

1 Pathogenicity and phenotypic characterization of enterotoxigenic *Escherichia coli* isolated from a birth cohort of
 2 rural Egyptian children
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Table S1: Numbers and percentages of ETEC isolates that are associated with diarrhea (S) or not associated with diarrhea (AS) by toxin phenotype and child age and ETEC associated diarrhea incidence rate by child age in Abu Homos, Egypt from 2004 to 2007.

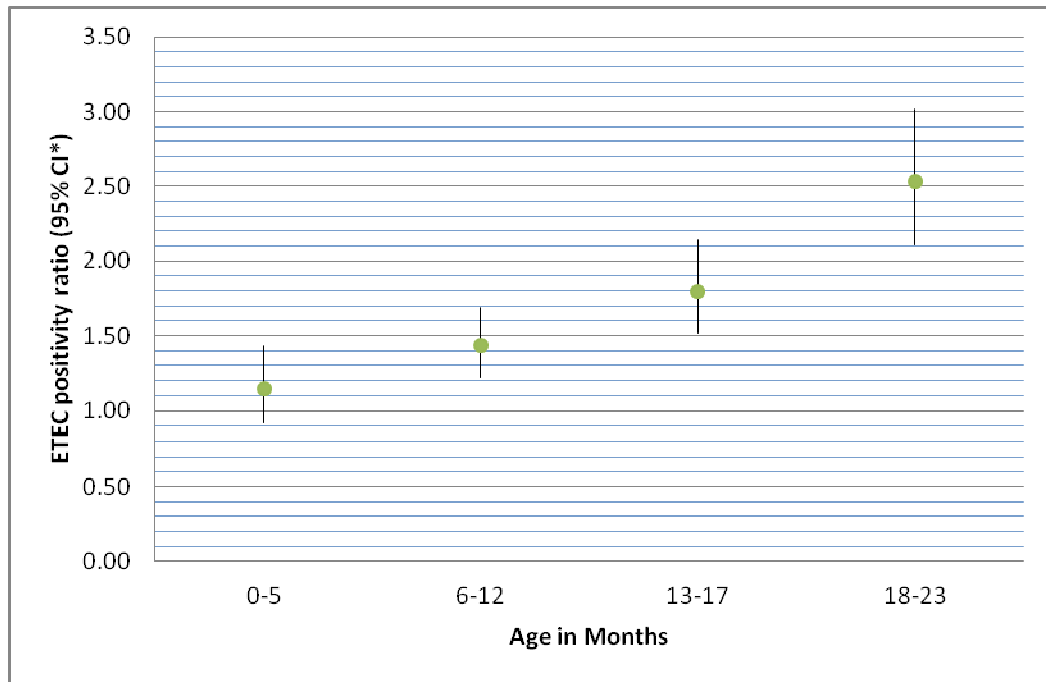
Characteristics	LT, n(%)		ST, n(%)		LTST, n(%)		Total ETEC, n(%)			ETEC incidence rate episode/ child-year
	AS*	S**	AS	S	AS	S	AS	S	all [§]	
0-5	77(10.7)	58(17.4)	76(16.9)	65(22.3)	17(13.2)	25(19)	170(13.1)	148(19.6)	318(15.5)	1.2
6-11	168(23.3)	93(27.8)	138(30.8)	109(37.5)	35(27.1)	42(32)	341(26.3)	238(31.5)	579(28.2)	1.8
12-17	215(29.8)	99(29.6)	120(26.7)	64(22)	31(24)	40(30.5)	366(28.2)	203(26.9)	569(27.7)	1.6
18-23	261(36.2)	84(25.1)	115(25.6)	53(18.2)	46(35.7)	30(22.9)	422(32.4)	167(22.1)	589(28.7)	1.3
Total	721(100)	334(100)	449(100)	291(100)	129(100)	131(100)	1299(100)	756(100)	2055(100)	1.5

* AS= ETEC infection that is not associated with diarrhea

** S = ETEC infection that is associated with diarrhea

§ All ETEC isolates associated with symptomatic or asymptomatic ETEC infection.

4 Figure S1: Age stratified ETEC positivity ratios between asymptomatic and
5 symptomatic children, **Abu Homos, Egypt 2004-2007**



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* 95% CI= 95% confidence interval
Dots represent the ratio of number of ETEC infection in children who have no diarrhea versus children who have diarrhea; and the bars represent the 95% confidence interval of those ratios.

21 **Table S2: Identification of CFAs expressing ETEC isolates in symptomatic**
 22 **and asymptomatic children, classified by toxin types**

Colonization factors	Symptomatic			Asymptomatic		
	LT N=334	ST N=291	LTST N=131	LT N=721	ST N=449	LTST N=129
CFA/1	1(0.3)	48(16.5)	12(9.2)	1 (0.1)	39(8.7) [¥]	3(2.3) [¶]
CFA/11	3(0.9)	16(5.5)	31(23.7)	5(0.7)	14(3.1)	14(10.9) [¥]
- CS1	0(0.0)	10(3.4)	14(10.7)	3(0.4)	7(1.6)	5(3.9) [¶]
- CS2	1(0.3)	4(1.4)	13(9.9)	0(0)	4(0.9)	5(3.9)
- CS3	3(0.9)	16(5.5)	31(23.7)	2(0.3)	14(3.1)	14(10.9) [¥]
CFA/111	2(0.6)	0(0.0)	0(0.0)	1 (0.1)	0(0.0)	0(0.0)
CFA/1V	2(0.6)	43(14.8)	21(16.0)	5(0.7)	61(13.6)	11(8.5)
- CS4	0(0)	2(0.7)	1(0.8)	0(0)	2(0.5)	1(0.8)
- CS5	0(0)	3(1.0)	13(9.9)	1 (0.1)	1(0.2)	3(2.3) [¶]
- CS6	2(0.6)	38(13.1)	19(14.5)	4(0.6)	58(12.9)	10(7.8)
CS7	18(5.4)	0(0.0)	7(5.3)	6(0.8) [¥]	1(0.2)	1(0.8) [¶]
CS17	9(2.7)	0(0.0)	3(2.3)	11(1.5)	1(0.2)	0(0.0)
CS12	3(0.9)	7(2.4)	3(2.3)	15(2.1)	18(4.1)	18(14.0) [¥]
CS14	0(0)	21(7.2)	11(8.4)	0(0)	16(3.6) [¶]	4(3.1)
CFA Positive	38(11.4)	131(45.0)	83(63.4)	44(6.1) [¥]	146(32.5) [¥]	50(38.8) [¥]
CFA Negative	296(88.6)	160(55.0)	48(36.6)	677(93.9) [¥]	303(67.5) [*]	79(61.7) [¥]

23 [¶]: P <0.05 [¥]: P <0.001

24 **Table S3: ETEC-virulence characteristics associated with first documented**
 25 **ETEC in symptomatic and asymptomatic children, Abu Homos, Egypt, 2004-**
 26 **2007.**

ETEC phenotype	% (episodes)	% (controls)	Crude Odds ratio	Adjusted^(a) Odds ratio
LT only	10.9 (53)	8.2 (2)	1.37 (0.96, 1.96)	1.64 (1.09, 2.47) ¶
CF +	1.1 (17)	0.5 (18)	2.24 (1.15, 4.37) ¶	1.88 (0.97, 3.65)
CF -	8.9 (49)	7.5 (2)	1.21 (0.84, 1.74)	1.35 (0.81, 2.26)
ST only	12.3 (64)	7.0 (75)	1.86 (1.31, 2.64) ¥	1.81 (1.17, 2.80) ¶
CF +	3.1 (39)	1.5 (44)	2.07 (1.34, 3.21) ¥	1.88 (1.18, 2.98) ¶
CF -	7.2 (51)	4.9 (73)	1.49 (1.03, 2.16) ¶	1.43 (1.02, 2.01) ¶
Any LT/ST	11.8 (18)	5.0 (17)	2.55 (1.28, 5.10) ¶	2.45 (1.03, 5.82) ¶
CF +	3.7 (11)	2.3 (15)	1.66 (0.75, 3.65)	1.54 (0.65, 3.65)
CF -	3.9 (2)	1.7 (11)	2.35 (0.99, 5.61) ¶	1.92 (0.79, 4.64)
All ETEC	12.6 (135)	7.7 (181)	1.72 (1.36, 2.18) ¥	1.93 (1.46, 2.56) ¥
CF +	4.8 (113)	2.1 (116)	2.38 (1.83, 3.10) ¥	2.16 (1.62, 2.89) ¥
CF -	9.9 (123)	7.1 (189)	1.43 (1.13, 1.82) ¶	1.31 (0.96, 1.78)

27 **(a):** Adjusted for age (in years), gender, season (warm/cool), mother's education
 28 (some education/no education), and crowding (No. of persons per bed room),
 29 using multivariate logistic regression model.

30 ¶: P <0.05

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34 **Table S4: Frequency of ETEC isolation by toxin, colonization factor antigen**
 35 **phenotype, and child's age groups in repeated diarrhea episodes in**
 36 **symptomatic (S) as compared to asymptomatic (AS) children.**

<i>ETEC phenotype</i>	<i>% (N)*</i>	<i>% (N)**</i>	<i>Crude</i>	<i>Adjusted ^(a)</i>
<i>Age (months)</i>	<i>(S)</i>	<i>(AS)</i>	<i>Odds ratio</i>	<i>Odds ratio</i>
Age (0-5)				
LT-CF+	0.4 (2)	0.2 (2)	1.85 (0.54, 6.42)	1.68 (0.52, 5.40)
LT-CF-	4.4 (53)	3.2 (72)	1.38 (0.96, 1.98)	1.29 (0.90, 1.86)
ST-CF+	1.2 (14)	0.7 (15)	1.74 (0.84, 3.61)	1.56 (0.73, 3.23)
ST-CF-	4.3 (51)	2.7 (61)	1.57 (1.08, 2.29) ¶	1.46 (0.99, 2.17)
LTST-CF+	1.0 (2)	0.4 (2)	2.79 (1.14, 6.85) ¶	2.79 (1.20, 6.46) ¶
LTST-CF-	1.1 (13)	0.4 (2)	2.69 (1.15, 6.31) ¶	2.41 (1.03, 5.66) ¶
All ETEC	12.3 (148)	7.6 (170)	1.70 (1.34, 2.14) ¥	1.58 (1.24, 2.01) ¥
Age (6-11)				
LT-CF+	1.0 (2)	0.7 (18)	1.41 (0.68, 2.95)	1.21 (0.55, 2.65)
LT-CF-	6.7 (81)	5.9 (150)	1.15 (0.87, 1.52)	1.19 (0.90, 1.59)
ST-CF+	4.2 (50)	1.8 (46)	2.36 (1.57, 3.54) ¥	2.11 (1.43, 3.09) ¥
ST-CF-	4.9 (59)	3.6 (92)	1.38 (0.98, 1.92)	1.30 (0.95, 1.77)
LTST-CF+	2.0 (24)	0.4 (11)	4.69 (2.29, 9.61) ¥	4.07 (2.16, 7.67) ¥
LTST-CF-	1.0 (2)	0.9 (24)	1.06 (0.53, 2.12)	1.03 (0.54, 1.95)
All ETEC	19.8 (238)	13.4 (341)	1.59 (1.33, 1.91) ¥	1.53 (1.26, 1.85) ¥
Age (12-17)				

LT-CF+	1.0 (2)	0.4 (2)	2.42 (0.98, 5.98)	1.97 (0.80, 4.83)
LT-CF-	9.9 (90)	8.5 (205)	1.19 (0.92, 1.55)	1.09 (0.84, 1.42)
ST-CF+	3.4 (31)	1.8 (43)	1.96 (1.23, 3.13) ¶	1.51 (0.93, 2.46)
ST-CF-	3.7 (33)	3.2 (77)	1.15 (0.76, 1.75)	1.03 (0.70, 1.52)
LTST-CF+	3.1 (2)	0.5 (13)	5.92 (3.05, 11.47) ¥	4.79 (2.57, 8.93) ¥
LTST-CF-	1.3 (2)	0.7 (18)	1.79 (0.86, 3.74)	1.48 (0.74, 2.96)
All ETEC	22.4 (203)	15.1 (366)	1.62 (1.34, 1.97) ¥	1.39 (1.13, 1.72) ¶
Age (18-23)				
LT-CF+	1.7 (2)	0.5 (11)	3.76 (1.65, 8.55) ¥	3.27 (1.50, 7.13) ¶
LT-CF-	10.4 (72)	10.7 (250)	0.98 (0.74, 1.29)	0.92 (0.69, 1.23)
ST-CF+	5.2 (2)	1.8 (42)	3.02 (1.92, 4.75) ¥	2.85 (1.77, 4.57) ¥
ST-CF-	2.5 (17)	3.1 (73)	0.79 (0.46, 1.34)	0.84 (0.53, 1.34)
LTST-CF+	2.8 (19)	0.8 (18)	3.66 (1.91, 7.02) ¥	2.48 (1.36, 4.53) ¥
LTST-CF-	1.6 (11)	1.2 (2)	1.37 (0.66, 2.71)	1.19 (0.61, 2.33)
All ETEC	24.2 (167)	18.0 (422)	1.46 (1.19, 1.78) ¥	1.34 (1.10, 1.64) ¶
Overall ETEC	18.9 (756)	13.6(1299)	1.48 (1.34, 1.63) ¥	1.37 (1.24, 1.52) ¥

37 * Number (percentage) of ETEC isolates during the diarrhea episode

38 (symptomatic)

39 ** Number (percentage) of ETEC isolates from asymptomatic children (had
40 no diarrhea).

41 (a): Adjusted for gender, season (warm/cold), breastfeeding (yes/no), and for the
42 repeated measures of the same child, using multivariate logistic regression model.

43 ¶: P <0.05 ¥: P <0.001

44 **Table S5: Comparison of ETEC enterotoxins combined with CFAs between**
 45 **symptomatic and asymptomatic controls.; Abu Homos, Egypt, 2004-2007*.**

<i>Toxin and CFA type(s)</i>	<i>Symptomatic</i>	<i>Asymptomatic</i>	<i>Adjusted OR (CI)</i>
	% (N) isolates	%(N) isolates	
LT-CS7	5.4 (18)	0.8 (6)	5.74 (2.19, 15.07)¥
ST-CFA/I	16.5 (48)	8.7 (39)	2.48 (1.63, 3.77)¥
ST- CS14	7.2 (21)	3.6 (16)	2.20 (1.22, 3.96)¥
LTST-CFA/I	9.2 (12)	2.3 (3)	9.04 (2.63, 31.15)¥
LTST-CFA/II**	23.7 (31)	10.9 (14)	4.61 (2.76, 7.69)¥
LTST-CS5	9.9 (13)	2.3 (3)	4.73 (1.94, 11.50)¥
LTST-CS7	5.3 (7)	0.8 (1)	9.57 (1.22, 75.19)¶
LTST- CS12	2.3 (3)	14.0 (18)	0.33 (0.11, 0.92)¶

46 * Adjusted for age (6 months intervals), season of diarrhea (warm/cold), child's
 47 breastfeeding status (yes/no), and for the repeated measures of same child,
 48 using multiple logistic regression model. Only variables demonstrated
 49 significance between the two groups were mentioned in the table.

50 **CFA/II = CS1 plus CS3; CS2 plus CS3 or CS3

51 ¶: P <0.05 ¥: P <0.001

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58 **Table S6: Comparison of the detection of a CFA and associated relative**59 **risk (RR) of symptomatic (versus asymptomatic) ETEC infection**

CFAs	Symptomatic	Asymptomatic	Crude RR	Adjusted RR (95% CI)
	N (% isolate) (Cases=4001)	N (% isolates) (Cases=9539)	(95% CI)	**
CFA/I Only	58(1.45)	43 (0.5)	3.22 (2.15, 4.80) ¥	2.82 (1.87, 4.27) ¥
CFA/II Only	48 (1.2)	33 (0.4)	3.27 (2.23, 4.79) ¥	3.14 (2.13, 4.63) ¥
CS3 Only	8 (0.2)	9 (0.09)	2.10 (0.91, 4.84)	2.37 (1.01, 5.54) ¶
CS1 + CS3	24 (0.6)	12 (0.1)	4.24 (2.48, 7.25) ¥	4.18 (2.38, 7.34) ¥
CS2 + CS3	16 (0.4)	9 (0.09)	3.88 (1.80, 8.33) ¥	3.37 (1.58, 7.16) ¶
CFA/IV Only	62 (1.55)	73 (0.77)	1.83 (1.35, 2.48) ¥	1.83 (1.33, 2.50) ¥
CS6 Only	45 (1.12)	65 (0.69)	1.58 (1.12, 2.25) ¶	1.62 (1.12, 2.33) ¶
CS5 + CS6	11 (0.28)	5 (0.05)	3.34 (1.35, 8.26) ¶	3.21 (1.30, 7.91) ¶
Other CFAs	76 (1.88)	89 (0.93)	1.99 (1.49, 2.67) ¥	1.79 (1.33, 2.40) ¥
CS7	23 (0.57)	7 (0.07)	7.54 (3.21, 17.71) ¥	6.19 (2.58, 14.84) ¥
CS14	31 (0.77)	20 (0.21)	3.35 (2.05, 5.49) ¥	2.59 (1.58, 4.24) ¥

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61 95% CI= 95% Confidence Interval

62 ¶: P <0.05 ¥: P <0.001

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