Epidemiology of rotavirus diarrhoea in Africa: a review to assess the need for rotavirus immunization

N.A. Cunliffe,1 P.E. Kilgore,2 J.S. Bresee,3 A.D. Steele,4 N. Luo,5 C.A. Hart,6 & R.I. Glass7

Rapid progress towards the development of rotavirus vaccines has prompted a reassessment of the disease burden of rotavirus diarrhoea in developing countries and the possible impact of these vaccines in reducing diarrhoeal morbidity and mortality among infants and young children. We examined the epidemiology and disease burden of rotavirus diarrhoea among hospitalized and clinic patients in African countries through a review of 43 published studies of the etiology of diarrhoea. The studies were carried out from 1975 through 1992, and only those in which a sample of more than 100 patients with diarrhoea were specifically screened for rotavirus by using an established diagnostic test were included.

Rotavirus was detected in a median of 24% of children hospitalized for diarrhoea and in 23% who were treated as outpatients; 38% of the hospitalized patients with rotavirus were <6 months and 81% were <1 year of age. Rotavirus was detected year-round in nearly every country and generally exhibited distinct seasonal peaks during the dry months. In 5 countries where rotavirus strains had been G-typed, 74% of strains were of one of the four common serotypes (G1 to G4), G1 was the predominant serotype, and 26% were non-typeable. This cumulative experience from 15 African countries suggests that rotavirus is the most important cause of severe diarrhoea in African children and that most strains in circulation today belong to common G types that are included in reassortant vaccines. Wherever large numbers of cases of rotavirus diarrhoea occur early in infancy, immunization at birth may protect the children before their first symptomatic infection.

Introduction

In developing countries, diarrhoea is a major cause of disease among under-5-year-olds, with an estimated 2.4–3.3 million deaths each year (I, 2). Rotavirus is the single most important etiological agent implicated in severe dehydrating diarrhoea, and is responsible each year for an estimated 600000 to 870000 childhood deaths (3, 4). Improvements in water supplies and excreta disposal may reduce the transmission of enteric bacteria and parasites, but are unlikely to reduce the incidence of rotavirus diarrhoea. Vaccines are therefore being developed as the primary public health intervention to reduce the burden of diarrhoea caused by rotavirus (5, 6).

Gastroenteritis is a major cause of childhood morbidity and mortality in Africa (I, 7). Although many studies have documented the high prevalence of rotavirus among African children with mild or severe diarrhoea, these have never been analysed to

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provide a broader picture of the importance of rotavirus in this region. The objectives of this review of published studies of rotavirus diarrhoea in northern, southern and sub-Saharan Africa are as follows: to estimate the disease burden and assess the need for a rotavirus immunization programme; to examine the age distribution of severe cases to determine an optimal schedule for immunization; to evaluate the circulating rotavirus strains to identify unusual types that could be incorporated into a vaccine; and to determine the seasonal patterns of rotavirus infection and their links with possible routes of transmission or regional trends relevant to immunization strategies.

Methods

Papers were identified for this review from a multilingual MEDLINE search of publications from 1975 to 1996 using the keywords of “rotavirus” and the name of each African country, or from citations noted in studies found in the MEDLINE search. Excluded were studies in which data on fewer than 100 children were reported and surveys of less than 3 months’ duration. The studies were grouped by setting (hospital, outpatient, combined in- and outpatient, and community based) and analysed separately, since rotavirus is detected more frequently among children with severe disease (i.e., hospitalized) than in a community setting (8). For each study, the prevalence of rotavirus diarrhoea among all patients with diarrhoea was examined by age group. The prevalence of neonatal rotavirus infections and of mixed rotavirus/bacterial or parasitic infections was examined where data were available.

Seasonal and geographical trends in rotavirus diarrhoea were reviewed from studies presenting data on monthly rotavirus detections for at least one year. Climatic information supplied in each publication was used to define months as rainy or dry. For each report, we determined the peak season for rotavirus transmission by plotting the monthly detection rates and comparing them with the median monthly value for rotavirus detection for the year or for the study period. To test the hypothesis that rotavirus peaks were associated with dry seasons, we performed a stratified analysis by region because previous studies had identified differences in the seasonality of rotavirus detection with changes in latitude (9). Finally, we reviewed studies in which rotavirus strains were characterized for G-types (VP7 genes) and P-types (VP4 genes) to examine the distribution of rotavirus strains in circulation.

Results

Overview of inpatient and outpatient studies

A total of 27 inpatient and 16 outpatient studies from 15 countries met the criteria for inclusion in this review. The inpatient studies (Table 1), which were conducted between 1975 and 1992, included children aged ≤15 years. Twelve studies lasted for a full year; 6 studies were continued longer. Faecal specimens were screened by enzyme-linked immunosorbent assay (ELISA) in 18 studies, by latex agglutination (LA) in 3, electron microscopy (EM) in 4, viral culture in 2, and immunoelectro-osmophoresis (IEOP) in 1 study. Rotavirus was detected in a median of 24% (range, 13–55%) of children hospitalized for diarrhoea.

The 16 outpatient studies (Table 2), which were conducted between 1977 and 1992, included children up to 14 years of age. Eight studies lasted 12 months and none continued for more than 2 years. Faecal specimens were screened by ELISA in 11 studies and by EM, IEOP and LA in the others. Rotavirus was detected in a median of 23% (range, 7–40%) of children. These investigations contrast with 9 community-based surveys of diarrhoea, where rotavirus was detected in fewer than 10% (range, 2.3–8%) of children with diarrhoea (10–18). Of 23 inpatient and outpatient studies that tested for pathogens other than rotavirus, 19 (83%) identified rotavirus as the most common diarrhoeal pathogen.

Age of patients with rotavirus diarrhoea

Of the 27 inpatient studies, 11 surveyed infants and children <2 years of age and 19 included infants and children <5 years of age (Table 1). The median rates of rotavirus detection did not differ significantly between studies of younger versus older children in either the inpatient (26% versus 29%) or outpatient settings (25% versus 20%).

Data from 10 inpatient and 6 outpatient studies indicated the age distribution of rotavirus diarrhoea in patients <2 years of age, the age group with the highest morbidity and mortality from rotavirus diarrhoea. Children hospitalized for rotavirus diarrhoea tended to be younger than those seen as outpatients (median age, 6 months versus 9 months). Moreover, 81% of children hospitalized (compared with 61% of those treated as outpatients) were <1 year of age; 97% of the cases among inpatient children occurred by the age of 18 months. In 3 inpatient studies where detailed age data were available, a median of 38% of patients with rotavirus diarrhoea were <6 months of age.
## Table 1: Rotavirus detection rates from 27 inpatient studies of paediatric gastroenteritis in Africa

<table>
<thead>
<tr>
<th>Country or area</th>
<th>Reference</th>
<th>Years</th>
<th>Duration (months)</th>
<th>Detection assay</th>
<th>Number</th>
<th>Age (years)</th>
<th>% with rotavirus</th>
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<td>87</td>
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</tr>
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<td>Benin</td>
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<td>220</td>
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<td>NR^d</td>
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<td>Pretoria</td>
<td>59</td>
<td>1989</td>
<td>12</td>
<td>ELISA</td>
<td>292</td>
<td>&lt;3^f</td>
<td>33</td>
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<tr>
<td>Pretoria</td>
<td>60</td>
<td>1989</td>
<td>12</td>
<td>ELISA</td>
<td>605</td>
<td>&lt;12</td>
<td>16^e</td>
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<td>Transkei</td>
<td>56</td>
<td>1988–89</td>
<td>12</td>
<td>ELISA</td>
<td>216</td>
<td>&lt;2^e</td>
<td>33</td>
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</tbody>
</table>

| Median (range)  | 12 (4–60) | 237 (104–1316) | 24 (13–55) |

* Includes studies with > 100 children.

^a ELISA = enzyme-linked immunosorbent assay; LA = latex agglutination; EM = electron microscopy; IEOP = immunoelectrophoresis.

^b Age selection criteria not given, but majority of cases less than the stated age.

^c NR = not reported.

^d Includes nosocomial rotavirus infections.

**Potential bias.** To examine potential bias introduced by our selection criteria, we examined detection rates from additional studies excluded from this review because they included a mixture of both inpatients and outpatients, enrolled fewer than 100 children, or lasted less than 3 months. The 8 investigations from 4 countries (19–26) that enrolled both inpatients and outpatients had a median detection rate of 20% (range, 11–33%), not significantly different from studies that included only outpatients (23%) or inpatients (24%) (data not shown here). In addition, 19 other studies from 8 countries were excluded because of small numbers of patients and their short duration. In 12 inpatient studies (27–38) the median proportion of cases attributable to rotavirus infection was higher (32%; range, 4–61%), compared with 7 outpatient studies (29, 39–44) in which the median detection was lower (10%; range, 0–44%).

**Seasonality of rotavirus infection**

We examined the seasonal patterns of disease by plotting the monthly detections of rotavirus and comparing them with the local wet and dry seasons (Fig. 1). In all countries except Ghana, rotavirus detections occurred throughout the year. Seasonal peaks were commoner during dry seasons than wet

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Fig. 1. Percentage monthly rate of diarrhoeal cases excreting rotavirus in 12 African countries. a) Northern countries, b) Southern countries. The yearly median is marked; the shaded areas indicate peaks above the median value.

a) Northern latitudes

seasons, but this pattern was not consistent for every country. We stratified countries by latitude into three regions — northern, sub-Saharan, and southern Africa — to determine whether large differences in climate were associated with peaks in rotavirus activity. In northern Africa (Egypt and Morocco), rotavirus had a single peak in the autumn and winter, but not during the dry season. In southern Africa (South Africa, Madagascar, Zambia and Zimbabwe), rotavirus generally had a single peak in the autumn and winter, which overlapped with the dry seasons. In sub-Saharan Africa (Central African Republic, Ethiopia, Ghana, Kenya, Nigeria and Somalia), rotavirus detections were 6 times more likely to have peaks during the dry season (P < 0.0001), but the seasonality of virus detection was not clearly defined by the onset or end of the dry season alone.

Rotavirus strain characteristics

Rotavirus strains were characterized for G serotype in 8 studies from 5 countries and for P genotype in
3 studies from South Africa (Table 3). The G1 serotype was commonest (42%), followed by G2 (16%), G4 (12%) and G3 (4%); the G serotypes of 26% of strains could not be determined. The P genotype of 68% of strains could be determined; P[8] was the commonest (44%), followed by P[4] (15%), P[6] (6%), P[12] (0.7%) and P[9] (0.6%). Mixed rotavirus infections (either G or P type) were identified in 1.8% of specimens. In early studies, strains were characterized by electropherotype or subgroup. Strains with long electropherotypes and/or subgroup II specificity were predominant in most countries (Central African Republic, Egypt, Ethiopia, Gambia, Ghana, Kenya, Malawi, Morocco, Senegal, and South Africa (40, 45–65), but short electropherotypes were common in the United Republic of Tanzania (30), Madagascar (24), and Gambia (62, 63). Rotaviruses with atypical combina-
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Table 2: Rotavirus detection rates from 16 outpatient studies of paediatric gastroenteritis in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
<th>Years</th>
<th>Duration (months)</th>
<th>Detection assay</th>
<th>Number</th>
<th>Age (years)</th>
<th>% with rotavirus</th>
</tr>
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<td>Egypt</td>
<td>104</td>
<td>1986</td>
<td>12</td>
<td>ELISA</td>
<td>200</td>
<td>&lt;2</td>
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<td>350</td>
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<td><strong>Sub-Saharan Africa</strong></td>
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<td>Cameroon</td>
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<td>156</td>
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<td>10</td>
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<td>LA</td>
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<td>13</td>
<td>ELISA</td>
<td>225</td>
<td>&lt;2</td>
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</table>

Median (range) 12 (3-24) 208 (115-1667) 23 (7-40)

* Includes studies with > 100 children.
* ELISA = enzyme-linked immunosorbent assay; LA = latex agglutination; EM = electron microscopy; IEO = immunoelectrophoresis.
* NR = not reported.
* Age selection criteria not given, but majority of cases less than the stated age.

of subgroup and electropherotype indicative of natural reassortment between genetically distinct rotaviruses were detected in Kenya (53) and South Africa (55). Strains with additional RNA segments indicative of genomic rearrangement were found in Kenya (53) as well as among South African neonates (66). Non-group A rotaviruses were detected in 15% of rotavirus-positive stools from a study in Ghana, and included 3 strains with RNA patterns indicative of group C rotavirus (67).

**Mixed rotavirus infections**

Data on mixed infections from 7 studies that each included more than 50 children with rotavirus diarrhoea (17, 20, 21, 68-71) identified at least one other potential enteropathogen in a median of 23% of rotavirus cases (range, 14-64%). In several studies, these mixed infections were associated with malnutrition (21) and prolonged diarrhoea (70, 72).

**Neonatal rotavirus infections**

Eight studies from three countries (Table 4) identified rotavirus in a median of 14% of newborns (range, 9-38%), most of whom were <1 week old (66, 73-79). These infections were predominantly asymptomatic, and in Kenya were associated with diarrhoea in pre-term newborns (73). Neonatal infections have also been detected in the Gambia between seasonal epidemics (62). In South Africa, neonatal strains were characterized to be P[6]G4 (60, 80-82).

**Discussion**

Diarrhoea remains a major contributor to the high rates of childhood mortality in Africa. Of the 25 million children born each year in sub-Saharan Africa, 4.3 million (about 1 in 6) will die by the age of 5 years and about one-fifth of these deaths (850,000) will be from diarrhoea. This review of 43 studies from 15 African countries has examined the etiology of acute gastroenteritis in children, and found rotavirus to be the single most common cause of diarrhoea, responsible for about one-fourth of all diarrhoea cases identified in both hospital patients and outpatients. If 20-25% of these diarrhoeal deaths are due to rotavirus, an effective properly administered rotavirus vaccine could potentially prevent 170,000-210,000 childhood deaths every year, or
Table 3: Summary of rotavirus G and P types in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
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<th>No. tested</th>
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<th>G type</th>
<th>P type</th>
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<td>G1</td>
<td>G2</td>
<td>G3</td>
<td>G4</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Saharan Africa</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central African</td>
<td>45</td>
<td>1983–85</td>
<td>152</td>
<td>ELISA</td>
<td>102</td>
<td>22</td>
<td>19</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Republic Gambia</td>
<td>62</td>
<td>1982–84</td>
<td>24</td>
<td>ELISA</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>—</td>
</tr>
<tr>
<td>Kenya</td>
<td>52</td>
<td>1982–83</td>
<td>16</td>
<td>FFN</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>—</td>
</tr>
<tr>
<td>Nigeria</td>
<td>115</td>
<td>1989</td>
<td>13</td>
<td>ELISA</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>—</td>
</tr>
<tr>
<td><strong>Southern Africa</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ga-Rankuwa</td>
<td>58</td>
<td>1989</td>
<td>94</td>
<td>ELISA</td>
<td>40</td>
<td>12</td>
<td>0</td>
<td>9</td>
<td>—</td>
</tr>
<tr>
<td>Pretoria</td>
<td>116</td>
<td>1984–93</td>
<td>227</td>
<td>HYB</td>
<td>35</td>
<td>95</td>
<td>13</td>
<td>6</td>
<td>P[8]</td>
</tr>
<tr>
<td>Pretoria</td>
<td>60</td>
<td>1989</td>
<td>14</td>
<td>HYB</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>Multicentre</td>
<td>81</td>
<td>1986–89</td>
<td>572</td>
<td>HYB</td>
<td>214</td>
<td>91</td>
<td>9</td>
<td>98</td>
<td>83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>980</td>
<td></td>
<td>414</td>
<td>153</td>
<td>35</td>
<td>119</td>
<td>121</td>
</tr>
</tbody>
</table>

| (G types)              | 813       |         |            |               |        |        |            |             |             |    |   |   |
| (P types)              | (42)      | (16)    | (4)        | (12)          | (15)   | (44)   | (6)        | (0.6)       | (0.7)       | — | — | — |

* P genotype designations as recommended by Rotavirus Nomenclature Working Group (117).
* ELISA = enzyme-linked immunosorbent assay; FFN = fluorescent-focus-neutralization; HYB = hybridization.
* G4 serotyping not performed.
* G2 was the most common serotype in the first year, which was replaced by G1 the following year.
* Antigenic mosaic strains.
* Includes three mixed infections with P[9] genotype.
* Includes a single neonatal strain.
* Includes strains from Pretoria, Ga-Rankuwa, Johannesburg, Umtata and Port Elizabeth.
* Includes 28 neonatal strains.
* Figures in parentheses are percentages.
Table 4: Summary of clinical studies of neonatal infections among hospitalized infants in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
<th>No. of patients</th>
<th>Rotavirus infection (%)</th>
<th>Age at infection</th>
<th>Detection assay*</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>73</td>
<td>128</td>
<td>9</td>
<td>NRb</td>
<td>ELISA</td>
<td>Pre-term</td>
</tr>
<tr>
<td>Nigeria</td>
<td>74</td>
<td>213</td>
<td>11</td>
<td>71%, &lt;1 week</td>
<td>ELISA</td>
<td>Hospital stay &lt;48hrs</td>
</tr>
<tr>
<td>Nigeria</td>
<td>75</td>
<td>84</td>
<td>38</td>
<td>75% nosocomial</td>
<td>ELISA</td>
<td>24% nosocomial</td>
</tr>
<tr>
<td>South Africa</td>
<td>76</td>
<td>122</td>
<td>34</td>
<td>63%, &lt;1 week</td>
<td>EM</td>
<td>1 case with necrotizing enterocolitis</td>
</tr>
<tr>
<td>South Africa</td>
<td>77</td>
<td>125</td>
<td>15</td>
<td>80%, &lt;5 days</td>
<td>ELISA</td>
<td>Re-infection in 4/14 at follow-up</td>
</tr>
<tr>
<td>South Africa</td>
<td>78</td>
<td>86</td>
<td>13</td>
<td>NRb</td>
<td>ELISA</td>
<td>—</td>
</tr>
<tr>
<td>South Africa</td>
<td>79</td>
<td>324</td>
<td>32</td>
<td>Peak, 4–5 days</td>
<td>EM</td>
<td>—</td>
</tr>
<tr>
<td>South Africa</td>
<td>66</td>
<td>78</td>
<td>13</td>
<td>1–2 weeks</td>
<td>EM</td>
<td>Collected in community</td>
</tr>
</tbody>
</table>

Median (range) 124 (78–324) 14 (9–38)

* ELISA = enzyme-linked immunosorbent assay; EM = electron microscopy.

about one in 20 deaths (4–5%). In other terms, between 1 in 120 and 1 in 150 children would die by age 5 years from rotavirus diarrhoea. While previous public health efforts to decrease diarrhoea mortality focused on early treatment with oral rehydration salts, the availability of rotavirus vaccine in the near future may provide an important new public health tool to address the problem of child survival in Africa.

This study provides several insights into the role that rotavirus vaccine might play in preventing diarrhoeal morbidity and mortality, while underscoring the challenges and pitfalls to vaccine development that may lie ahead. In this review, 81% of hospitalizations for rotavirus occurred in children during their first year of life, and 38% of cases occurred before 6 months of age — figures quite different from those for children in industrialized countries, where more disease occurs at an older age. Rotavirus vaccine would have to be administered very early and with high coverage in the first few months of life to prevent disease. The effectiveness of rotavirus vaccines in infants and children is likely to be influenced, in some areas, by neonatal rotavirus infections that appear to be asymptomatic, may protect children against subsequent disease, and could influence the efficacy of the vaccine as measured in clinical trials.

A majority of the serotypes of rotavirus strains in circulation in Africa appear to be like those common in the rest of the world, i.e. G serotypes 1–4, which are components of the first tetravalent vaccine. At the same time, 26% of strains in this review were considered non-typeable, leaving open the prospect that the vaccine may fare less well against this unknown antigenic challenge.

The legacy of testing rotavirus vaccines in Africa has been negative since neither of the two candidate vaccines tested in three trials had proven efficacy (Table 5) (83–85). While these studies suggest that live, oral rotavirus vaccines may not work well in African children, the low efficacy may reflect problems of study design. All three trials enrolled relatively small sample sizes compared to rotavirus trials done elsewhere, and their analysis did not include coding for the severity of diarrhoea, an important observation since the vaccine protects best against severe disease which is less common and would require a larger sample size in a vaccine trial. The absence of stratification by the severity of diarrhoea may have inadvertently diluted the observed impact of the vaccine in preventing severe rotavirus diarrhoea, which is the primary goal of current vaccines. In this review, the early peak age of rotavirus diarrhoea suggests that immunization in the three trials may have occurred too late to avoid natural infection, thus decreasing the power of the trial to detect significant vaccine efficacy. In view of these critical problems of trial design and status of natural immunity in the host, the results of these early trials provide little information about how current candidate vaccines might fare if they were administered to African infants in a timely fashion (i.e. at a very young age) and in a trial setting where an adequate number of episodes of severe rotavirus diarrhoea could be effectively monitored. New vaccine trials in Africa will be needed to examine the potential efficacy of current reassortant vaccines to protect...
against the four major G serotypes. A recent trial in Venezuela suggests that if the trials are large and children are immunized early, live oral rotavirus vaccines can be effective in developing countries (86).

This review was conducted to learn about the epidemiology of rotavirus in Africa from the many published etiological studies. Its scope was limited because of the lack of countries with published data, differences in the methods and populations sampled, and the requirement to include only papers that met our selection criteria. Despite these limitations, the weight of evidence confirms the major role played by rotavirus as a cause of severe diarrhea in African children. Unassessed is the role of concurrent infections with human immunodeficiency virus (HIV), malaria, other enteric infections, and malnutrition as modulators of the severity of rotavirus disease. These cofactors, which may influence disease severity, could also affect the behaviour, immunogenicity, and efficacy of live oral vaccines.

Much more work is needed for the prevention of rotavirus diarrhoea in Africa through the use of vaccines. The safety, immunogenicity, and efficacy of new vaccines will have to be assessed in situations of malnutrition, HIV, concurrent enteric infections, unusual rotavirus serotypes, and early age of first infection, all of which could influence the vaccine’s effectiveness. Once efficacy is established, the challenge to achieve good vaccine coverage in a timely fashion in sub-Saharan Africa will be great, since current levels of immunization coverage in this region are among the lowest in the world. However, the huge burden of rotavirus diarrhoea in Africa and the impact of a successful rotavirus vaccine could serve to boost vaccine coverage overall.

**Acknowledgements**

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**Résumé**

**Epidémiologie de la diarrhéee à rotavirus en Afrique: évaluation des besoins en matière de vaccination antirotavirus**

Les progrès rapides de la mise au point de vaccins antirotavirus ont conduit à réévaluer l’importance des diarrhées à rotavirus dans les pays en développement et la place éventuelle de ces vaccins dans la diminution de la morbidité et de la mortalité du nourrisson et du jeune enfant. L’épidémiologie et la charge de morbidité ont été analysées chez des patients des hôpitaux et des dispensaires de 12 pays africains à partir de 43 études sur l’étiologie de la diarrhée publiées dans la littérature. Les études ont été réalisées de 1975 à 1992, et seules ont été incluses dans l’analyse celles dont l’échantillon comptait plus de 100
patients diarrhéiques chez lesquels les rotavirus ont été recherchés au moyen d’une épreuve diagnostique classique.

Les rotavirus ont été décelés chez 24% (médiane) des enfants hospitalisés pour diarrhée et chez 23% (médiane) des patients ambulatoires; parmi les patients hospitalisés, 38% avaient moins de 6 mois et 81% moins d’un an. La présence de rotavirus est notée tout au long de l’année dans presque tous les pays, avec des pics saisonniers en saison sèche. Dans 5 pays où le sérotype G des souches a été déterminé, 74% des souches appartenaient à l’un des 4 sérotypes courants (G1-G4), avec une prédominance du sérotype G1, et 26% de souches étaient non typables. D’après l’ensemble de ces observations dans 15 pays africains, les rotavirus sont la cause principale de diarrhée grave chez l’enfant dans ces pays, et la plupart des souches en circulation aujourd’hui appartiennent aux types G courants inclus dans les vaccins réassortis. Quand le nombre de cas de diarrhée à rotavirus observé chez le jeune nourrisson est considérable, la vaccination à la naissance pourrait protéger l’enfant avant sa première infection symptomatique.

References


Epidemiology of rotavirus diarrhoea in Africa


