aetiological proportions were multiplied by the regional estimates of diarrhoea incidence, and the resultant regional *Campylobacter* incidence was applied to all countries in that region.

In the 61 low mortality countries (EUR and other subregion "A" countries), we used a literature review that identified national incidence estimates for *Campylobacter* from seven countries: Australia [272], Canada [175], France [174], Netherlands [154], New Zealand [252], United Kingdom [48], and the United States of America [188]. These national estimates were based on systematic reviews, national surveillance data, and expert judgment. In these seven countries, we used the estimated national *Campylobacter* incidence (and range) for that country. For low mortality countries without a national estimate, we used the median *Campylobacter* incidence from the seven national studies. The median incidence was from Canada: 789.2 per 100 000 population (after increasing by 20% to account for travellers according to proxy infomation from the United States of America) with range of 532.3–1140.3. Using a systematic review that identified 63 papers, updated for papers published through 2013 for FERG by the author with the addition of 9 papers, the incidence of Guillain-Barre Syndrome (GBS) in all countries was estimated at 1.4 per 100 000 population (min. 1.1–max. 1.8) [55]. Based on a systematic review, we assumed that 31% (min. 28%–max. 45%) of GBS cases were due to *Campylobacter* infection [280]

Clinical Outcomes

Clinical outcomes were acute *Campylobacter* diarrhoea (severe); acute *Campylobacter* diarrhoea (moderate); acute *Campylobacter* diarrhoea (mild); Guillain-Barre Syndrome due to *Campylobacter* infection; and *Campylobacter* death. We assumed that 2% of *Campylobacter* diarrhoeal cases resulted in severe diarrhoea, 25% of *Campylobacter* diarrhoeal cases resulted in moderate diarrhoea, and 73% of *Campylobacter* diarrhoeal cases resulted in mild diarrhoea.

Duration

In children <5 years of age, duration of severe diarrhoea was 8.4 days; moderate diarrhoea was 6.4 days; and mild diarrhoea was 4.3 days [266]. Based on the assumed distribution of severe, moderate and mild diarrhoea cases, the duration of all *Campylobacter* diarrhoea cases in children <5 years of age was estimated to be 4.9 days (min. 4.3 days–max. 8.4 days). In persons >5 years of age, the duration of *Campylobacter* diarrhoea was 2.8 days [266]. The duration of Guillain-Barre Syndrome due to *Campylobacter* infection was assumed life-long [281].

Disability weight

- Acute *Campylobacter* diarrhoea (severe): GBD2010 disability weight of 0.281 (95% UI 0.184–0.399) for diarrhoea, severe.
- Acute *Campylobacter* diarrhoea (moderate): GBD2010 disability weight of 0.202 (95% UI 0.133–0.299) for diarrhoea, moderate.
- Acute *Campylobacter* diarrhoea (mild): GBD2010 disability weight of 0.061 (95% UI 0.036–0.093) for diarrhoea, mild.
- Guillain-Barre Syndrome due to *Campylobacter* infection: GBD201 disability weight of 0.445 (95% UI 0.303–0.593) for multiple sclerosis, moderate [82].

Mortality

The mortality of *Campylobacter* was estimated separately for middle-to-high mortality countries, and for low mortality countries. For the 133 middle-

to-high mortality countries, we used a modification of the CHERG approach [50]. We received envelopes of diarrhoeal deaths from WHO; because this estimate was not available with an uncertainty interval, we used the uncertainty range from the GBD2010 estimate of diarrhoeal deaths (81.7% to 114.6% around the point estimate) [58]. We then estimated the aetiological proportions of diarrhoeal deaths due to *Campylobacter* and the 10 other diarrhoeal pathogens in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among inpatients [40], and the aetiological proportions of diarrhoeal deaths due to *Campylobacter* and the 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients [40, 282]. The *Campylobacter* aetiological proportions were extracted from studies, and regional median *Campylobacter* aetiological proportions calculated. We modified the CHERG approach by dropping regional median *Campylobacter* aetiological proportion outliers that were >5 times greater than the global median *Campylobacter* aetiological proportion, and replacing missing regional *Campylobacter* aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional *Campylobacter* aetiological proportions were multiplied by the regional estimates of diarrhoea deaths, and the resultant regional *Campylobacter* mortality was applied to all countries in that region. In the 61 low mortality countries (EUR and other subregion "A" countries), we used a literature review that identified *Campylobacter* mortality estimates from five countries: Australia [272], France [174], Netherlands [154], New Zealand [252], and the United States of America [188]. These national estimates were based on systematic reviews, national surveillance data, and expert judgment. In these five countries, we used the estimated national *Campylobacter* mortality (and range) for that country. For low mortality countries without a national estimate, we used the median *Campylobacter* mortality from the five national studies. The median Campyloacter mortality was the mean from the United States: 0.04 per 100 000 population, with a range 0–0.17). We assumed that the case fatality ratio for Gullain-Barre Syndrome due to *Campylobacter* infection was 4.1% (min. 2.4%–max. 6%) [281].

Age distribution

In middle-to-high mortality countries we estimated incidence and mortality of *Campylobacter* diarrhoea seperately for children <5 years of age and persons >5 years of age. In low mortality countries the age distribution for *Campylobacter* diarrhoea cases was 11% <5 years; 8% 5–14 years; 10% 15–24 years; 57% 25–64 years; and 14% >65 years [276]. We assumed the age distribution of *Campylobacter* Guillian-Barre Syndrome cases and deaths were the same as *Campylobacter* diarrhoea cases and deaths.

Sex distribution

Campylobacter sex distribution: 50% male.

A4.15 Norovirus infection

Incidence

The incidence of diarrhoeal norovirus and vomiting-only norovirus were

estimated separately. The incidence of diarrhoeal norovirus was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. To derive "envelopes" of diarrhoea cases, for children <5 years of age we used estimates of diarrhoea incidence from a CHERG systematic review [51] and for persons >5 years of age we used a FERG-commissioned systematic review [52]. We then estimated the aetiological proportions of diarrhoeal illnesses due to norovirus and the 10 other diarrhoeal pathogens[3] in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among outpatients and persons in the community [40], and the aetiological proportions of diarrhoeal illnesses due to norovirus and the 10 other diarrhoeal pathogens in persons >5 years of age, using an updated FERG systematic review of aetiology studies among inpatients, outpatients and persons in the community [40, 274]; these systematic reviews were supplemented by a FERG-commissioned norovirus systematic review [283]. The norovirus aetiological proportions were extracted from studies, and regional median norovirus aetiological proportions calculated. We modified the CHERG approach by dropping regional median norovirus aetiological proportion outliers that were >5 times greater than the global median norovirus aetiological proportion, and replacing missing regional norovirus aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional norovirus aetiological proportions were multiplied by the regional estimates of diarrhoea incidence, and the resultant regional norovirus incidence was applied to all countries in that region.

In the 61 low mortality countries (EUR and other subregion "A" countries), we used a literature review that identified national incidence estimates for norovirus from seven countries: Australia [272], Canada [175], France [174], Netherlands [154], New Zealand [252], United Kingdom [48], and the United States of America [188]. These national estimates were based on systematic reviews, national surveillance data, and expert judgment. In these seven countries, we used the estimated national norovirus incidence (and range) for that country. For low mortality countries without a national estimate, we used the median norovirus incidence from the seven national studies. The median incidence was from the United States: 6978.5 per 100 000 population, with range 4 295.0–10 282.3.

To estimate the incidence of vomiting-only norovirus, based on a FERG-commissioned systematic review [57], we multiplied the incidence of diarrhoeal norovirus by 19% (min. 15%–max. 23%).

Clinical Outcomes

Clinical outcomes were acute norovirus diarrhoea (severe); acute norovirus diarrhoea (moderate); acute norovirus diarrhoea (mild); acute norovirus vomiting-only; and norovirus death. We assumed that 0.5% of norovirus diarrhoea cases resulted in severe diarrhoea, 8.5%

[3] The 11 diarrhoeal pathogens are: non-typhoidal *Salmonella*, *Campylobacter*, *Shigella*, norovirus, enterotoxigenic *E. coli* (ETEC), enteropathogenic *E. coli* (EPEC), *Cryptosporidia*, *Giardia*, *Entamoeba histolytica*, other diarrhoeal agents not known to be foodborne (rotavirus and astrovirus), and unspecified agents.

of norovirus diarrhoea cases resulted in moderate diarrhoea, and 91% of norovirus diarrhoea cases resulted in mild diarrhoea.

Duration

The duration of norovirus diarrhoea was estimated to be 2 days (min. 1 day–max. 4 days). We assumed norovirus vomiting-only cases had the same duration as norovirus diarrhoea cases.

Disability weight

- Acute norovirus diarrhoea (severe): GBD2010 disability weight of 0.281 (95% UI 0.184–0.399) for diarrhoea, severe.
- Acute norovirus diarrhoea (moderate): GBD2010 disability weight of 0.202 (95% UI 0.133–0.299) for diarrhoea, moderate.
- Acute norovirus diarrhoea (mild) and acute norovirus vomiting-only: GBD2010 disability weight of 0.061 (95% UI 0.036–0.093) for diarrhoea, mild [82].

Mortality

The mortality of norovirus was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. We received envelopes of diarrhoeal death from WHO; because this estimate was not available with an uncertainity interval, we used the uncertainity range from the GBD2010 estimate of diarrhoeal deaths (81.7% to 114.6% around the point estimate) [58]. We then estimated the aetiological proportions of diarrhoeal deaths due to norovirus and the other 10 diarrhoeal pathogens in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among inpatients [40], and the aetiological proportions of diarrhoeal deaths due to norovirus and the other 10 diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients [40, 274]; these systematic reviews were supplemented by a FERG-commissioned norovirus systematic review [192]. The norovirus aetiological proportions were extracted from studies, and regional median norovirus aetiological proportions calculated. We modified the CHERG approach by dropping regional median norovirus aetiological proportion outliers that were >5 times greater than the global median norovirus aetiological proportion, and replacing missing regional norovirus aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional norovirus aetiological proportions were multiplied by the regional estimates of diarrhoea deaths, and the resultant regional norovirus mortality was applied to all countries in that region. In the 61 low mortality countries (EUR and other subregion "A" countries), we used a literature review that identified norovirus mortality estimates from four countries: Australia [272], Netherlands [154], New Zealand [252], and the United States of America [188]. These national estimates were based on systematic reviews, national surveillance data, and expert judgment. In these four countries, we used the estimated national norovirus mortality (and range) for that country. For low mortality countries without a national estimate, we used the median norovirus mortality from the four national studies. The median norovirus mortality was the mean from New Zealand and the United

States: 0.18 per 100 000 with a range of 0.11– 0.28. We assumed no deaths among vomiting-only norovirus cases.

Age distribution

In middle-to-high mortality countries we estimated incidence and mortality of norovirus seperately for children <5 years of age and persons >5 years of age. In low mortality countries the age distribution for norovirus was 40% <5 years; 10% 5–14 years; 30% 15–44 years; 10% 45–64 years; and 10% >65 years [284].

Sex distribution

Norovirus sex distribution: 50% male.

A4.16 Shigellosis

Incidence

The incidence of shigellosis was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. To derive "envelopes" of diarrhoea cases, for children <5 years of age we used estimates of diarrhoea incidence from a CHERG systematic review [51] and for persons >5 years of age we used a FERG-commissioned systematic review [52]. We then estimated the aetiological proportions of diarrhoeal illnesses due to Shigella and the 10 other diarrhoeal pathogens[4] in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among outpatients and persons in the community [40], and the aetiological proportion of diarrhoeal illnesses due to Shigella and the 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients, outpatients and persons in the community [40, 274]. The shigellosis aetiological proportions were extracted from studies, and regional median shigellosis aetiological proportions calculated. We modified the CHERG approach by dropping regional median shigellosis aetiological proportion outliers that were >5 times greater than the global median shigellosis aetiological proportion, and replacing missing regional shigellosis aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional shigellosis aetiological proportions were multiplied by the regional estimates of diarrhoea incidence, and the resultant regional shigellosis incidence was applied to all countries in that region.

In the 61 low mortality countries (EUR and other subregion "A" countries), we used a literature review that identified national incidence estimates for shigellosis from five countries: Australia [272], Canada [175], France [174], New Zealand [252], and the United States of America [188]. These national estimates were based on systematic reviews, national surveillance data, and expert judgment. In these five countries, we used the estimated national shigellosis incidence (and range) for that country. For low mortality countries without a national estimate, we used the median shigellosis incidence from the five national studies. The median incidence was from Canada (which was increased

[4] The 11 diarrhoeal pathogens are: non-typhoidal *Salmonella*, *Campylobacter*, *Shigella*, norovirus, enterotoxigenic *E. coli* (ETEC), enteropathogenic *E. coli* (EPEC), *Cryptosporidia*, *Giardia*, *Entamoeba histolytica*, other diarrhoeal agents not known to be foodborne (rotavirus and astrovirus), and unspecified agents.

by 8% to account for travellers, using proxy information from the United States of America) which was 23.6 per 100 000 population, with a range of 13.2–38.7.

Clinical Outcomes

Clinical outcomes were acute Shigella diarrhoea (severe); acute Shigella diarrhoea (moderate); acute Shigella diarrhoea (mild); and Shigella death. We assumed that 2% of Shigella cases resulted in severe diarrhoea, 25% of Shigella cases resulted in moderate diarrhoea, and 73% of Shigella cases resulted in mild diarrhoea.

Duration

In children <5 years of age, duration of severe diarrhoea was 8.4 days, moderate diarrhoea was 6.4 days, and mild diarrhoea was 4.3 days [266]. Based on the assumed distribution of severe, moderate and mild diarrhoea cases, the duration of Shigella diarrhoea cases in children <5 years of age was estimated to be 4.9 days (min. 4.3 days–max. 8.4 days). In persons >5 years of age, the duration of Shigella diarrhoea was 2.8 days [266].

Disability weight

- Acute Shigella diarrhoea (severe): GBD2010 disability weight of 0.281 (95% UI 0.184–0.399) for diarrhoea, severe.
- Acute Shigella diarrhoea (moderate): GBD2010 disability weight of 0.202 (95% UI 0.133–0.299) for diarrhoea, moderate.
- Acute Shigella diarrhoea (mild): GBD2010 disability weight of 0.061 (95% UI 0.036–0.093) for diarrhoea, mild [82].

Mortality

The mortality of shigellosis was estimated separately for middle-to-high mortality countries, and low mortality countries.

For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. We received envelopes of diarrhoeal deaths from WHO; because this estimate was not available with an uncertainity interval, we used the uncertainity range from the GBD2010 estimate of diarrhoeal deaths (81.7% to 114.6% around the point estimate) [58]. We then estimated the aetiological proportions of diarrhoeal deaths due to Shigella and 10 other diarrhoeal pathogens[5] in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among inpatients [40], and the aetiological proportions of diarrhoeal deaths due to Shigella and the 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients [40, 274]. The shigellosis aetiological proportions were extracted from studies, and regional median shigellosis aetiological proportions calculated. We modified the CHERG approach by dropping regional median shigellosis aetiological proportion outliers that were >5 times greater than the global median shigellosis aetiological proportion, and replacing missing regional shigellosis aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional shigellosis aetiological proportions were multiplied by the

[5] The 11 diarrhoeal pathogens are: non-typhoidal *Salmonella*, *Campylobacter*, *Shigella*, norovirus, enterotoxigenic *E. coli* (ETEC), enteropathogenic *E. coli* (EPEC), *Cryptosporidia*, *Giardia*, *Entamoeba histolytica*, other diarrhoeal agents not known to be foodborne (rotavirus and astrovirus), and unspecified agents.

regional estimates of diarrhoea deaths, and the resultant regional shigellosis mortality was applied to all countries in that region. In the 61 low mortality countries (EUR and other subregion "A" countries), we used a literature review that identified shigellosis mortality estimates from the United States of America [188]. This national estimate was based on national surveillance data, and expert judgment. We used the shigellosis mortality from the United States of America for all low mortality countries: 0.013 per 100,000 population with range 0.002 - 0.085.

Age distribution

In middle-to-high mortality countries we estimated incidence and mortality of *Shigella* separately for children <5 years of age and persons >5 years of age. In low mortality countries the age distribution for *Shigella* cases was 24% <5 years; 23% 5-14 years; 10% 15-24 years; 39% 25-64 years; and 4% >65 years [276].

Sex distribution

Shigella sex distribution: 50% male.

A4.17 Enterotoxigenic Escherichia coli (ETEC) infection

Incidence

The incidence of diarrhoea due to ETEC was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. To derive "envelopes" of diarrhoea cases, for children <5 years of age we used estimates of diarrhoea incidence from a CHERG systematic review [51] and for persons >5 years of age we used a FERG-commissioned systematic review [52]. We then estimated the aetiological proportions of diarrhoeal illnesses due to ETEC and 10 other diarrhoeal pathogens in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among outpatients and persons in the community [40], and the aetiological proportion of diarrhoeal illnesses due to ETEC and 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients, outpatients and persons in the community [40, 274]. The ETEC aetiological proportions were extracted from studies, and regional median ETEC aetiological proportions calculated. We modified the CHERG approach by dropping regional median ETEC aetiological proportion outliers that were >5 times greater than the global median ETEC aetiological proportion, and replacing missing regional ETEC aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional ETEC aetiological proportions were multiplied by the regional estimates of diarrhoea incidence, and the resultant regional ETEC incidence was applied to all countries in that region. In the 61 low mortality countries (EUR and other subregion "A" countries), a liturature review identified a national incidence estimates for ETEC in the United States of America that was based on national surveillance data, and expert judgment [188]. We used the ETEC incidence from the United States for all low mortality countries; 13.3 per 100,000 population with range 3.9 - 34.2.

Clinical Outcomes

Clinical outcomes were acute ETEC diarrhoea (severe); acute ETEC diarrhoea (moderate); acute ETEC diarrhoea (mild); and death. We assumed that 0.5% of ETEC cases resulted in severe diarrhoea, 8.5% of ETEC cases resulted in moderate diarrhoea, and 91% of ETEC cases resulted in mild diarrhoea.

Duration

In children <5 years of age, duration of severe diarrhoea was 8.4 days, moderate diarrhoea was 6.4 days, and mild diarrhoea was 4.3 days [266]. Based on the assumed distribution of severe, moderate and mild diarrhoea cases, the duration of ETEC diarrhoea cases in children <5 years of age was estimated to be 4.9 days (min. 4.3 days–max. 8.4 days). In persons >5 years of age, the duration of ETEC diarrhoea was 2.8 days [266].

Disability weight

- Acute ETEC diarrhoea (severe): GBD2010 disability weight of 0.281 (95% UI 0.184–0.399) for diarrhoea, severe.
- Acute ETEC diarrhoea (moderate): GBD2010 disability weight of 0.202 (95% UI 0.133–0.299) for diarrhoea, moderate.
- Acute ETEC diarrhoea (mild): GBD2010 disability weight of 0.061 (95% UI 0.036–0.093) for diarrhoea, mild [82].

Mortality

The mortality of ETEC was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. We received envelopes of diarrhoeal deaths from WHO; because this estimate was not available with an uncertainty interval, we used the uncertainty range from the GBD2010 estimate of diarrhoeal deaths (81.7% to 114.6% around the point estimate) [58]. We then estimated the aetiological proportions of diarrhoeal deaths due to ETEC and 10 other diarrhoeal pathogens[6] in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among inpatients [40], and the aetiological proportions of diarrhoeal deaths due to ETEC and 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients [40, 274]. The ETEC aetiological proportions were extracted from studies, and regional median ETEC aetiological proportions calculated. We modified the CHERG approach by dropping regional median ETEC aetiological proportion outliers that were >5 times greater than the global median ETEC aetiological proportion, and replacing missing regional ETEC aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant ETEC aetiological proportions were multiplied by the regional estimates of diarrhoea deaths, and the resultant regional ETEC mortality was applied to all countries in that region. We estimated no ETEC deaths in the 61 low mortality countries (EUR and other subregion "A" countries).

[6] The 11 diarrhoeal pathogens are: non-typhoidal *Salmonella*, *Campylobacter*, *Shigella*, norovirus, enterotoxigenic *E. coli* (ETEC), enteropathogenic *E. coli* (EPEC), *Cryptosporidia*, *Giardia*, *Entamoeba histolytica*, other diarrhoeal agents not known to be foodborne (rotavirus and astrovirus), and unspecified agents.

Age distribution

In middle-to-high mortality countries we estimated incidence of diarrhoea seperately for children <5 years of age and persons >5 years of age. In low mortality countries, no information was available on the age distribution of EPEC cases; we therefore, used the age distribution for *Campylobacter* diarrhoea cases as a proxy, which was 11% <5 years; 8% 5–14 years; 10% 15–24 years; 57% 25–64 years; and 14% >65 years.

Sex distribution

ETEC sex distribution: 50% male.

A4.18 Enteropathogenic Escherichia coli (EPEC) infection

Incidence

The incidence of diarrhoea due to EPEC was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. To derive "envelopes" of diarrhoea cases, for children <5 years of age we used estimates of diarrhoea incidence from a CHERG systematic review [51] and for persons >5 years of age we used a FERG-commissioned systematic review [52]. We then estimated the aetiological proportions of diarrhoeal illnesses due to EPEC and the 10 other diarrhoeal pathogens[7] in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among outpatients and persons in the community [40], and the aetiological proportion of diarrhoeal illnesses due to EPEC and the 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients, outpatients and persons in the community [40, 274]. The EPEC aetiological proportions were extracted from studies, and regional median EPEC aetiological proportions calculated. We modified the CHERG approach by dropping regional median EPEC aetiological proportion outliers that were >5 times greater than the global median EPEC aetiological proportion, and replacing missing regional EPEC aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant regional EPEC aetiological proportions were multiplied by the regional estimates of diarrhoea incidence, and the resultant regional EPEC incidence was applied to all countries in that region. In the 61 low mortality countries (EUR and other subregion "A" countries), we adopted the assumption used in the national study in the United States of America that EPEC was as common as enterotoxigenic *E. coli* [188]. The national estimate for ETEC in the United States of America was based on national surveillance data, and expert judgment. For low mortality countries, we used the EPEC incidence from the United States of America, which was 13.33 per 100 000 population with range 4.00 – 34.24.

[7] The 11 diarrhoeal pathogens are: non-typhoidal *Salmonella*, *Campylobacter*, *Shigella*, norovirus, enterotoxigenic *E. coli* (ETEC), enteropathogenic *E. coli* (EPEC), *Cryptosporidia*, *Giardia*, *Entamoeba histolytica*, other diarrhoeal agents not known to be foodborne (rotavirus and astrovirus), and unspecified agents.

Clinical Outcomes

Clinical outcomes were acute EPEC diarrhoea (severe); acute EPEC diarrhoea (moderate); acute EPEC diarrhoea (mild); and EPEC death. We assumed that 0.5% of EPEC cases resulted in severe

diarrhoea, 8.5% of EPEC cases resulted in moderate diarrhoea, and 91% of EPEC cases resulted in mild diarrhoea.

Duration

In children <5 years of age, duration of severe diarrhoea was 8.4 days, moderate diarrhoea was 6.4 days, and mild diarrhoea was 4.3 days [188]. Based on the assumed distribution of severe, moderate and mild diarrhoea cases, the duration of EPEC diarrhoea cases in children <5 years of age was estimated to be 4.9 days (min. 4.3 days–max. 8.4 days). In persons >5 years of age, the duration of diarrhoea was 2.8 days [266].

Disability weight

- Acute EPEC diarrhoea (severe): GBD2010 disability weight of 0.281 (95% UI 0.184–0.399) for diarrhoea, severe.
- Acute EPEC diarrhoea (moderate): GBD2010 disability weight of 0.202 (95% UI 0.133–0.299) for diarrhoea, moderate.
- Acute EPEC diarrhoea (mild): GBD2010 disability weight of 0.061 (95% UI 0.036–0.093) for diarrhoea, mild [82].

Mortality

The mortality of EPEC was estimated separately for middle-to-high mortality countries, and low mortality countries. For the 133 middle-to-high mortality countries, we used a modification of the CHERG approach [50]. We received envelopes of diarrhoeal deaths from WHO; because this estimate was not available with an uncertainity interval, we used the uncertainity range from the GBD2010 estimate of diarrhoeal deaths (81.7% to 114.6% around the point estimate) [58]. We then estimated the aetiological proportions of diarrhoeal deaths due to EPEC and the 10 other diarrhoeal pathogens in children <5 years of age using a CHERG and FERG systematic review of aetiology studies among inpatients [40], and the aetiological proportions of diarrhoeal deaths due to EPEC and the 10 other diarrhoeal pathogens in persons >5 years of age using an updated FERG systematic review of aetiology studies among inpatients [40, 274]. The EPEC aetiological proportions were extracted from studies, and regional median EPEC aetiological proportions calculated. We modified the CHERG approach by dropping regional median EPEC aetiological proportion outliers that were >5 times greater than the global median EPEC aetiological proportion, and replacing missing regional EPEC aetiological proportions with the global median. Furthermore, for children <5 years of age, we proportionally decreased the aetiological proportions for all 11 diarrhoeal pathogens in each region so that the sum of the aetiological proportions for all diarrhoeal pathogens in a region equalled 1. The resultant EPEC aetiological proportions were multiplied by the regional estimates of diarrhoea deaths, and the resultant regional EPEC mortality was applied to all countries in that region. We estimated no EPEC deaths in the 61 low mortality countries (EUR and other subregion "A" countries).

Age distribution

In middle-to-high mortality countries we estimated incidence and mortality of EPEC separately for children <5 years of age and persons >5 years of age. In low mortality countries, no information was available on the age distribution of EPEC cases; we therefore used the age distribution for *Campylobacter* diarrhoea cases as a proxy, which was 11% <5 years; 8% 5–14 years; 10% 15–24 years; 57% 25–64 years; and 14% >65 years.

Sex distribution

EPEC sex distribution: 50% male.