I. Title: Leadership in Reducing Diarrhea Mortality and Morbidity for Children Under Age 5: A Pressing Priority under the Sustainable Development Goals (SDGs)

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III. Sponsorship – Submitted on behalf of Global Maternal and Child Health Network, a new entity formed 2016 between the International Health and Maternal and Child Health Sections). Endorsement signed letter from Sections’ leadership is attached.

IV. Collaborating Units – No collaboration outside the Global MCH Network.

V. Co-sponsorship or Endorsement –
Several Sections and other APHA entities are already processing endorsement. JPC will be receiving the endorsement letters as soon as we have them. Other endorsements: see Appendix B.
VI. Each of the following should be labeled sections in the proposal.

Summary – Every minute one child under age 5 dies of Diarrhea globally. This is unacceptable. Enhanced public health, early childhood interventions must be intensified building on past achievements. Oral Rehydration Solutions (ORS) and zinc are WHO and UNICEF recommended treatments for acute diarrheal disease in children. ORS could prevent up to 93% of diarrhea deaths, and zinc can reduce the duration of illness by 25% and prevent recurrence of disease by 2-3 months. This combined treatment is highly cost-effective and could be administered or prepared by caregivers at home.

A multi-pronged approach is needed to achieve large-scale and sustained increases in zinc and ORS coverage for diarrhea treatment and prevention that addresses:

1) facilitating a strong enabling environment,
2) improving availability of high-quality and affordable supply,
3) improving knowledge and skills of health providers, and
4) generating demand among families/caregivers

Simultaneous improvements of supply and demand in both public and private sectors are needed to maximize impact. Furthermore, successful implementation requires a concerted investment from multiple partners—including national governments, development partners, donors private sector and research institutions.

Appointing a United States Global "Children's Champion" (e.g. at USAID Bureau for Global Health), is critical to 1) coordinate US and international activities in reducing mortality and morbidity from diarrhea in children under age 5, and 2) serve as a global leader and voice urging, planning and financing integration of diarrhea programming into all children’s mortality reduction, nutrition, and early childhood ‘survive and thrive’ development initiatives.

VII. Relationship to existing APHA policy statements –

There are several current APHA policy statements which provide a framework for this proposed policy statement, however none are specific to diarrhea management and treatment in children under five in low and middle income countries (LMICs).

First, APHA’s two policies that provide an overarching umbrella for policy support for Maternal and Child Health and reduction of global maternal, neonatal and child morbidity and mortality include:
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- **Policy Number: 2011-13**: Call to Action to Reduce Global Maternal Neonatal and Child Morbidity and Mortality. The policy focused on increasing political and financial commitments for global maternal, neonatal, and child health by the United States and by all world governments; and

- **Policy Number: 2009-4**: Ensuring the Achievement of the Millennium Development Goals (MDGs): Strengthening US Efforts to Reduce Global Poverty and Promote Public Health. This policy supported the achievement of the Millennium Development Goals (2000-2015), one of which was reduction of child mortality; e.g., with diarrhea specified as a major cause of death in children under age 5. It is important to note that this policy is now outdated as the MDGs for 2015 have been replaced by the UN Sustainable Development Goals for 2030, a fifteen-year development blueprint with goals and targets that will be mentioned in this policy.

A second set of relevant policies reference support for diarrhea prevention strategies, however none of these specify diarrhea treatment with ORS and zinc as a strategy to reduce child mortality.

- **Policy Number: 2014-5**: Supporting Breastfeeding Worldwide through Maternity Protection. Breastfeeding is the strategy supported by evidence as optimal practice to prevent diarrhea and other most common causes of child mortality.

- **Policy Number: 2002-6**: Access to Safe Water, Sanitation, and Hygiene Promotion in Developing Countries. Safe water, sanitation and hygiene are also considered vital complementary strategies for diarrhea and disease prevention.

- **Policy Number: 2015-7**: Public Health Opportunities to Address the Health Effects of Climate Change. This policy includes availability of safe water as at risk due to health effects of climate change and mentions diarrhea as a morbidity factor that can be impacted by climate change.

Finally, several additional APHA policies address health system and public health infrastructure that could support diarrhea prevention and treatment, however these are not specific to child health.
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- **Policy Number: 2008-9:** Strengthening Health Systems in Developing Countries. This policy supports the importance of health systems, including supply systems, to provide quality prevention and treatment services that could include diarrhea prevention and treatment.

- **Policy Number: 9022(PP):** Medicines in Developing Countries: A Global Health Concern. As diarrhea treatment requires availability of ORS and zinc, this policy supports availability of key medicines and commodities, though not specific to these two commodities.

- **Policy Number: 2011-17:** APHA Endorses the World Health Organization’s Global Code of Practice on the International Recruitment of Health Personnel. In order to treat diarrhea appropriately, trained health providers are needed. This APHA policy discusses and supports retention of trained health providers in low and middle income countries.

- **Policy Number: 92-12:** The Health of Refugees and Displaced Persons: A Public Health Priority. Refugees and displaced persons, particularly children of this designated special population at risk for diarrhea, this policy focuses on and supports these populations as a public health priority.

VIII. **Rationale for Consideration.**

This is a new policy that builds on the existing APHA policies cited above. This new policy complements APHA JPC’s interest to narrow gaps in existing policies as identified in the "2017 Policy Statement Gaps" internal document.

Despite progress in reducing child mortality worldwide (by more than half over the last 25 years), an estimated 5.8 million children less than five years of age died in 2015; with diarrhea remaining as one of the top causes of child death: 1 out of 10 childhood deaths were due to diarrhea in 2015\(^1\) however, significant progress has been made over the past decade to scale up access to and use of zinc and ORS* that together comprise the WHO recommended treatment for childhood diarrhea. In countries such as Niger, Kenya, and Nigeria improvement in ORS coverage — defined as the percentage of children with diarrhea in the last two weeks who received ORS — was among the top interventions responsible for 5-11% of total deaths averted.

\* ORS: refers to Oral Rehydration Salts/Solution/Therapy that may be prepackaged or made at home using standardized guidelines. UNICEF and WHO recommend only prepackaged ORS, but there is considerable evidence that quality can be maintained and coverage increased with the administration of homemade solutions\(^2\).
Since the release of the WHO/UNICEF Joint Statement for Clinical Management of Acute Diarrhea in 2004, strong political attention and technical support have been mobilized to facilitate country action. New global initiatives and frameworks have helped to elevate the profile of zinc and ORS as key interventions for child health. Building on this momentum, national governments and local partners have launched large-scale efforts that have effectively addressed local barriers to access. Specific interventions have led to successful outcomes across four key objectives: 1) facilitating a strong enabling environment, 2) improving availability of high-quality and affordable supply, 3) improving knowledge and skills of health providers, and 4) generating demand among caregivers.

A multi-pronged approach addressing all four areas is needed to achieve large-scale and sustained increases in zinc and ORS coverage for diarrhea treatment and prevention. Simultaneous improvements in supply and demand in both public and private sectors are needed to maximize impact. Furthermore, successful implementation requires a concerted investment from multiple partners—including national governments, development partners, donors, private sector and research institutions. The success of such an approach has been demonstrated in Bangladesh, where 77% and 44% of children with diarrhea are receiving ORS and zinc, respectively in 2015.

A United Nation's initiated Diarrhea & Pneumonia Working Group (2012-present) is among the leading consortia advocating for urgent further action to reduce mortality. A recent report, "Progress over a Decade of Zinc and ORS Scale-up: Best Practices And Lessons Learned" does not advocate for a “one-size fits all” approach, but rather discusses common challenges to scale-up across countries and solutions to address them.

While important gains have been made since zinc and ORS were endorsed as recommended treatments, continued investment is needed to address the remaining challenges for achieving high coverage levels at scale, and ensuring effective integration with other related life-saving solutions.

Evident in the results tracking of the UN Millennium Development Goals (MDGs), supported by APHA policy, infant and child mortality rates have not met the MDG 4 goals. Among the 67 countries with the highest child mortality rates, only 10 met the MDG target on child survival. 'About 16,000 children die each day before celebrating their fifth birthday, mostly from
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preventable causes’. 1400 deaths each day are due to diarrhea\textsuperscript{6,7}. This is unacceptable because there is such an array of possible interventions.

As of 2015 the MDGs have been replaced by the UN Sustainable Development Goals (SDGs) for 2030, a fifteen-year development blueprint. While Child Health is no longer a headline goal as it was in the MDGs, child mortality remains an indicator under the Health SDG number 3. No APHA policy as yet provides support for the SDGs. However, in the context of burgeoning and strong early childhood development (ECD) global, public and private, inclusive policy support, ‘surviving and thriving’ (nutrition, sanitation, cognitive and social-emotional stimulation), are the necessary foundations upon which to address this vital treatment initiative.

It is also scientifically clear from recent studies that the water, sanitation and hygiene (WASH) agenda should play a major role in further reducing child deaths from pneumonia and diarrhea. This policy will close the gap in Policy 2002-6. Data published in 2014 indicates that effective household water treatment (boiling or filtration and safe storage) showed the greatest diarrheal disease reduction, - 45\%\textsuperscript{8}.

IX. Problem Statement:
ORS and zinc are well-established, evidence-based, combined treatment for diarrhea. They are the WHO-recommended treatment for acute diarrheal disease. The gap in coverage is well documented, especially in countries with greatest needs\textsuperscript{5}. Globally, children are dying due to dehydration and loss of essential nutrients as there is insufficient access to or use of ORS and zinc in home-based treatment by caregivers. Many countries have had ORS and zinc coverage of less than 50\% for several decades, indicating a need to both improve and find new ways to close existing coverage gap\textsuperscript{9}. If scaled to 100\% coverage, ORS could prevent up to 93\% of diarrhea deaths, and zinc could reduce the duration of illness by 25\%, and prevent recurrence of disease by 2-3 months. This combined treatment is highly cost-effective and easily administered by caregivers at home \textsuperscript{7,10,11,12}.

Diarrhea is a leading cause of child mortality and morbidity in the world, and the second leading cause of death in children under age 5, and is responsible for the death of approximately 760,000 children every year due to severe dehydration and fluid loss. The causes are known; i.e., a variety of bacterial, viral and parasitic organisms. Infection is spread through contaminated food or
drinking water, or from person-to-person transmission as a result of poor hygiene and/or sanitation. Loss of nutrients in stools from vomiting and loss of appetite contribute to decline in nutritional status of children with diarrhea\textsuperscript{13,14,15,16}.

It has also been determined that the burden of diarrhea is disproportionately distributed worldwide. Epidemiological evidence indicates that 10 countries (across sub-Saharan Africa and South Asia) account for more than half of all diarrhea (and pneumonia) incidence worldwide\textsuperscript{5}. The recognition of the need to galvanize efforts in the affected countries led to the formation of the Diarrhea and Pneumonia working group. This group has set a target of achieving 60-80 percent treatment coverage (including for pneumonia) for under-five children by 2015\textsuperscript{4}.

About 88\% of diarrhea-associated deaths are attributable to unsafe water, inadequate sanitation, and insufficient hygiene\textsuperscript{17,18}. Simple interventions can prevent diarrhea, including access to safe drinking water, use of improved sanitation, and proper hand washing with soap or ash. Known as WASH— Water and Sanitation for Health— this initiative is an important element in diarrhea reduction. Another major preventive measure is childhood immunization with rotavirus vaccine as a standard part of vaccine protocols.

Frontline healthcare providers and families need to know about and have access to safe water as part of early home fluid treatment of diarrhea to prevent dehydration. Timely care-seeking for dehydration and nutrition during and after diarrhea episodes constitute evidence-based best practices. Diagnosis and proper treatment of diarrhea and of prolonged diarrhea are essential knowledge for primary health care providers. A major problem worldwide is the overuse of antibiotics for diarrhea\textsuperscript{4,5,19,20}.

Demonstrated success in reducing number of deaths in children under age 5 is encouraging. Mortality has dropped globally, from more than 12 million deaths in 1990 to 6.3 million in 2013. This 53\% drop in under-five mortality, while significant, was not enough to meet the Millennium Development Goal of a two-thirds reduction between 1990 and 2015\textsuperscript{21}.

A concerted effort is imperative to further reduce deaths of children under age 5 by at least five-fold in the next five years. It is part of the UN SDGs Goal 3 targets which cites 5.9 million children under 5 dying in 2015 alone (43 per 1000 live births). The prevention of avoidable deaths
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due to diarrhea is an important and integral part of the strategy to meet this goal. Resource mobilization is necessary for an appropriate and targeted budget allocations for research and innovation, treatment and prevention directly supporting this goal. In addition, these recommendations align with numerous recent early childhood care and development policies from multilaterals, donors, government aid agencies, pediatric and related professional and scientific associations, neuroscientists, and nongovernmental organizations.22,23,24,25.

X. Evidence-based Strategies to Address the Problem.

Two 2016 new, well referenced, evidence-based documents (ref. 5 & 7 below) provide most updated rationale for the work ahead in diarrhea treatment and prevention; both substantially informed this section.

As noted in earlier recommendations above, to eliminate preventable deaths from diarrhea, increased investments are needed to strengthen treatment, prevention, and protection. This calls for coordinated action between child health programs to ensure that children access lifesaving interventions that include zinc and ORS.

While zinc and ORS treatment coverage rates are increasing, it is necessary to address the remaining challenges to accelerate progress.

Foremost, diarrheal disease needs to remain both a policy and programmatic priority on both global and national levels to ensure the gains of the past decade are not lost. This includes stronger national coordination within Ministries of Health and other stakeholders, as well as increased resources from donors and partners.

New cross-sectoral efforts should align with existing national strategic frameworks and leverage existing structures (e.g. Integrated Community Case management- iCCM), where possible.

Diarrhea management must be part and parcel of all national child health strategies and policies, full rollout of rotavirus vaccine should be prioritized where not already achieved, and metrics deployed to ensure the target achievement is transparent.
Increased coverage could benefit from better supply systems that deliver zinc and ORS, particularly to 1) ensure products are available in the most remote areas and where most children die from diarrhea, and 2) ensure access and meet caregivers' identified needs.

Ongoing innovation efforts are needed to test and implement interventions for improving products and their availability through public and private sector collaboration. Over the past decade, improvements to product presentation and formulation (e.g., zinc dispersible tablets as well as better-tasting ORS) have made the products easier to use and more appealing to caregivers. In addition, new product development research suggests that reducing ORS volume can also help improve acceptance and compliance. Additional product and delivery innovations that improve the effectiveness and/or appeal as well as overcome existing barriers in home-based diarrhea treatment and WASH could help to further accelerate scale up rates of utilization as well.

On the provider side, continued investments in training, child health communications messaging, and behavior change must be complemented by supportive supervision and continuous monitoring and evaluation to improve the quality of care delivered. Building demand for zinc and ORS is an essential component of scale-up efforts.

Improving diarrhea treatment behavior change messaging to improve children’s lives in resource-poor countries requires culturally sensitive indicators and metrics that are valid for that country or community. Measures of mortality are important, but health-related quality of life measures are also necessary in order to identify gaps in child health. Many health measures for children rely on parent or caretaker reports that may not be accurate, especially among orphaned or refugee children.

Further research into the patient-provider interaction and specifically the “know-do” gap could produce insights into providers’ resistance to prescribing the recommended treatments, as well as inform the development of improved products and the design of higher-impact behavior change interventions. Continued attention should be paid to ensure correct usage. Questions also remain surrounding the optimal coverage levels and how to ensure adherence.
XI. Other Arguments/Evidence

In addition to focusing action on one disease, such as diarrhea, collecting data for studying the root causes of child mortality is compelling and still a challenge. In addition to focusing action on one disease, such as diarrhea, collecting data for studying the root causes of child mortality is compelling and still a challenge.

The recent Lancet Series on breastfeeding, concluded that breast milk "makes the world healthier, smarter, and more equal." This Series also affirmed that "the deaths of 823,000 children and 20,000 mothers each year could be averted through universal breastfeeding, along with economic savings of US$300 billion." The Series confirms the benefits of breastfeeding includes fewer infections, increased intelligence, probable protection against being overweight and diabetes, and cancer prevention for mothers. Moreover, exclusive breastfeeding for up to six months is a documented intervention for preventing diarrhea.

Ending preventable maternal mortality (EPMM) by 2025 remains an unfinished agenda and one of the world’s most critical challenges. Maternal mortality has a direct effect on child survival, when mothers die, child mortality increases. Therefore, maternal health, wellbeing and survival must remain a central goal and investment priority in the post-2015 framework for sustainable development.

A Centers for Disease Control and Prevention report brief titled ‘Common Illness, Global Killer’ stated that ‘every $1 invested yields an average return of $25.50’, thus reflecting not only the moral and humanitarian rationale for enhanced efforts to mitigate mortality and morbidity due to diarrhea, but also the economic imperative.

Enhanced action on diarrhea is an important interest of the USA locally not only globally: A 1992-2006 U.S study of child mortality due to diarrhea in children ages 1 to 59 months of age showed alarming mortality rate increase of 40% between the first 3 and last 2 years of the study (from 1.6 to 2.3 deaths per 100,000), with black children dying at four times the rate of white children. The authors of these findings concluded that a small but significant percentage was due to rotavirus and that diarrhea related mortality, though stabilized, was increasing. Closing the gap and addressing disparities in diarrhea treatment and prevention for children under age of 5 is an important public health task for the immediate future.
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**XII. Action Steps**

Proposed Action Steps pertinent to this policy include:

**APHA recommends that the US Congress, the Executive Branch, federal agencies, and partners:**

1. Make a sustained political commitment at all levels of the US Government that concern foreign assistance to reduce deaths of children under age 5 by supporting programs and research in diarrhea prevention, protection, and treatment as a ‘survive and thrive’ component;

2. Make a sustained political commitment at all levels of the US Government that concern foreign assistance to reduce maternal deaths and concomitantly improve child survival;

3. Lead a global movement to ensure that saving lives of children under age 5 is prioritized in Low and Middle Income Countries as well as developed countries through appointment of a United States Global "Children's Health Champion" (e.g. at USAID Bureau for Global Health), to coordinate US and International activities in reducing mortality and morbidity from diarrhea in children under age 5 and serve as a Global Leader and Voice for improving child health;

4. Target significant budget allocation annually for international development activities aimed at reducing by at least 50% the mortality and morbidity of children under age 5 from diarrhea in both developing and developed prioritized countries.

**APHA calls on public health professionals and international organizations to:**

1. Engage in every possible way with the agenda of reducing diarrhea in children under age 5 and support ongoing initiatives; i.e., Diarrhea & Pneumonia Working Group, Diarrhea Innovation Group (DIG), Every Woman Every Child, First 1,000 Days, American Academy of Pediatrics, Partnership for Maternal, Child and Adolescents Health and encourage Public-Private-Partnerships (PPP) in this area;

2. Support and form liaison with The Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea (GAPPD); and similar clinical and research initiatives.

3. Innovate integration of WASH and Diarrhea treatment in countries' MNCH, iCCM and ECD policy and program systems development

4. Include the diarrhea related mortality and morbidity reduction goal and treatment issue in respective newsletters, meetings and initiatives;

5. Promote exchanges on the subject with colleagues from around the world;

6. Promote inclusion of NCDs/MCH intersects under PEPFAR;
7. Engage city planning officials and increase the funding for sanitation infrastructure to support growing urban populations;

8. Improve access to maternal education around diarrhea in the context of breastfeeding, nutrition, immunizations and early childhood development;

9. Conduct more research on diarrhea treatment, prevention and protection;

10. Work toward child health measures that build on the cultural understanding of health and early childhood development, and involve community participation in the research and monitoring and evaluation data collection efforts.

APHA, considering its leadership role and ability to impact through its annual conferences:
Will increase visibility of diarrhea prevention and treatment programming about best practices in children under age 5 to reduce child mortality and optimize early childhood development, through its organized activities.

XIII. References (peer-reviewed, primary sources, most recently available).


5. Goh N, Pollak C. Progress over a decade of zinc and ORS scale-up: best practices and lessons learned. Clinton Health Access Initiative Web site. 2016. Available at:
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