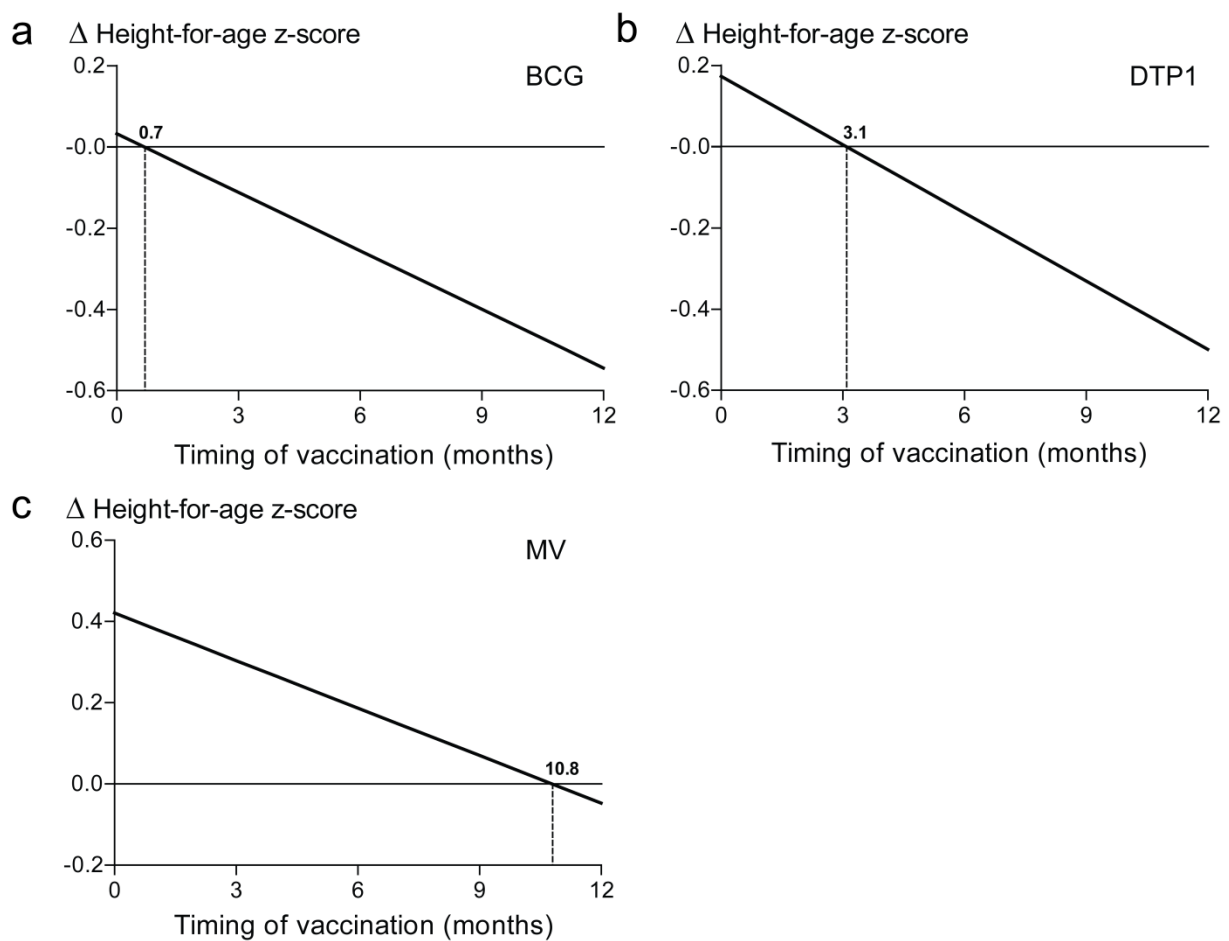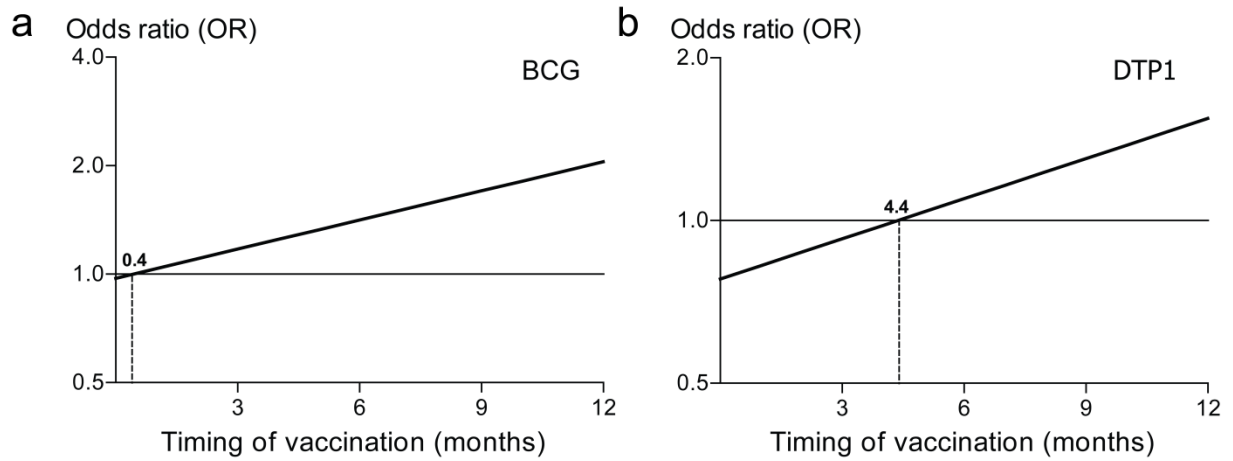SUPPLEMENTARY MATERIAL

Non-specific effects of vaccines and stunting: Timing may be essential
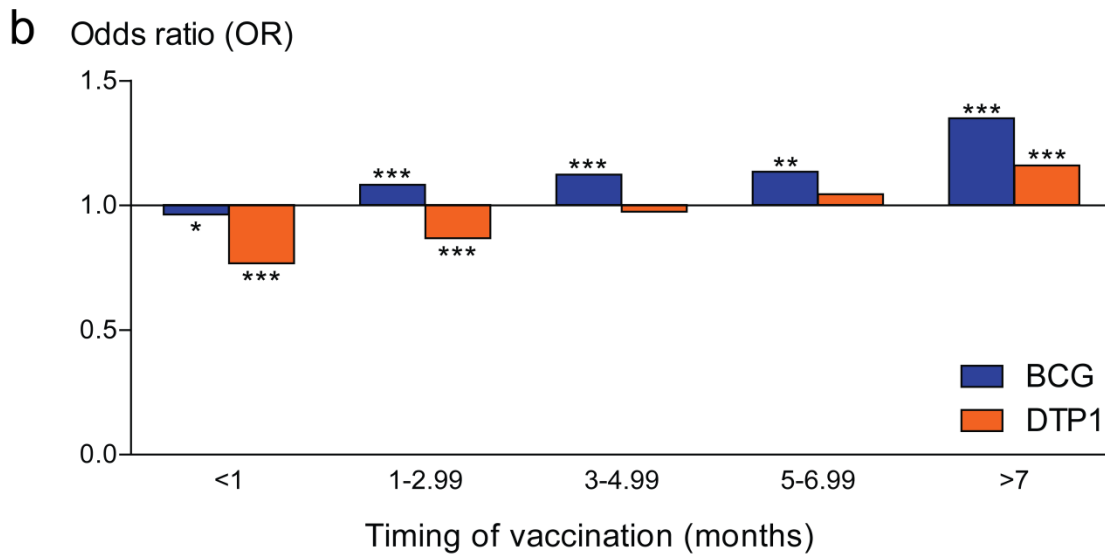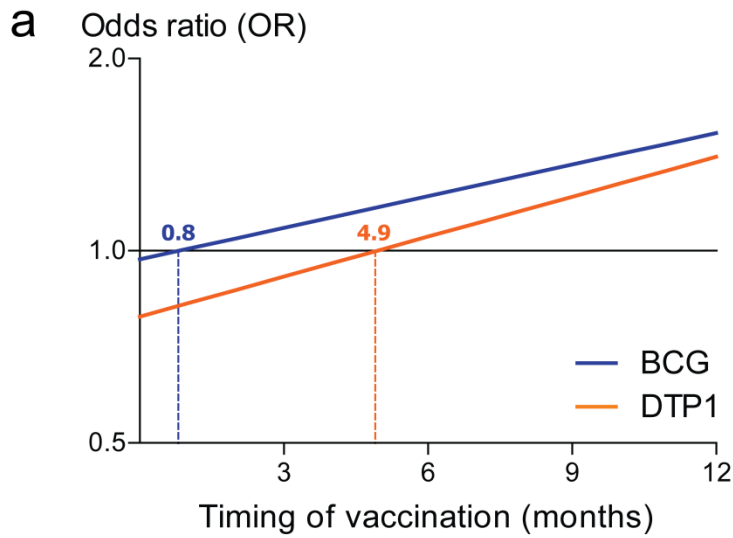
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Supplementary Figure 1. Time-dependent effect of vaccination on height-for-age z-score (HAZ). Time-dependency of vaccination with BCG (**a**), DTP1 (**b**) and MV (**c**) is shown for alterations in HAZ in Sub-Saharan African children aged 1-60 months. Comparable to the effect on the dichotomous variable stunting, delaying vaccination is associated with a decrease in the child's HAZ. Differences in HAZ shift from an improved HAZ to decreased HAZ at 0.7 months (BCG), 3.1 months (DTP1) and 10.8 months (MV) compared to unvaccinated children for the specified vaccine as indicated by the dashed vertical lines.

Supplementary Figure 2. Sensitivity analyses of the time-dependent effects of BCG and DTP1 vaccination. Time-dependency of vaccination with BCG is shown for odds on stunting in children without DTP1 vaccination (**a**) and time-dependency of vaccination with DTP1 is shown for odds on stunting in children without BCG vaccination (**b**). Shifts from reduced odds ratios to increased odds rations were seen at 0.4 months (BCG) and 4.4 months (DTP1) compared to unvaccinated children for the specified vaccine as indicated by the dashed vertical lines. A 2 log scale is used for the ordinates.

Supplementary Figure 3. Time-dependent effect of combined BCG and DTP1 vaccination on stunting. Time-dependency of vaccination with BCG and DTP is shown for odds on stunting (**a** and **b**) in Sub-Saharan African children aged 1-60 months. Timing as continuous variable showed a positive relation to odds on stunting (a) with shifts from reduced odds ratios to increased odds rations at 0.8 months (BCG) and 4.9 months (DTP1) compared to unvaccinated children as indicated by the dashed vertical lines. Broken down into relevant time periods the same trend is visible with reduced odds ratios after early vaccination and increased odds ratios after late vaccination (b). *P <0.05, **P<0.005, ***P <0.001 compared to unvaccinated children. A 2 log scale is used for the ordinate in a.

Supplementary Table 1. Descriptive characteristics of 33 African countries regarding to the number of children included, percentage BCG vaccinated, percentage stunted and the relative contribution of each country.

Country	Number of children	BCG vaccinated (%)		Stunted (%)		Relative contribution
Benin	24,801	21,678	(87.4)	10,899	(43.9)	6.7
Burkina Faso	18,716	15,221	(81.3)	7,630	(40.8)	5.1
Burundi	3,449	3,400	(98.6)	2,010	(58.3)	0.9
Cameroon	9,827	8,143	(82.9)	3,338	(34.0)	2.7
Chad[a]	4,397	1,621	(36.9)	1,978	(45.0)	1.2
Comoros[a]	2,352	1,982	(84.3)	695	(29.5)	0.6
Congo Brazzaville	7,529	6,877	(91.3)	2,020	(26.8)	2.0
Congo Democratic Republic	10,823	8,622	(79.7)	4,697	(43.4)	2.9
Cote d'Ivoire	4,622	3,717	(80.4)	1,407	(30.4)	1.3
Ethiopia	23,346	12,415	(53.2)	11,857	(50.8)	6.3
Gabon	5,375	4,817	(89.6)	1,129	(21.0)	1.5
Ghana	7,651	6,830	(89.3)	2,414	(31.6)	2.1
Guinea	9,611	7,373	(76.7)	3,411	(35.5)	2.6
Kenya[a]	12,109	11,089	(91.6)	4,371	(36.1)	3.3
Liberia[a]	6,687	5,386	(80.5)	2,336	(34.9)	1.8
Lesotho	2,610	2,437	(93.4)	1,037	(39.7)	0.7
Madagascar	9,548	7,311	(76.6)	5,004	(52.4)	2.6
Malawi	20,583	18,706	(90.9)	10,743	(52.2)	5.6
Mali	23,276	16,693	(71.7)	9,130	(39.2)	6.3
Mozambique	17,385	14,919	(85.8)	7,826	(45.0)	4.7
Namibia	7,491	7,018	(93.7)	2,046	(27.3)	2.0
Niger	12,562	7,824	(62.3)	6,085	(48.4)	3.4
Nigeria[a]	45,663	23,033	(50.4)	17,910	(39.2)	12.4
Rwanda	13,665	13,307	(97.5)	6,564	(48.1)	3.7
Sao Tome and Principe	1,334	1,274	(95.4)	394	(29.5)	0.4
Senegal	6,062	5,563	(91.8)	1,491	(24.6)	1.6
Sierra Leone	6,057	5,400	(89.2)	2,241	(37.0)	1.6
Swaziland	2,011	1,948	(96.9)	552	(27.4)	0.5
Tanzania	16,222	15,135	(93.3)	7,148	(44.1)	4.4
Togo[a]	3,273	2,439	(74.5)	1,002	(30.6)	0.9
Uganda	9,613	8,157	(84.9)	3,895	(40.5)	2.6
Zambia[a]	9,743	8,794	(90.3)	4,813	(49.4)	2.6
Zimbabwe	10,063	8,423	(83.7)	3,259	(32.4)	2.7
Total	368,450[b]	287,552	(78.0)	151,332	(41.1)	100.0

[a]Countries that did not include information on hemoglobin. [b]Numbers of the separate countries do not add up to 368,450 due to rounding of the individual numbers. BCG: Bacillus Calmette-Guérin.

Supplementary Table 2. Baseline characteristics of the 368,450 children (aged 1-60 months) and their mothers (aged 15-49 years) from 33 African countries.

Characteristics	
Height z-score children, mean (SD)	-1.6 (1.8)
BCG vaccination	
Yes (%)	287,550 (78.0)
DTP1 vaccination[a]	
Yes (%)	268,697 (73.3)
DTP2 vaccination[a]	
Yes (%)	241,196 (65.9)
DTP3 vaccination[a]	
Yes (%)	204,184 (55.8)
MV vaccination[a]	
Yes (%)	212,274 (58.2)
Age of child (months), median (IQR)	27.2 (13.2-42.5)
Sex	
Female (%)	183,774 (49.9)
Birth order, median (IQR)	3 (2-5)
Preceding birth interval (months), median (IQR)[a]	34.0 (26.0-46.0)
Twin status	
Twin (%)	10,627 (2.9)
Size of child at birth[a]	
Very small (%)	18,417 (5.1)
Smaller than average (%)	42,084 (11.6)
Average (%)	164,352 (45.3)
Larger than average (%)	94,093 (25.9)
Very large (%)	43,944 (12.1)
Vitamin A supplementation[a]	
Yes (%)	147,960 (45.2)
Age of mother (years), mean (SD)	29.0 (7.0)
BMI of mother (kg/m^2), median (IQR)[a]	21.5 (19.7-23.7)
Height z-score mother, mean (SD)[a]	-0.9 (1.1)
Breastfeeding till 2 years of age[a]	
Yes (%)	256,594 (70.7)
Place of delivery[a]	
At home (%)	183,700 (50.0)
In public health facility (%)	149,409 (40.7)
In private health facility (%)	31,460 (8.6)
Other (%)	2,762 (0.7)
International Wealth Index, median (IQR)[a]	17.2 (8.2-33.9)
Educational level mother[a]	
No education (%)	171,380 (46.7)
Incomplete primary (%)	86,132 (23.5)
Complete primary (%)	40,209 (11.0)
Incomplete secondary (%)	48,557 (13.2)
Complete secondary (%)	14,146 (3.9)
Higher (%)	6,394 (1.7)
Marital status mother[a]	
Never married (%)	16,930 (4.6)
Married/Living together (%)	329,657 (89.7)
Widowed (%)	5,501 (1.5)
Divorced/Not living together (%)	15,367 (4.2)
Residence	
Urban (%)	95,206 (25.8)
Rural (%)	273,224 (74.2)

[a]Based on different N due to missings in the control variables, which were accounted for by the dummy variable adjustment procedure. BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis, MV: Measles vaccine.

1 **Supplementary Table 3. Baseline characteristics of the children (aged 1-60 months) and their mothers (aged 15-49 years) separated by timing of BCG vaccination.**

	Not BCG vaccinated N=80,900	Less than 1 month N=114,020	Between 1 and 3 months N=39,551	Between 3 and 5 months N=9,436	Between 5 and 7 months N=3,967	Between 7 and 12 months N=4,099	Vaccinated, age unknown N=116,476	Overall P-value	Pairwise not vs < 1 month	Pair wise not vs. 7-12 months
Received DTP1 (%)[a]	10,807 (13.4)	102,830 (90.2)	35,613 (90.0)	8,552 (90.6)	3,614 (91.1)	3,732 (91.0)	103,548 (90.2)	< 0.001	< 0.001	< 0.001
Received DTP2 (%)[a]	7,170 (8.9)	96,524 (84.7)	32,647 (82.5)	7,634 (80.9)	3,088 (77.8)	3,128 (76.3)	91,005 (79.6)	< 0.001	< 0.001	< 0.001
Received DTP3 (%)[a]	4,223 (5.2)	88,778 (77.9)	29,228 (73.9)	6,493 (68.8)	2,545 (64.1)	2,521 (61.5)	70,396 (61.5)	< 0.001	< 0.001	< 0.001
Received MV (%)[a]	8,136 (10.1)	78,844 (69.1)	26,223 (66.3)	6,090 (64.5)	2,538 (64.0)	2,979 (72.7)	87,364 (77.1)	< 0.001	< 0.001	< 0.001
Age child in months, median (p25-p75)	25.53 (10.41-41.86)	22.11 (10.51-37.65)	22.14 (10.84-37.42)	23.03 (12.39-37.93)	24.48 (13.92-40.14)	27.73 (17.67-42.28)	35.71 (21.26-47.70)	< 0.001	<0.001	< 0.001
Female gender (%)	40,386 (49.9)	56,758 (49.8)	19,712 (49.8)	4,758 (50.4)	2,026 (51.1)	2,044 (49.9)	58,092 (49.9)	0.697	-	-
Birth order, median (p25-p75)[a]	4 (2-6)	3 (2-5)	3 (2-5)	4 (2-6)	4 (2-6)	4 (2-6)	3 (2-5)	< 0.001	<0.001	0.067
Preceding birth interval, median (p25-p75)[a]	32 (25-42)	36 (28-50)	34 (26-45)	33 (26-44)	33 (26-44)	32 (25-42)	34 (25-45)	< 0.001	<0.001	0.857
Born as twin (%)	1,813 (2.2)	3,938 (3.5)	1,405 (3.6)	353 (3.7)	125 (3.2)	128 (3.1)	2,866 (2.5)	< 0.001	<0.001	< 0.001
Size of child at birth[a]								< 0.001	<0.001	< 0.001
Very small (%)	6,198 (7.8)	3,751 (3.3)	1,854 (4.8)	543 (5.8)	222 (5.7)	228 (5.6)	5,622 (4.9)			
Small (%)	10,899 (13.8)	11,749 (10.4)	4,731 (12.1)	1,148 (12.3)	517 (13.2)	577 (14.3)	12,462 (10.9)			
Average (%)	33,154 (41.9)	53,749 (47.6)	18,645 (47.8)	4,411 (47.4)	1,809 (46.4)	1,800 (44.6)	50,782 (44.2)			
Large (%)	18,564 (23.5)	31,463 (27.9)	9,696 (24.9)	2,240 (24.1)	894 (22.9)	958 (23.7)	30,277 (26.4)			
Very large (%)	10,223 (12.9)	12,115 (10.7)	4,089 (10.5)	964 (10.4)	461 (11.8)	475 (11.8)	15,618 (13.6)			
Vitamin A supplementation (%)[a]	18,505 (25.9)	47,293 (46.9)	16,788 (48.4)	3,989 (48.7)	1,661 (48.9)	1,616 (45.7)	58,108 (55.2)	< 0.001	< 0.001	< 0.001
Age mother in years, mean (SD)	28.91 (7.21)	28.69 (6.76)	28.68 (6.89)	28.89 (7.19)	29.18 (7.21)	29.14 (7.12)	29.43 (6.97)	< 0.001	<0.001	0.048
BMI mother (kg/m^2), median (p25-p75)[a]	20.78 (19.24-22.68)	21.99 (20.13-24.51)	21.24 (19.65-23.33)	21.03 (19.51-22.97)	20.96 (19.39-22.83)	20.89 (19.40-22.85)	21.58 (19.77-23.93)	< 0.001	<0.001	0.002
Height z-score mother, mean (SD)[a]	-0.95 (1.09)	-0.85 (1.10)	-0.96 (1.10)	-0.98 (1.09)	-0.96 (1.11)	-0.90 (1.08)	-0.84 (1.12)	< 0.001	<0.001	0.008
Breastfeeding till 2 years of age (%)[a]	58,370 (73.9)	81,106 (71.9)	28,837 (73.7)	6,934 (74.2)	2,874 (73.7)	2,866 (70.5)	75,606 (65.9)	< 0.001	< 0.001	< 0.001
Delivery[a]								< 0.001	<0.001	< 0.001
Home (%)	66,099 (82.2)	30,908 (27.2)	21,630 (54.8)	6,083 (64.5)	2,638 (66.6)	2,752 (67.3)	53,589 (46.1)			
Public (%)	11,026 (13.7)	69,812 (61.4)	13,790 (34.9)	2,578 (27.3)	980 (24.7)	1,093 (26.7)	50,130 (43.1)			
Private (%)	2,722 (3.4)	12,185 (10.7)	3,634 (9.2)	696 (7.4)	315 (8.0)	216 (5.3)	11,692 (10.1)			
Other (%)	543 (0.7)	856 (0.8)	403 (1.0)	69 (0.7)	28 (0.7)	30 (0.7)	833 (0.7)			

Supplementary Table 3 continued on next page.

International Wealth Index,	13.11	23.45	14.05	12.59	12.06	12.06	18.06	< 0.001	<0.001	< 0.001
median (p25-p75)[a]	(6.18-24.05)	(12.06-45.16)	(8.09-26.78)	(6.18-21.18)	(6.18-20.20)	(5.97-20.31)	(8.20-36.47)			
Educational level mother[a]								< 0.001	<0.001	< 0.001
No education (%)	56,551 (70.4)	38,928 (34.3)	15,253 (38.7)	4,488 (47.7)	2,139 (54.0)	2,404 (58.8)	51,618 (44.5)			
Incomplete primary (%)	12,501 (15.6)	29,000 (25.5)	12,195 (30.9)	2,896 (30.8)	1,097 (27.7)	1,052 (25.7)	27,391 (23.6)			
Complete primary (%)	5,379 (6.7)	15,628 (13.8)	5,467 (13.9)	980 (10.4)	350 (8.8)	278 (6.8)	12,127 (10.5)			
Incomplete secondary (%)	4,471 (5.6)	21,248 (18.7)	4,882 (12.4)	842 (8.9)	283 (7.2)	249 (6.1)	16,582 (14.3)			
Complete secondary (%)	1,152 (1.4)	5,590 (4.9)	1,234 (3.1)	156 (1.7)	75 (1.9)	76 (1.9)	5,863 (5.1)			
Higher (%)	265 (0.3)	3,173 (2.8)	404 (1.0)	53 (0.6)	14 (0.4)	27 (0.7)	2,458 (2.1)			
Marital status[a]								< 0.001	<0.001	< 0.001
Never married (%)	1,677 (2.1)	8,233 (7.2)	1,602 (4.1)	256 (2.7)	91 (2.3)	94 (2.3)	4,976 (4.3)			
Married/Living together (%)	75,493 (93.6)	99,406 (87.4)	35,415 (89.7)	8,595 (91.3)	3,643 (92.0)	3,750 (91.6)	103,355 (89.0)			
Widowed (%)	1,010 (1.3)	1,480 (1.3)	583 (1.5)	128 (1.4)	66 (1.7)	65 (1.6)	2,168 (1.9)			
Divorced/Not living together (%)	2,445 (3.0)	4,603 (4.0)	1,871 (4.7)	430 (4.6)	159 (4.0)	185 (4.5)	5,674 (4.9)			
Rural residence (%)	70,652 (87.3)	72,239 (63.4)	31,816 (80.4)	8,241 (87.3)	3,528 (88.9)	3,619 (88.3)	83,148 (71.4)	< 0.001	<0.001	0.072

[a]Based on different N due to missings in the control variables, which were accounted for by the dummy variable adjustment procedure. BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis, MV: Measles vaccine.

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Supplementary Table 4. Multivariate logistic regression for stunting of African children (age 1-60 months, N = 368,450) from 33 African countries.

Variable	Categories	Coefficient (95% CI)
BCG vaccination	No	Reference group
	Yes	0.003 (-0.024-0.030)
DTP1 vaccination	No	Reference group
	Yes	-0.048 (-0.082--0.014)*
DTP2 vaccination	No	Reference group
	Yes	0.018 (-0.018-0.053)
DTP3 vaccination	No	Reference group
	Yes	-0.036 (-0.062--0.011)*
MV vaccination	No	Reference group
	Yes	-0.021 (-0.042-0.000)
Age of child (months)		0.124 (0.122-0.126)***
Age of child (months^2)		-0.002 (-0.002--0.002)***
Sex	Male	Reference group
	Female	-0.262 (-0.276--0.247)***
Birth order		0.022 (0.017-0.028)***
Twin status	Singleton	Reference group
	Twin	0.767 (0.724-0.810)***
Size of child at birth	Very small	Reference group
	Smaller than average	-0.086 (-0.124--0.049)***
	Average	-0.322 (-0.356--0.288)***
	Larger than average	-0.494 (-0.529--0.459)***
	Very large	-0.566 (-0.604--0.527)***
Vitamin A supplementation	No	Reference group
	Yes	0.026 (0.010-0.042)***
Age of mother (years)		-0.010 (-0.012--0.008)***
BMI of mother (kg/m^2)		-0.035 (-0.038--0.033)***
Height z-score mother		-0.048 (-0.053--0.044)***
Breastfeeding till 2 years of age	No	Reference group
	Yes	0.109 (0.092-0.127)***
Preceding birth interval (months)		-0.004 (-0.005--0.004)***
Place of delivery	At home	Reference group
	In public health facility	-0.124 (-0.143--0.106)***
	In private health facility	-0.182 (-0.214--0.151)***
	Other	-0.005 (-0.088-0.077)
International Wealth Index		-0.010 (-0.011--0.010)***
Educational level mother	No education	Reference group
	Incomplete primary	-0.050 (-0.071--0.029)***
	Complete primary	-0.137 (-0.165--0.109)***
	Incomplete secondary	-0.226 (-0.256--0.197)***
	Complete secondary	-0.398 (-0.447--0.349)***
	Higher	-0.595 (-0.674--0.517)***
Marital status mother	Never married	Reference group
	Married/Living together	-0.116 (-0.155--0.077)***
	Widowed	-0.079 (-0.149--0.010)*
	Divorced/Not living together	-0.035 (-0.086-0.017)
Residence	Urban	-0.110 (-0.133--0.088)***
	Rural	Reference group

Model included a fixed effect design whereby dummy variables for the 285 sub-national regions and for the years in which the surveys were held were included in the model, to achieve the best possible control for direct effects of confounders at those levels. *P<0.05, ***P <0.001. BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis, MV: Measles vaccine.

Supplementary Table 5. Multivariate logistic regression of timing of BCG vaccination (continuous) on stunting in African children (age 1-60 months, N = 95,409) without DTP1 vaccination.

Variable	Coefficient (95% CI)
Timing BCG vaccination (months)	0.062 (0.042-0.082)***
Not vaccinated	0.026 (-0.035-0.087)
Unknown age of vaccination	-0.007 (-0.076-0.061)

Model included all control factors for child, maternal and household characteristics as well as region and year dummy variables present under supplementary table 4. ***P <0.001. BCG: Bacillus Calmette-Guérin.

Supplementary Table 6. Multivariate logistic regression of timing of DTP1 vaccination (continuous) on stunting in African children (age 1-60 months, N = 77,070) without BCG vaccination.

Variable	Coefficient (95% CI)
Timing DTP1 vaccination (months)	0.057 (0.031-0.082)***
Not vaccinated	0.249 (0.106-0.393)**
Unknown age of vaccination	0.179 (0.045-0.313)*

Model included all control factors for child, maternal and household characteristics as well as region and year dummy variables present under supplementary table 4. *P<0.05, **P<0.005, ***P <0.001. DTP: Diphtheria-Tetanus-Pertussis.

Supplementary Table 7. Multivariate logistic regression of timing of BCG and DTP1 vaccination (continuous) on stunting in African children (age 1-60 months, N = 363,437).

Variable	Coefficient (95% CI)
BCG	
Timing BCG vaccination (months)	0.038 (0.031-0.046)***
Not vaccinated	0.031 (-0.006-0.067)
Unknown age of vaccination	0.017 (-0.024-0.058)
DTP1	
Timing DTP1 vaccination (months)	0.048 (0.040-0.056)***
Not vaccinated	0.237 (0.190-0.285)***
Unknown age of vaccination	0.164 (0.118-0.211)***

Model included all control factors for child, maternal and household characteristics as well as region and year dummy variables present under supplementary table 4. ***P <0.001. BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis.

Supplementary Table 8. Multivariate logistic regression of timing of BCG and DTP1 vaccination (categorical) on stunting in African children (age 1-60 months, N =363,437).

Variable	Coefficient (95% CI)
Timing BCG vaccination	
Not vaccinated	Reference group
< 1 month	-0.037 (-0.074--0.001)*
1-3 months	0.080 (0.041-0.119)***
3-5 months	0.116 (0.060-0.173)***
5-7 months	0.126 (0.046-0.207)**
> 7 months	0.300 (0.213-0.388)***
Unknown	-0.014 (-0.047-0.019)
Timing DTP1 vaccination	
Not vaccinated	Reference group
< 1 month	-0.265 (-0.329--0.200)***
1-3 months	-0.142 (-0.184--0.100)***
3-5 months	-0.026 (-0.075-0.023)
5-7 months	0.044 (-0.026-0.114)
> 7 months	0.148 (0.071-0.226)***
Unknown	-0.071 (-0.110--0.031)***

Model included all control factors for child, maternal and household characteristics as well as region and year dummy variables present under supplementary table 4.*P<0.05,**P<0.005, ***P <0.001. BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis.

Supplementary Table 9. Interaction analysis of early BCG and DTP1 vaccination (continuous) on stunting in African children (age 1-60 months, N = 363,437).

Variable	Coefficient (95% CI)
BCG	
Timing BCG vaccination (months)	0.036 (0.028-0.045)***
Not vaccinated	-0.031 (-0.141-0.079)
Unknown age of vaccination	0.028 (-0.042-0.098)
DTP1	
Timing DTP1 vaccination (months)	0.048 (0.039-0.057)***
Not vaccinated	0.216 (0.158-0.273)***
Unknown age of vaccination	0.152 (0.079-0.226)***
BCG not vaccinated*DTP1 not vaccinated	0.083 (-0.037-0.203)
BCG not vaccinated*Timing DTP1 vaccination	0.012 (-0.014-0.038)
BCG not vaccinated*DTP1 unknown age of vaccination	0.072 (-0.070-0.213)
DTP1 not vaccinated*Timing BCG vaccination	0.017 (-0.004-0.037)
DTP1 not vaccinated*BCG unknown age of vaccination	0.004 (-0.088-0.096)

Model included all control factors for child, maternal and household characteristics as well as region and year dummy variables present under supplementary table 4. ***P <0.001. BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis.

Calculation of reduction in stunting

To provide a sense of the effects that can be expected from early vaccination (< 1 month), we calculated the reduction in terms of percentages. Calculation of the expected reduction in stunting when all children would have received early vaccination with either BCG or DTP1 required transformation of the odds ratios to prevalence ratios. We used the formula described by Zhang and Yu.[1]

$$RR = \frac{OR}{\left((1-P0)+(P0*OR)\right)}$$

The resulting prevalence ratios are only an approximation of the true prevalence ratios. Based on these prevalence ratios the relative benefit of early vaccination per group was calculated and multiplied with the percentage of children in the corresponding group to retrieve a rough estimation of the total effects that can be expected from early vaccination in our population. This resulted in a possible reduction in stunting of 10-15% if all children in this study would have received BCG and DTP1 vaccination before 1 month of age (Supplementary Table 3).

Supplementary Table 10. Estimation of the total effects that can be expected from early vaccination in our population.

	Percentage children in corresponding group	Fraction stunted	OR	RR	Fraction reduction achievable per group	Percentage reduction achievable total
BCG						
Not vaccinated	21.96	0.46	1.04	1.02	0.020	0.43
Less than 1 month	31.13	0.34	ref	ref	ref	ref
Between 1 and 3 months	10.78	0.42	1.12	1.07	0.064	0.69
Between 3 and 5 months	2.55	0.49	1.17	1.08	0.073	0.19
Between 5 and 7 months	1.07	0.51	1.18	1.08	0.073	0.08
Between 7 and 12 months	1.02	0.59	1.40	1.13	0.117	0.12
						1.51
Vaccinated, age unknown	31.50					0.47
						1.98
DTP1						
Not vaccinated	26.87	0.44	1.30	1.15	0.131	3.51
Less than 1 month	2.07	0.34	ref	ref	ref	ref
Between 1 and 3 months	31.99	0.36	1.13	1.08	0.074	2.37
Between 3 and 5 months	6.33	0.43	1.27	1.14	0.121	0.77
Between 5 and 7 months	1.66	0.49	1.36	1.16	0.135	0.23
Between 7 and 18 months	1.43	0.56	1.51	1.18	0.149	0.21
						7.09
Vaccinated, age unknown	29.65					2.10
						9.19

BCG: Bacillus Calmette-Guérin, DTP: Diphtheria-Tetanus-Pertussis, OR: Odds ratio, RR: Relative risk.

References for supplementary material

1.   Zhang J, Yu KF. What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *JAMA*. 1998; 280(19): 1690–1.