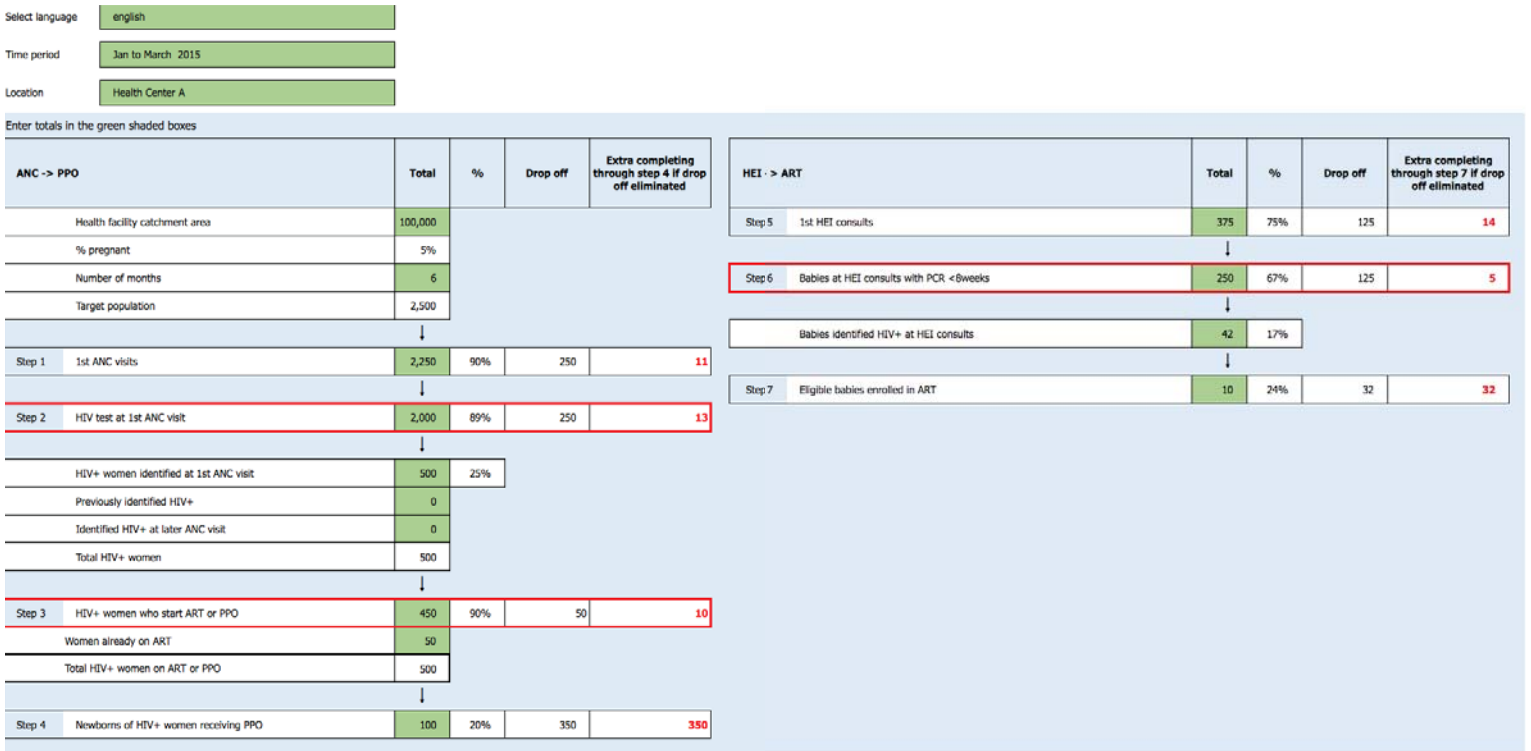
Supplemental Digital Content 1. Dates of Option B/B+ implementation at the 36 facilities in the SAIA trial. Kenya and Mozambique implemented Option B+; Côte d'Ivoire implemented Option B.

Study Arm	Country	Facility	Date
Control	Côte d'Ivoire	A	April 2013
		B	March 2013
		C	March 2013
		D	March 2013
		E	March 2013
		F	April 2013
	Kenya	G	November 2014
		H	September 2014
		I	January 2015
		J	August 2014
		K	November 2014
		L	May 2014
	Mozambique	M	July 2013
		N	July 2013
		O	July 2013
		P	January 2014
		Q	January 2014
		R	Not implemented as of study end
Intervention	Côte d'Ivoire	S	April 2013
		T	March 2013
		U	March 2013
		V	April 2013
		W	March 2013
		X	April 2013
	Kenya	Y	November 2014
		Z	January 2015
		AA	December 2014
		BB	June 2014
		CC	December 2014
		DD	December 2014
	Mozambique	EE	May 2014
		FF	May 2014
		GG	June 2013
		HH	January 2014
		II	August 2013
		JJ	October 2013

Supplemental Digital Content 2. Primary outcomes within the PMTCT cascade. Steps of the PMTCT cascade that were chosen as the three primary outcomes of the SAIA trial are highlighted in red.

Note: While health facility staff collected data for the Excel-based PCAT tool (shown as a screenshot below), only study staff trained in abstraction collected the data that were used to calculate the primary outcomes.



Select language	english
Time period	Jan to March 2015
Location	Health Center A

Enter totals in the green shaded boxes

ANC -> PPO		Total	%	Drop off	Extra completing through step 4 if drop off eliminated
	Health facility catchment area	100,000			
	% pregnant	5%			
	Number of months	6			
	Target population	2,500			
	↓				
Step 1	1st ANC visits	2,250	90%	250	11
	↓				
Step 2	HIV test at 1st ANC visit	2,000	89%	250	13
	↓				
	HIV+ women identified at 1st ANC visit	500	25%		
	Previously identified HIV+	0			
	Identified HIV+ at later ANC visit	0			
	Total HIV+ women	500			
	↓				
Step 3	HIV+ women who start ART or PPO	450	90%	50	10
	Women already on ART	50			
	Total HIV+ women on ART or PPO	500			
	↓				
Step 4	Newborns of HIV+ women receiving PPO	100	20%	350	350

HEI -> ART		Total	%	Drop off	Extra completing through step 7 if drop off eliminated
Step 5	1st HEI consults	375	75%	125	14
	↓				
Step 6	Babies at HEI consults with PCR <8weeks	250	67%	125	5
	↓				
	Babies identified HIV+ at HEI consults	42	17%		
	↓				
Step 7	Eligible babies enrolled in ART	10	24%	32	32

Supplemental Digital Content 3. Definitions of primary outcomes.

Outcome 1: Testing coverage: We defined testing coverage as the number of women counseled & tested for HIV at first ANC visit (ANC1) in a given month, divided by the total number of ANC1 visits in that month.

Outcome 2: ARV coverage: ARV coverage was defined as the number of HIV-positive women initiating AZT or cART in a given month, divided by the total number of HIV-positive pregnant women (those diagnosed in ANC1, those diagnosed in other ANC visits, and those diagnosed prior to entering ANC). We included women with previously diagnosed HIV in the denominator, given the reluctance of many women to initiate cART on the same day of diagnosis in the study countries, as reported by frontline nursing staff and study coordinators. Further, even under Option B+, previously diagnosed women would not be eligible for cART until presenting for ANC unless they also had low CD4 counts. Consequently, this outcome definition may generate absolute coverage estimates that are lower than those in future country-specific reports using data during comparable time periods. However, as the definition was applied uniformly between study arms and across time, our ability to analyze and compare trends in ART coverage is unaffected.

Outcome 3: HEI screening coverage: HEI screening coverage was estimated by dividing the number of infants <6 weeks of age receiving a PCR HIV test in a given month (or in Côte d'Ivoire, <8 weeks of age, in accordance with national guidelines), by the projected number of HIV-exposed infants (HEI) eligible for screening in that month. For the denominator, we used data from the health facility registry to collect the gestational age at ANC1 for 20 randomly selected women in each health facility (10 HIV-negative, 10 HIV-positive) in the last 3 months of the baseline period (October-December 2013). If <10 HIV-positive or HIV-negative women were available, we collected gestational age data on all available women. We then projected the number of newborns eligible for screening in a given month using a weighted average:

(% ANC1 attendees at ≤3 months gestational age)(number of ANC1 visits 8 months prior)
+ (% ANC1 attendees at 4 months gestational age)(number of ANC1 visits 7 months prior)
+ (% ANC1 attendees at 5 months gestational age)(number of ANC1 visits 6 months prior)
+ …

The sum of these terms was the denominator for HEI screening coverage.

Supplemental Digital Content 4. Classification of microinterventions by (A) focus and (B) primary outcome that could plausibly impacted.

(A) Focus of microintervention

	Reorganizing services	Educating patients	Improving health workers communication	Improving data quality	Strengthening existing norms	Total
	n(%)	n(%)	n(%)	n(%)	n(%)	n
Côte d'Ivoire	7 (20)	5 (14)	4 (11)	10 (29)	9 (26)	35
Kenya	39 (48)	4 (5)	3 (4)	5 (6)	30 (37)	81
Mozambique	11 (26)	8 (19)	5 (12)	9 (21)	9 (21)	42
Total	57 (36)	17 (11)	12 (8)	24 (15)	48 (30)	158

(B) Primary outcome(s) that could plausibly be impacted

	Outcome 1: HIV testing	Outcome 2: ARV coverage	Outcome 3: HEI screening	Other	Total[1]
	n(%)	n(%)	n(%)	n(%)	n
Côte d'Ivoire	8 (22)	14 (39)	6 (17)	6 (17)	36
Kenya	17 (20)	16 (19)	18 (21)	18 (21)	85
Mozambique	6 (12)	17 (33)	22 (42)	22 (42)	52
Total[1]	31 (18)	47 (27)	46 (27)	46 (27)	173

[1]A microintervention could conceivably impact more than 1 primary outcome.

Supplemental Digital Content 5. Raw numbers used to calculate primary outcomes in 36 health facilities in the SAIA trial.

			Outcome 1: ANC1 screening				Outcome 2: ARV coverage				Outcome 3: HEI screening			
			13-month baseline		3-month endline		13-month baseline		3-month endline		13-month baseline		3-month endline	
		Site	HIV tests during ANC1	ANC1 visits	HIV tests during ANC1	ANC1 visits	HIV-positive pregnant women on ARVs	HIV-positive pregnant women	HIV-positive pregnant women on ARVs	HIV-positive pregnant women	EID tests	Projected HEI	EID tests	Projected HEI
Control	Côte d'Ivoire	A	1023	1222	351	351	23	35	12	12	5	15.0	2	12.3
		B	1495	1510	301	301	39	22	3	3	19	7.8	1	4.8
		C	1273	1273	232	232	32	32	9	9	20	11.8	6	9.8
		D	652	652	140	141	8	8	0	0	5	4.6	4	4.1
		E	487	889	137	137	40	43	5	5	25	13.5	3	7.1
		F	577	1003	136	136	27	41	1	1	14	13.9	3	12.9
	Kenya	G	2341	3328	830	847	117	144	44	46	117	58.5	16	40.1
		H	2124	2294	572	578	36	72	3	14	17	31.2	8	14.5
		I[1]	1598	1733	432	458	47	69	13	23	-	-	-	14.0
		J	527	561	76	77	4	10	1	2	0	6.0	0	2.1
		K	627	636	160	183	10	13	3	22	5	6.9	0	13.5
		L	704	923	121	237	10	15	4	25	17	6.0	0	12.4
	Mozambique	M	3089	3495	872	983	214	922	140	268	148	377.2	54	169.1
		N	1688	1821	438	501	545	530	101	146	229	214.0	22	96.7
		O	3484	3815	990	1096	217	985	182	271	508	365.0	109	164.1
		P	1395	1542	340	355	137	339	64	71	81	122.7	15	65.7
		Q	1330	1340	434	446	171	317	64	87	81	118.1	27	54.3
		R	953	895	182	186	36	65	15	32	2	27.0	0	13.1
Intervention	Côte d'Ivoire	S	1353	1507	364	364	35	41	14	14	8	14.6	2	5.8
		T	338	363	72	72	3	3	0	0	3	0.0	2	0.0
		V	1660	1708	304	305	14	24	6	6	32	9.5	1	3.0
		U	737	772	201	201	21	24	5	5	4	7.1	2	4.1
		W	1219	1220	429	429	40	37	18	18	23	9.2	4	15.9
	Kenya	X	729	822	224	224	10	16	4	4	8	6.0	4	3.1
		Y	1874	2088	526	570	87	168	34	47	154	63.4	23	42.2
		Z	4131	4547	753	784	130	173	24	37	66	74.6	8	13.3
		AA	3207	3369	831	868	80	206	49	62	134	78.2	18	47.7
		BB	1247	1487	381	387	12	19	5	11	10	8.7	1	6.6

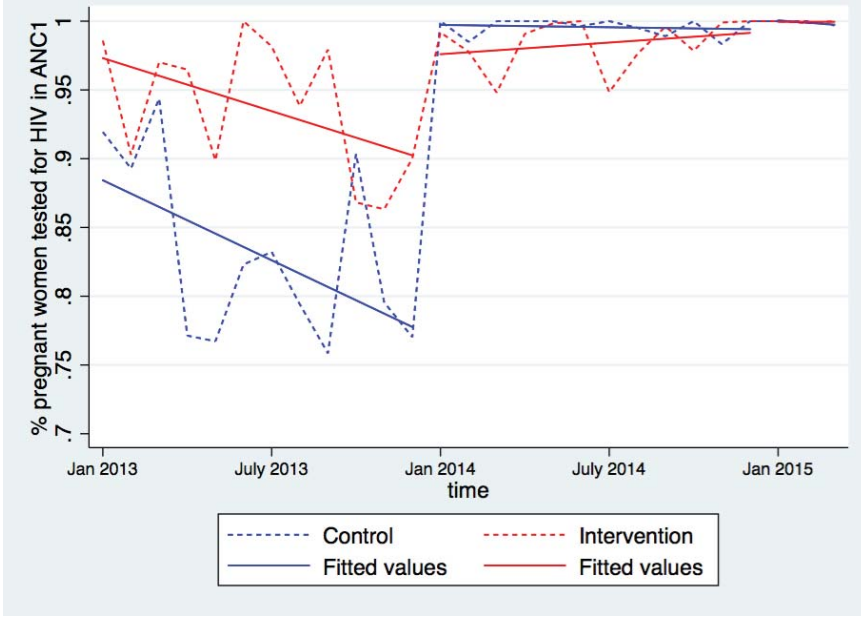
Mozambique	CC	1264	1671	407	417	54	98	27	28	38	44.2	2	24.2
	DD	1548	1744	372	393	45	111	31	41	65	49.6	18	35.2
	EE	1885	2022	415	456	388	427	53	88	76	186.2	40	77.5
	FF	3666	2881	709	787	928	1047	119	208	455	400.7	77	130.2
	GG	2871	2835	814	835	575	1368	82	98	233	573.1	37	89.3
	HH	1230	1297	327	370	217	322	59	85	27	136.7	21	49.1
	II	1132	1420	408	468	77	125	21	38	26	62.4	7	19.5
	JJ	1684	1710	662	687	138	189	24	49	92	93.4	16	37.2

[1]Facility I did not offer infant testing until July 2014, so baseline (January 2013-January 2014) estimates cannot be calculated. Infant testing data were missing for endline period (January-March 2015).

Note: Outcome percentages were an average of individual monthly percentages; that is, for each month, we calculated numerator/denominator, then summed up monthly percentages and divided by the number of months in the period. Therefore, aggregated raw numbers shown in this table cannot be used to calculate percentages shown in Tables 2-4.

Abbreviations: ANC1=first antenatal care visit; ARV=antiretroviral medication; EID=early infant diagnosis; HEI=HIV-exposed infant.

(A)



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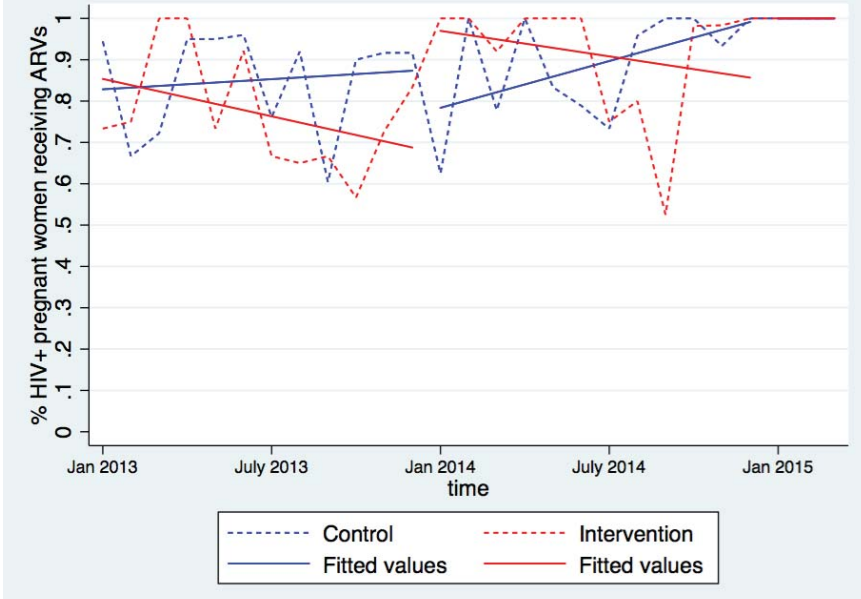

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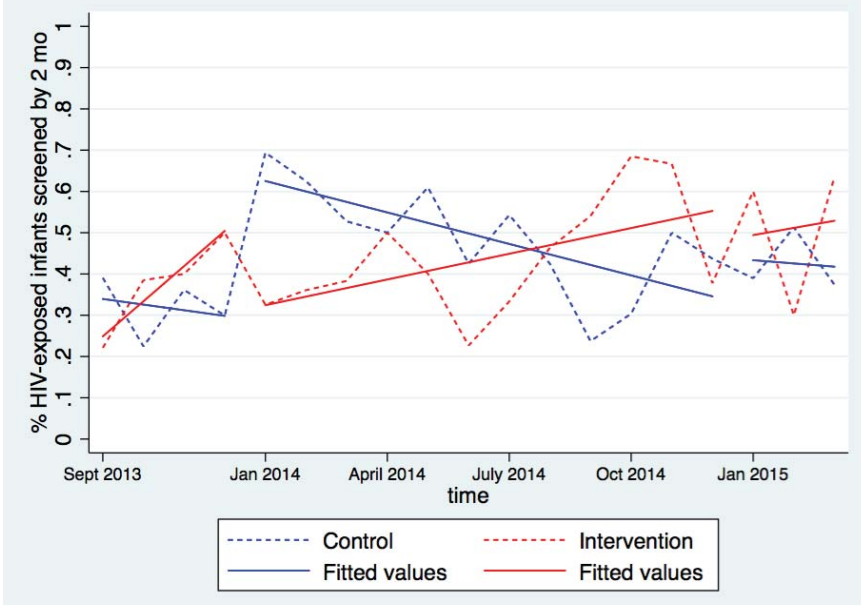
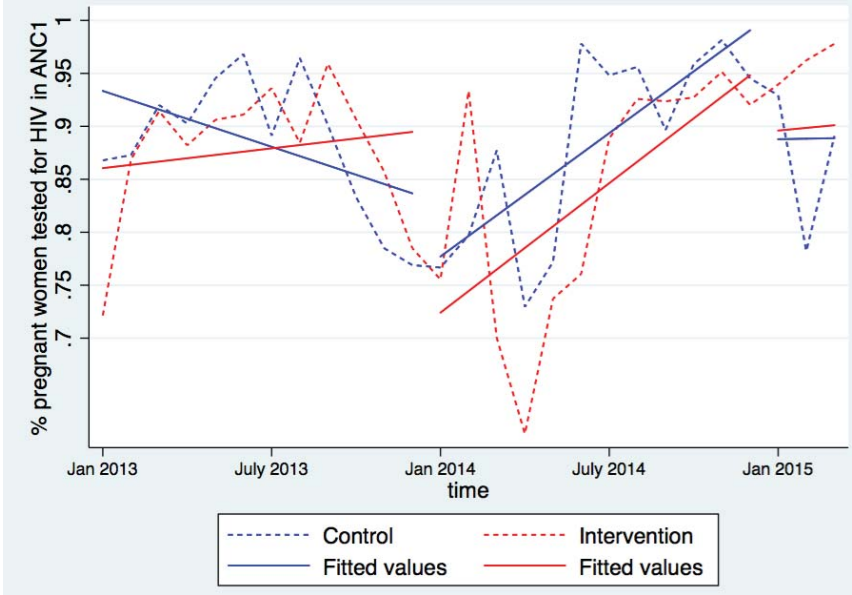


Supplemental Digital Content 6. Mean coverage of (A) HIV testing in first antenatal care visit; (B) ARV usage among HIV-positive pregnant women, and (C) HIV PCR testing among HIV-exposed infants by 8 weeks of age, in 12 facilities in Côte d'Ivoire in the SAIA trial. Dashed lines are actual means; solid lines are from linear regressions over baseline, intervention, and endline periods.

(A)



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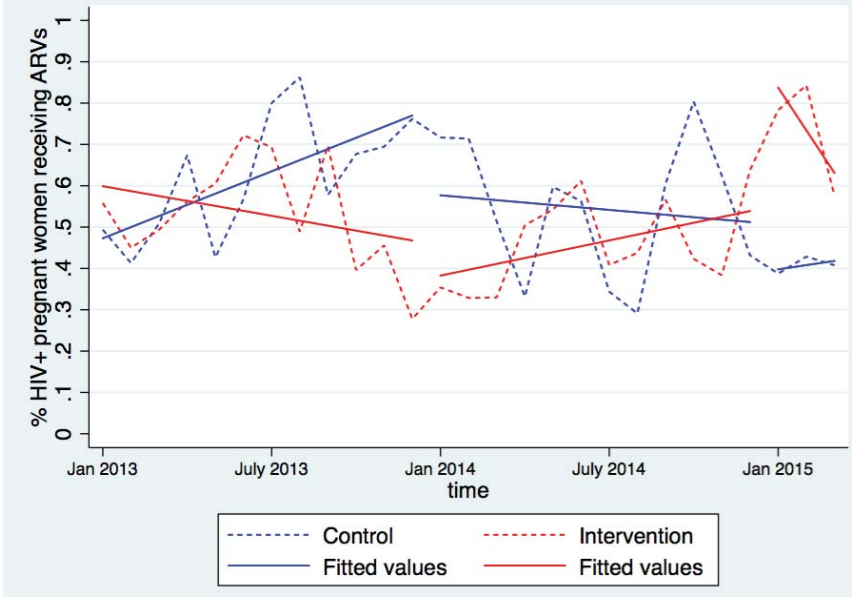
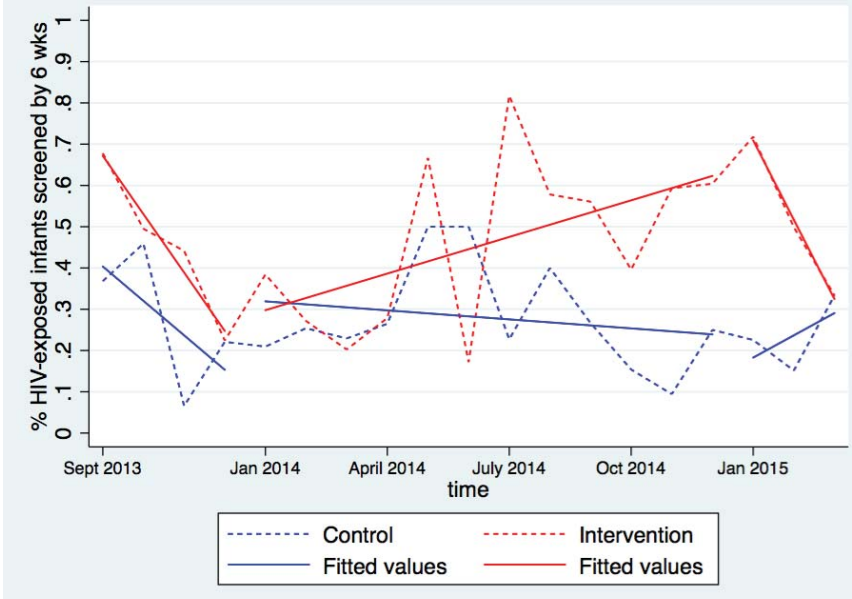
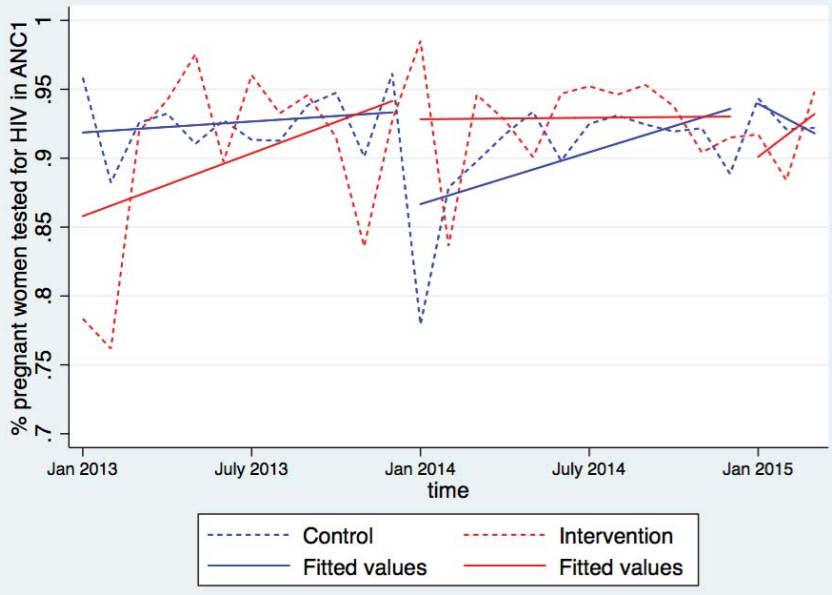


(C)



Supplemental Digital Content 7. Mean coverage of (A) HIV testing in first antenatal care visit; (B) ARV usage among HIV-positive pregnant women, and (C) HIV PCR testing among HIV-exposed infants by 6 weeks of age, in 12 facilities in Kenya in the SAIA trial. Dashed lines are actual means; solid lines are from linear regressions over baseline, intervention, and endline periods.

(A)



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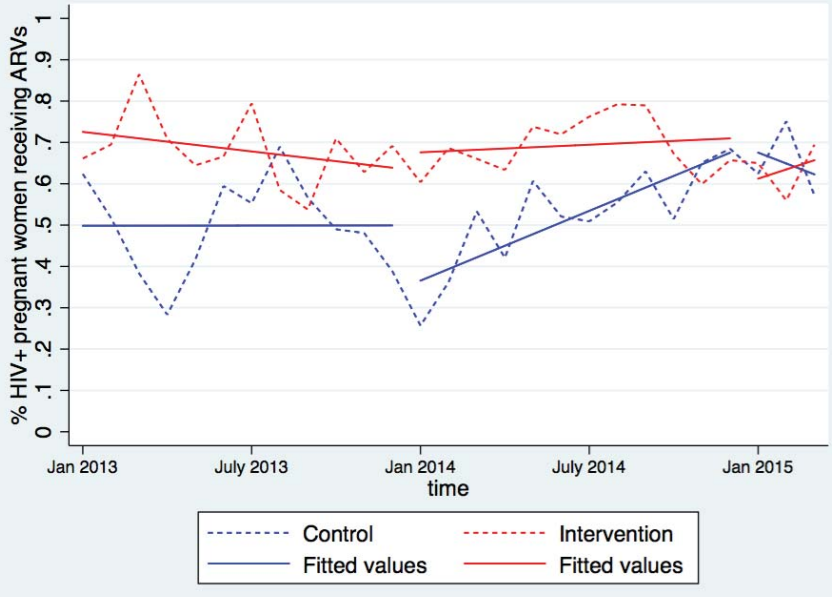

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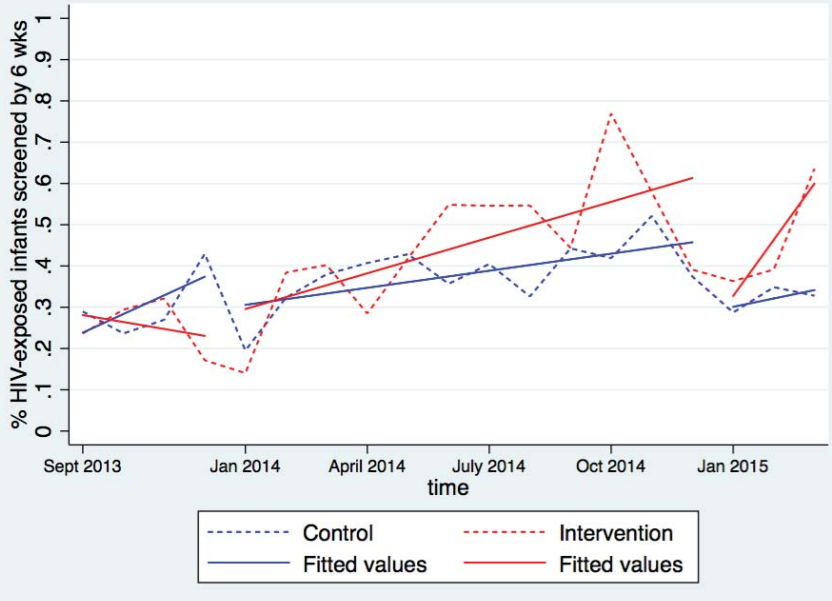

Supplemental Digital Content 8. Mean coverage of (A) HIV testing in first antenatal care visit; (B) ARV usage among HIV-positive pregnant women, and (C) HIV PCR testing among HIV-exposed infants by 6 weeks of age, in 12 facilities in Mozamique in the SAIA trial. Dashed lines are actual means; solid lines are from linear regressions over baseline, intervention, and endline periods.