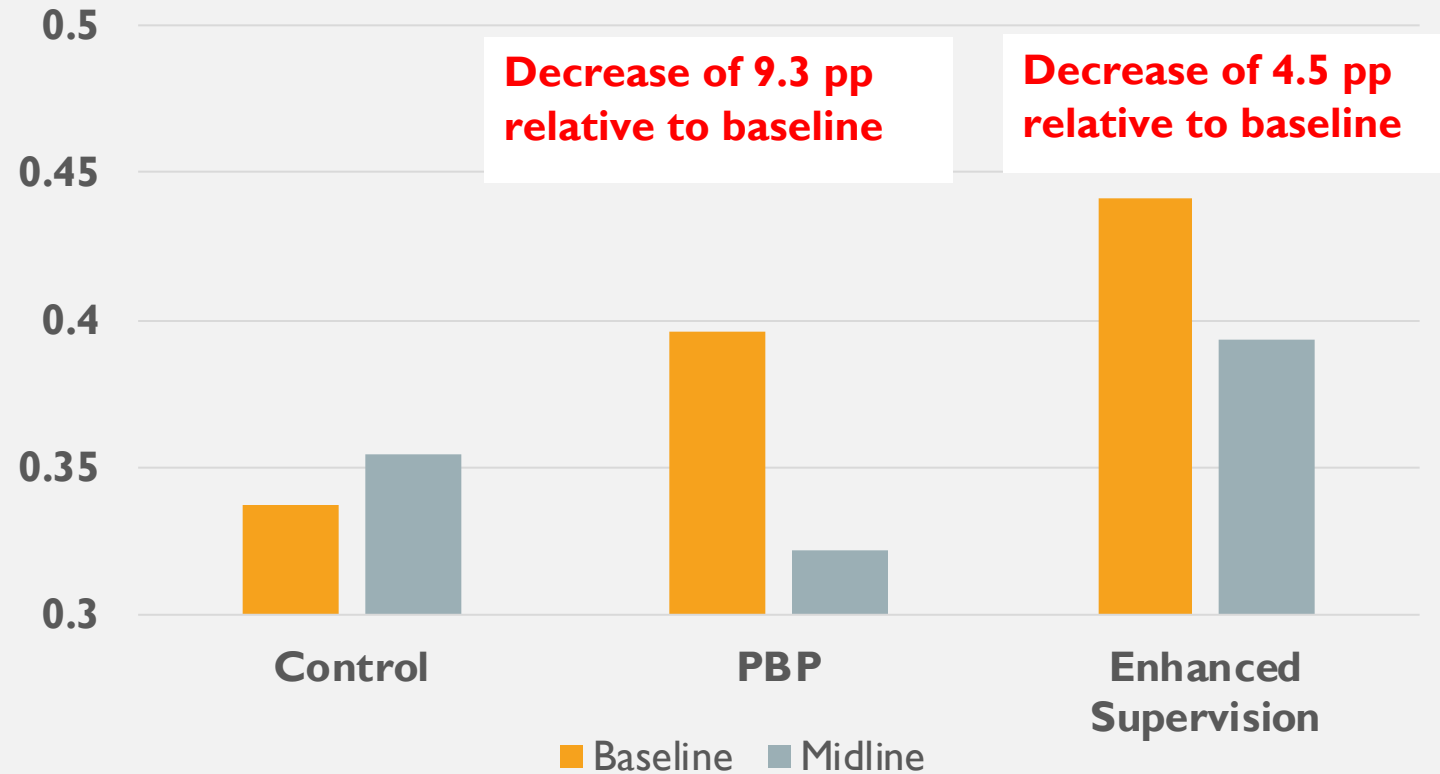
# OUTCOMES: 5<sup>TH</sup> MINUTE APGAR SCORE



- Increase in newborn **APGAR** score in both arms, but imprecisely estimated



## OUTCOMES: PROPORTION APGAR SCORES $\leq 7$



- **Decrease in low APGAR incidence in both arms, but precisely estimated only for PBF**

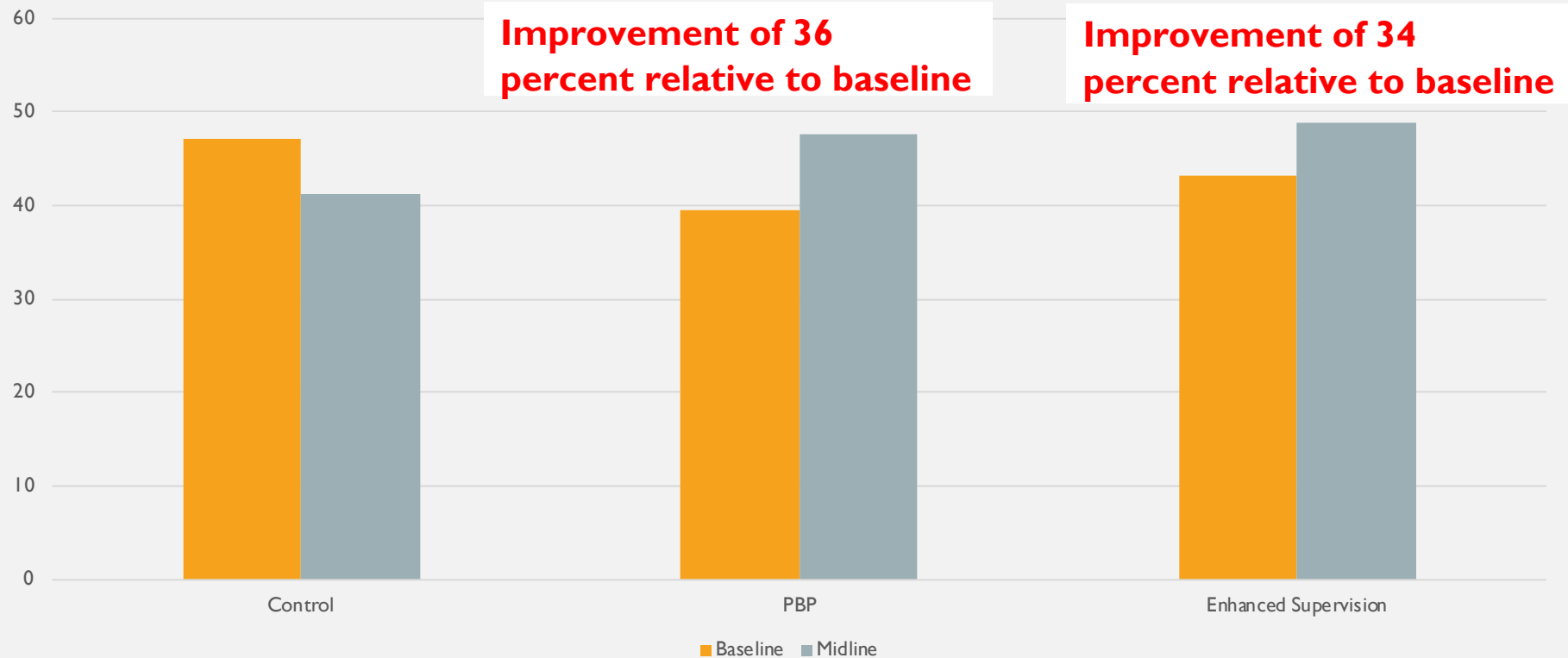
## KEY RESULTS ON OUTCOME MEASURES

- No impact on:
  - Infant death in first 48 hours
  - Fetal age (none expected)
  - Birthweight (none expected)
- Improvements in:
  - Rate of blood loss, especially for PBF
  - Rate of severe PPH, especially for PBF
  - Rate of low APGAR scores, especially for PBF

**SUMMARY  
RESULTS FROM  
SURVEY  
MEASURES:  
MEDIATORS AND  
PATHWAYS**

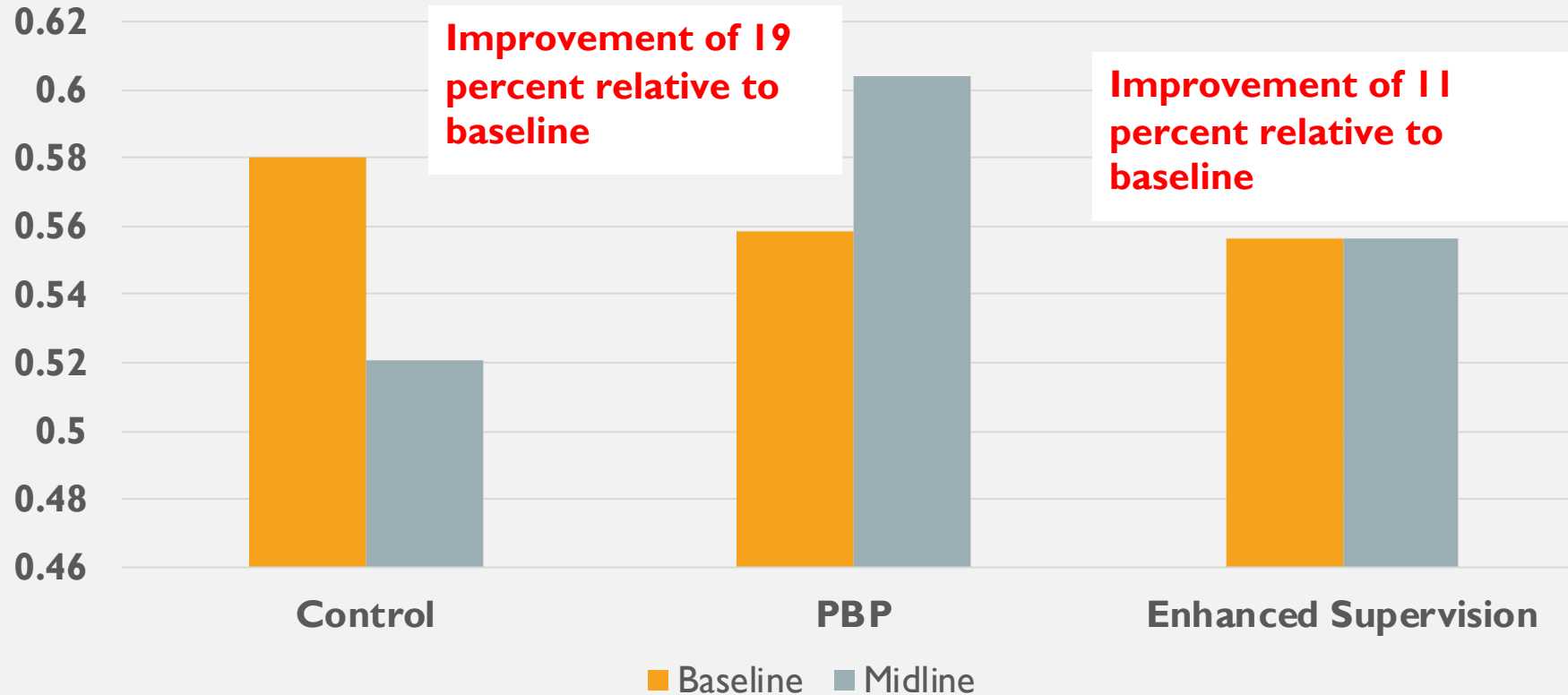
<b>Outcome (scored as all or nothing)</b>	<b>PBF versus control</b>	<b>ES versus control</b>	<b>PBF versus control</b>
<b>Structural Quality</b>			
Drug Availability and Storage	+	No difference	No difference
Medical Equipment Availability and Condition	No difference	No difference	No difference
Blood Availability, Storage, and Staffing of Blood Bank	+	+	No difference
Ability to Attend to Medical Emergencies	No difference	No difference	No difference
Laboratory Functioning—Key Tests	No difference	No difference	No difference
Hygiene Supplies in Exam Rooms, Delivery Rooms, and Operation Theaters	+	+	No difference
Communication and Transportation Infrastructure	+	+	No difference
Staffing	No difference	No difference	No difference
<b>Process Quality</b>			
Health Worker Knowledge	No difference	No difference	No difference
Patient Record Audits for Normal and Complicated Delivery	No difference	No difference	No difference
Newborn Resuscitation Simulation (NeoNatalie)	+	+	No difference
Post Partum Hemorrhage Simulation (MamaNatalie)	+	No difference	No difference
Newborn Resuscitation (Direct Observation)	No difference	+	No difference
Observation Index	No difference	No difference	No difference
Teamwork in the Delivery Room	+	+	No difference
Delivery Care Index	No difference	+	+
<b>Patient and Practitioner Outcomes</b>			
Patient Satisfaction	No difference	No difference	No difference
Health Worker Motivation	+	No difference	No difference
Health Worker Satisfaction	+	+	No difference

# STRUCTURAL QUALITY: HYGIENE



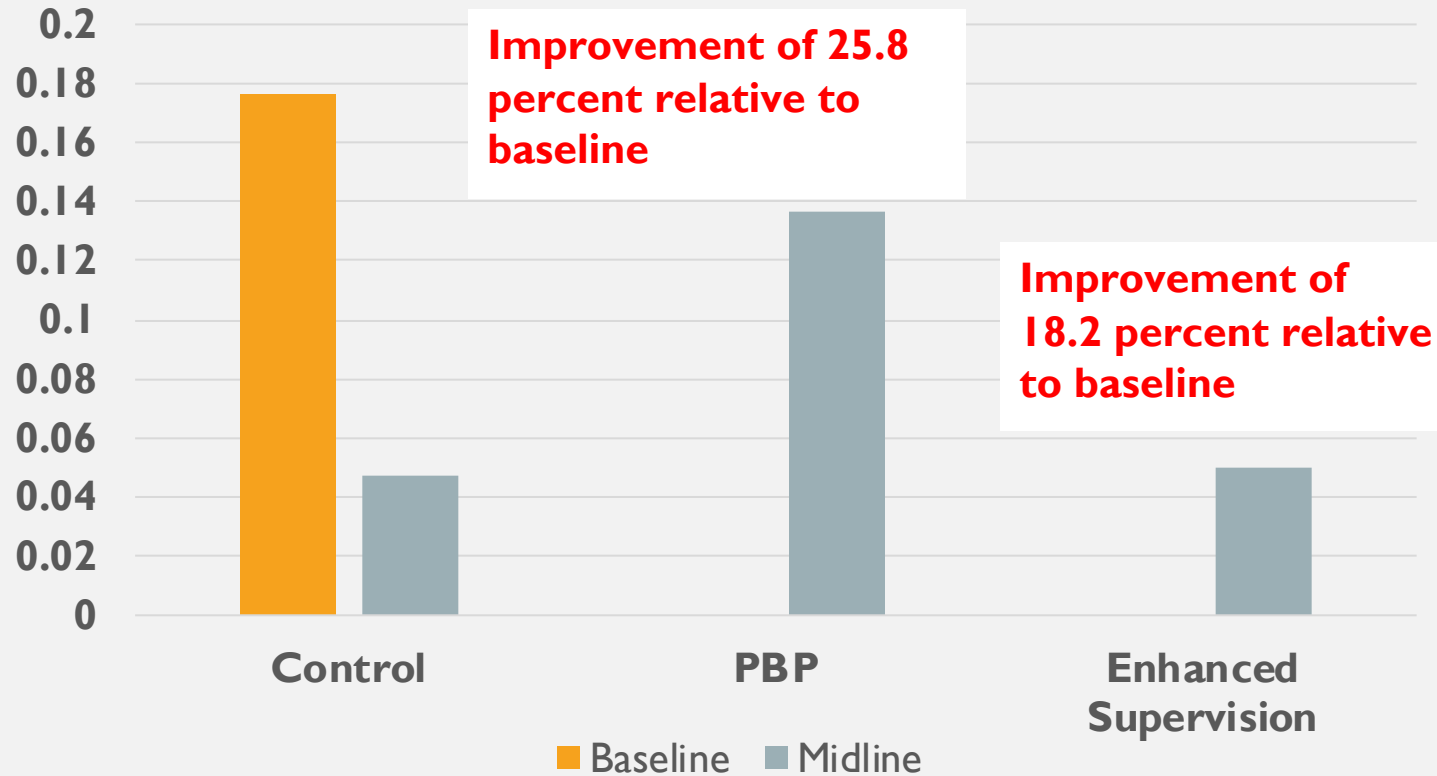
- **Significant increase in facility-level hygiene score in both program groups**

# STRUCTURAL QUALITY: DRUG AVAILABILITY AND STORAGE QUALITY



- **Significant increase in facility-level drug availability and quality score in both program groups, but particularly PBF**

## STRUCTURAL QUALITY: BLOOD AVAILABILITY, BLOOD BANK QUALITY AND TECHNICAL STAFFING

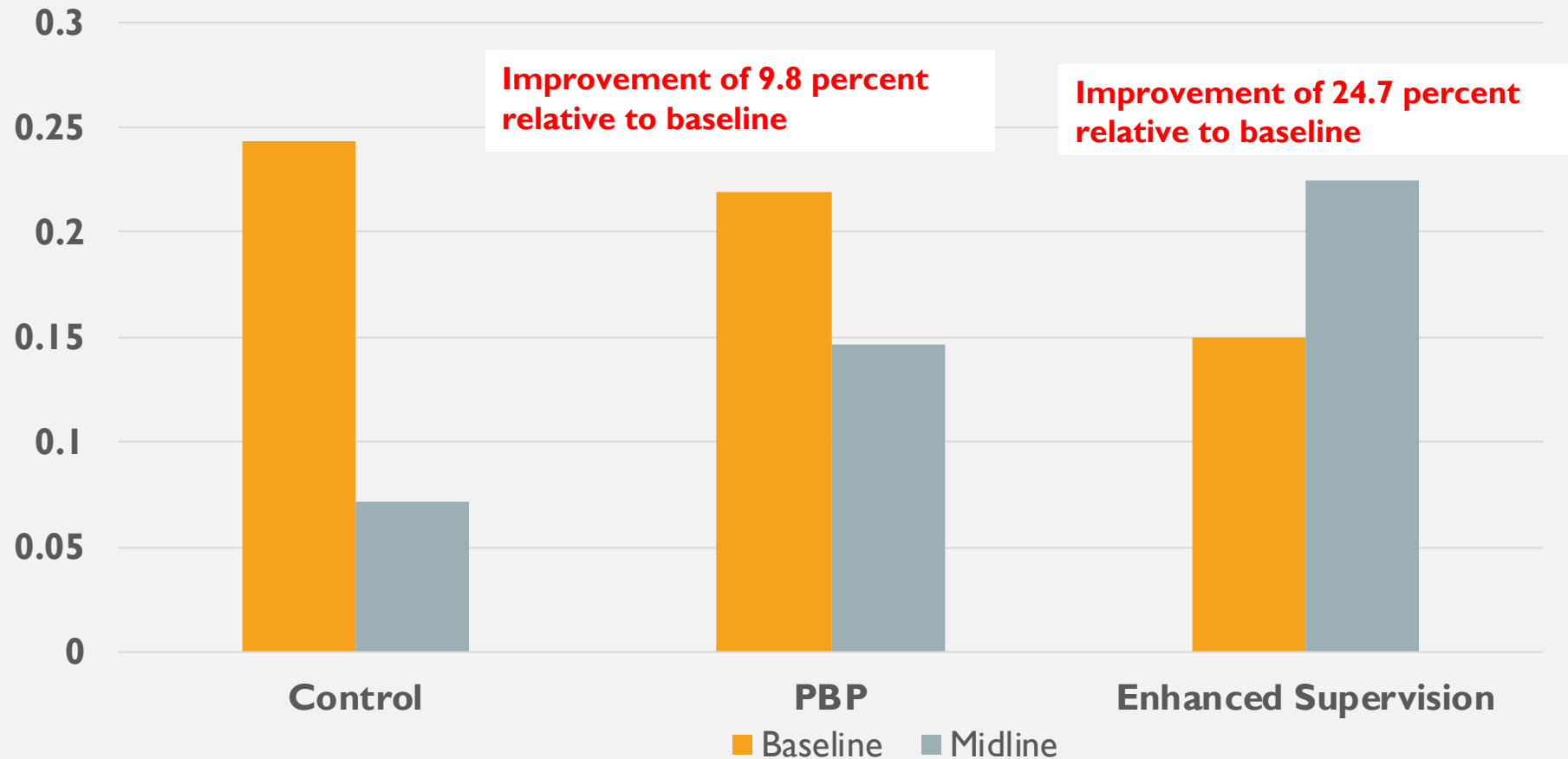


- **Significant increase in blood availability and quality score in both program groups, but particularly PBF**

## KEY RESULTS ON STRUCTURAL QUALITY

- No changes in:
  - Laboratory capacity/equipment
  - Obstetric/neonatal care equipment
- Improvements in :
  - Facility hygiene
  - Drug availability and storage quality, especially for PBF
  - Blood availability and storage quality, especially for PBF

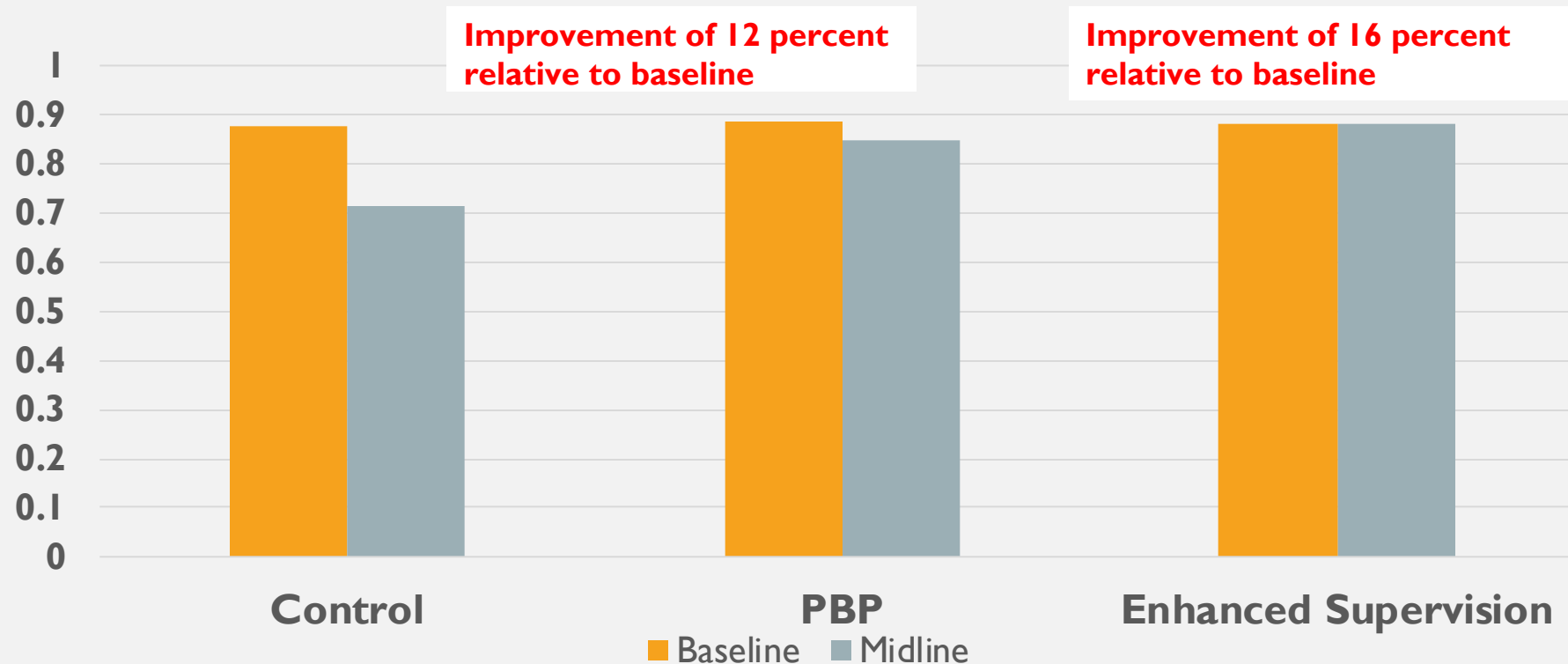
## CLINICAL SKILLS: SCORE FROM NEWBORN RESUSCITATION SIMULATION USING NEONATALIE MODEL



- **Relative improvement in skill assessment for both program groups, but only precisely estimated for ES**



# CLINICAL QUALITY: DIRECT CLINICAL OBSERVATION: ORDERLY DELIVERY ROOM



- **Significant differential in organization of care both arms**

# HEALTH WORKER SATISFACTION AND MOTIVATION

Variables	PBP vs. Control	ES vs. Control	PBP vs. ES
<b>Motivation (Total)</b>	0.044** (0.018)	0.014 (0.015)	0.030 (0.020)
<b>Satisfaction (Total)</b>	0.108*** (0.040)	0.061 (0.040)	0.046 (0.042)

Relative changes are a combination of increases in PBP and ES and a decline in the controls

## KEY RESULTS ON PROCESS QUALITY

- No changes in:
  - Staffing qualification or levels
  - Health worker knowledge scores
  - Skills for PPH management as measured by Mamanatalie
- Improvements in :
  - Skills for newborn resuscitation measured by NeoNatalie, at least for ES
  - Partograph use during active labor and delivery
  - Orderliness of delivery room

## SUMMARY

- A QoC PBF showed improvements along selected dimensions of quality of care:
  - **Structural quality:** improvements in hygiene, drug availability, blood bank
  - **Process quality:** skills (newborn resuscitation), partograph use, order in delivery room
  - **Outcomes:** APGAR scores, blood loss and decreased likelihood of severe PPH
- Impacts identified with survey despite confounding of BSC introduction to control facilities which would affect survey measures
- Enhanced supervision alone also showed select gains, although generally not as large in magnitude (or as precise)

## MECHANISMS IDENTIFIED BY QUALITATIVE WORK

- Parallel qualitative research suggest important role of
  - **Enhanced teamwork, renewed joint-decision making, and improved accountability**
    - Switch from command and control approach to all staff assigned to quality improvement teams
  - **Revitalized Hospital Quality Assurance Committees (QAC)**
    - Internal monthly performance supervision benchmarked against BSC
  - **Effective external supportive supervision**
    - “Staff enjoy simulation exams and record review. Supervisions.. Shares with us new approaches towards clinical practice”

## PBF VS. ENHANCED SUPERVISION: WHAT DRIVES CHANGE?

- By some metrics, supervision arm performs as well as PBF arm
  - But not for some of the most critical: blood loss during delivery, structural quality, satisfaction and motivation of health workers
- PBF costs are obviously higher – our preliminary estimate is 2 – 2.5 times higher
- While PBF “bought more health”, ES may still be cost-effective
  - Interpretive worry: anticipation effects of ES hospitals joining PBF program