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Changing oral vaccine to inactivated polio vaccine might increase mortality

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We, the undersigned, write as physicians and scientists committed to optimising the beneficial effects of vaccines to reduce infant mortality worldwide. In settings with high childhood mortality, live vaccines such as oral polio vaccine (OPV), BCG vaccine, and measles vaccine might have heterologous (non-specific) effects that reduce mortality from diseases other than poliomyelitis, tuberculosis, and measles, respectively, whereas inactivated vaccines might increase all-cause mortality.[1] The importance of these effects is controversial. In 2014, the WHO Special Advisory Group of Experts (SAGE) reviewed the evidence regarding the non-specific effects of vaccines and concluded that further research is warranted.

On average, about 75 cases of vaccine-associated paralytic poliomyelitis are reported each year worldwide, and WHO has suggested that OPV be gradually replaced by inactivated polio vaccine (IPV) to reduce the number of such cases.[3] Results from a randomised trial[4] in 2015 suggest that OPV might have beneficial non-specific effects that reduce all-cause mortality by 17%,possibly to a greater extent in boys than in girls, whereas previous evidence suggests that IPV increases all-cause mortality by 10%.[5] Consequently, the proposed change from OPV to IPV might lead to increased all-cause mortality through loss

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of the beneficial non-specific effects of the live vaccine, and adverse non-specific effects of the inactivated vaccine.[4,5] Replacement of OPV with IPV could translate to approximately 4000 deaths for each case of vaccine-associated paralytic poliomyelitis prevented, and might cause more than 300 000 additional deaths each year.

In view of the possible effects on all-cause mortality, more data need to be obtained before widespread replacement of OPV with IPV. We therefore strongly urge SAGE to advocate for randomised trials to be done – to assess the relative effects of OPV and IPV on all-cause mortality – before any decision on phasing out OPV is made. The results would inform whether such a replacement to reduce vaccine-associated paralytic poliomyelitis would increase all-cause mortality, and whether a combined OPV and IPV schedule might decrease vaccine-associated paralytic poliomyelitis without increasing mortality.

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