What is Pneumonia?

- Pneumonia is an inflammation of the lungs typically caused by bacteria and viruses. Symptoms vary from mild to life threatening.
- Common signs of pneumonia in children include cough with or without mucus, fever, difficult breathing, chest wall in-drawing, sweating or chills, pale or bluish lips or nail beds; and in severe cases, poor appetite, unconsciousness, hypothermia, and convulsion. In adults, symptoms include cough, sharp chest pain, nausea and vomiting, and confusion especially in older adults.
- Pneumonia is diagnosed through physical examination, blood tests, and a chest x-ray.

What causes Pneumonia?

- In children, the most common bacterial causes of pneumonia are Strep. pneumoniae and Haemophilus influenzae type b (Hib), while respiratory syncytial virus (RSV) is the most common viral cause. Pneumocystis jiroveci is an opportunistic pathogen, which is a common cause of pneumonia in HIV-infected infants.
- Pneumonia can be transmitted via air-borne droplets from coughing or sneezing, and contact with infected secretions from the nose or throat.
- People of any age can contract pneumonia. However, those most at risk are children under the age of five years (especially under-two), adults over the age of 65, individuals with weak immune systems such as HIV-infected individuals, and people with medical conditions such as diabetes, heart or lung disease, and sickle cell disease. In infants, poor nutrition and incomplete immunization against measles, Hib, pneumococcus, and pertussis are also risk factors. Environmental factors such as indoor air pollution, overcrowded homes, and second-hand smoke put children at an increased risk of contracting pneumonia.

Pneumonia is a leading cause of under 5 deaths globally.

- In 2013, an estimated 935,000 children under five years of age died from this preventable and treatable illness, accounting for 15% of child mortality globally.
- In 2008, there were an estimated 203,000 deaths due to Haemophilus influenzae type b (Hib) and 541,000 deaths due to Strep. pneumoniae in children under five.
- While pneumonia deaths have declined globally over time, 99% of pneumonia deaths occur in developing countries.

Pneumonia is second only to malaria as a leading cause of child deaths in Nigeria.

- In 2013, it was estimated that more than 800,000 under-five children died in Nigeria.
- Of these, about 120,000 died of pneumonia; accounting for 15% of all under-five deaths (including neonatal death due to pneumonia) in Nigeria (fig. 1).

Nigeria has made little or no progress on pneumonia control since 2000. About the same number of children died from pneumonia in 2013 as did in 2000. In contrast, malaria and measles deaths have fallen by 34% and 97%, respectively (fig. 2).

- Current interventions against pneumonia could save more than 500,000 lives by 2020 if national target are met (table 1).
- Beyond lives saved, achieving 90% coverage of vaccines against Hib, pneumococcus, rotavirus, measles and pertussis (between 2011 and 2020) would avert $17 billion dollars in treatment costs and productivity losses.
- Pneumonia control must be stepped up to save lives and money.

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5 Life saved analysis by Saving One Million Lives Initiative (SOML) using the LiST tool.
Protect Against Pneumonia

It is essential to protect children from pneumonia and other diseases by boosting their natural defenses through adequate nutrition including exclusive breastfeeding and complementary feeding.

- Only a quarter (25%) of children are exclusively breastfed in the country. This falls short of the GAPPD target of 50% (fig. 4.). Women must be encouraged and supported to feed their children only breast milk for the first six months of life.

Adapted from WHO and UNICEF: The Integrated Global Action Plan for Pneumonia and Diarrhea (GAPPD).

Prevent Pneumonia

Pneumonia prevention must address the direct causes of pneumonia as well as reduce the incidence of other diseases that increase pneumonia risk and severity, such as measles, HIV, and diarrhea. This entails increasing immunization coverage, preventing HIV transmission from mother to child and improving water, sanitation, and environmental conditions.

- Vaccines against Hib, pertussis (pentavalent vaccine) and measles are already offered in the national immunization program and can prevent pneumonia, but coverage of these vaccines remain below the GAPPD target of 90%. In 2013, only 38% of one year olds received their 3rd dose of pentavalent vaccine (penta3), while only 42% received measles vaccine. Regional variations are wide, with the North East and North West having the lowest rates for penta3 and measles vaccine coverage. (fig. 6.).

- Adequate complementary feeding improves a child’s natural defenses and helps reduce the duration of illness in the child. Infant and Young Child Feeding (IYCF) guidelines have been established to ensure children are fed adequately. IYCF recommends three practices for children 6-23 months to ensure children are fed with diverse nutritious foods at the right frequency and with enough breast milk or milk products. Nigeria has a long way to go in this regard. In 2013, only 10% of all children in the target group were fed according to the three IYCF recommendations, with all zones severely underperforming below the 90% GAPPD target. (fig. 5.).

Note: Assumes linear progression to targets by 2020
Source: Coverage data from NDHS 2013³ and UNICEF Smart Survey 2014.⁴ Life saved analysis by Saving One Million Lives Initiative (SOML) using the LiST tool.⁵

Table 1. Current interventions against pneumonia and potential number of lives that can be saved by 2020 in Nigeria

<table>
<thead>
<tr>
<th>Current interventions</th>
<th>National coverage</th>
<th>National coverage target</th>
<th>Potential lives saved by 2020²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine Immunization⁷</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT3/Penta3</td>
<td>38%</td>
<td>87%</td>
<td>153,000</td>
</tr>
<tr>
<td>Measles</td>
<td>42%</td>
<td>87%</td>
<td>77,000</td>
</tr>
<tr>
<td>PCV3</td>
<td>0%</td>
<td>87%</td>
<td>205,000</td>
</tr>
<tr>
<td>Exclusive breastfeeding</td>
<td>25%</td>
<td>80%</td>
<td>42,000</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>37%</td>
<td>80%</td>
<td>98,000</td>
</tr>
</tbody>
</table>

Figure 4. Coverage of exclusive breastfeeding (during the first six months of life) in the six geopolitical zones in Nigeria, 2014

Source: UNICEF Smart Survey 2014.⁶

• Adequate complementary feeding improves a child’s natural defenses and helps reduce the duration of illness in the child. Infant and Young Child Feeding (IYCF) guidelines have been established to ensure children are fed adequately. IYCF recommends three practices for children 6-23 months to ensure children are fed with diverse nutritious foods at the right frequency and with enough breast milk or milk products. Nigeria has a long way to go in this regard. In 2013, only 10% of all children in the target group were fed according to the three IYCF recommendations, with all zones severely underperforming below the 90% GAPPD target.

Figure 5. Percent of children aged 6-23 months fed according to the three IYCF practices in Nigeria by geopolitical zones, 2013

Source: NDHS 2013, page 190.⁷

Prevent Pneumonia

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- Vaccines against Hib, pertussis (pentavalent vaccine) and measles are already offered in the national immunization program and can prevent pneumonia, but coverage of these vaccines remain below the GAPPD target of 90%. In 2013, only 38% of one year olds received their 3rd dose of pentavalent vaccine (penta3), while only 42% received measles vaccine. Regional variations are wide, with the North East and North West having the lowest rates for penta3 and measles vaccine coverage. (fig. 6.).

- The pneumococcal conjugate vaccine (PCV) was introduced into the routine system in December 2014 to further strengthen pneumonia immunization efforts.
Figure 6. DPT3/Penta3 and Measles vaccine coverage among children aged 12-23 months in Nigeria by geopolitical zones, 2013

- HIV is a major risk factor for pneumonia. Prevention of Mother-to-Child Transmission of HIV (PMTCT) will reduce HIV incidence among children, while early infant diagnosis and initiation of treatment for HIV-infected children will improve survival. The PMTCT program has set ambitious goals to eliminate pediatric HIV infections. While PMTCT services have been scaled up in the last few years, gaps still remain. In 2012, national PMTCT coverage was less than 20% and varied from North East to North West with none of the zones achieving the GAPPD target for HIV prevention in children.

Figure 7. Coverage of PMTCT by geopolitical zones in Nigeria, 2012

- Regular hand washing and access to clean water and sanitation prevents exposure to pathogens that cause pneumonia, diarrhea, and other diseases. Water, Sanitation and Hygiene (WASH) interventions require collaborations beyond the health sector to be effective. Nationally, access to improved clean water source and sanitation facility was 52% and 37% respectively in 2013. Although this coverage varied by zones, more progress has been made in improving access to clean water than improved sanitation (fig. 8).

Figure 8. Access to improved water source and sanitation facility by geopolitical zones in Nigeria, 2014

- Other preventative strategies to reduce the risk of severe pneumonia in children include eliminating household air pollution, especially smoke from unsafe cook stoves.

Figure 9. Percent of children under-five years old with symptoms of ARI in the two weeks preceding the survey who received antibiotics by geopolitical zones in Nigeria, 2013

- Treatment access must be complemented with caregiver education to ensure prompt and effective treatment of children with pneumonia.

Note: NE = North East; NW = North West; NC = North Central; SE = South East; SW = South West; SS = South South
Source: NDHS 2013, page 160.


GAPPD target by 2025

Source: UNICEF Smart Survey 2014.

Other preventative strategies to reduce the risk of severe pneumonia in children include eliminating household air pollution, especially smoke from unsafe cook stoves.

Treat Pneumonia

Pneumonia is a type of acute respiratory infection (ARI). Children with pneumonia need prompt diagnosis and appropriate treatment to prevent disease progression and death.

- Antibiotics are effective against the major bacterial causes of pneumonia. Less than 40% of children under age five with ARI symptoms in the two weeks preceding a recent NDHS 2013 survey received antibiotics for their illness. This is short of GAPPD target of 90% and varied by zones. (fig. 9).

Source: NDHS, page 162.

*For South West fewer than 25 unweighted cases were reported and data was suppressed.
Source: NDHS, page 162.

- Effective, integrated case management strategies and improving care-seeking behaviour and referral ensure that children receive proper and timely treatment for pneumonia in the community, health centres, and hospital.

However, care-seeking behavior for pneumonia is still inadequate. In a recent NDHS 2013 survey, majority of under-five children (35%) with symptoms of ARI in the two weeks preceding the survey were not taken to a health facility or provider for pneumonia treatment. This is markedly less than the 90% GAPPD coverage target and varies across the six geopolitical zones. (fig. 10.)


Putting it all together - The Pneumonia Scorecard

The Pneumonia Scorecard summarizes national and zonal progress on pneumonia control with color codes for coverage achievements on nine key interventions. A green means the GAPPD targets have been met. A yellow means the targets have not been met, but coverage is more than half way to the target. A red means that less than 50% of the target has been met. (fig.11.)

Overall, none of the indicators met the GAPPD targets. At national level, only two indicators- exclusive breastfeeding and improved water sources achieved up to half of the set target. Even though the overall performance was poor, the South-West and South-South zones performed relatively better when compared to the other zones, and the North East and North West zones recorded the lowest scores with all indicators at red.

Exclusive breastfeeding, vaccination and improved water sources fared relatively better across the board with no more than half the zones severely below the set targets.

The worse performing indicators, with all zones severely below GAPPD targets, were adequate feeding, PMTCT, and pneumonia care seeking.

The overall results explains the country’s lack of progress in reducing pneumonia deaths over time. Therefore, there is an urgent need to strengthen pneumonia control and fight this preventable and treatable disease that contributes significantly to under-five deaths in the country.

How can you help fight pneumonia?

- Raise awareness about the impact of pneumonia among policy makers, health care providers, and the general public.
- Advocate for increased funding for programs that protect against, prevent and treat pneumonia.
- Hold a World Pneumonia Day event (November 12th).
- Like us on Facebook: World Pneumonia Day Nigeria.
- Visit our website for more information about pneumonia: www.worldpneumoniaday.org

The Global Coalition Against Child Pneumonia was established in April 2009 to raise awareness about the toll of pneumonia, the world’s leading killer of children, and to advocate for global action to protect against, prevent, and treat this deadly disease.

World Pneumonia Day is marked each year on November 12, to encourage efforts to combat the disease among donors, policy makers, healthcare professionals, and the general public.

This factsheet was produced by the International Vaccine Access Center Nigerian team at the Johns Hopkins School of Public Health, with funding from Gavi’s VITAC project.

Compiled and adapted in February 2014 by Nigerian Consultants: Direct Consulting and Logistics (Chism O. Obi and Shola K. Molemodile) and IVAC Nigeria Country Lead (Chizoba B. Wonodi)

For enquiries on this factsheet, please contact: Dr. Chizoba Wonodi, cwonodi1@jhu.edu

Note: (1) * Fewer than 25 unweighted cases were reported and data was suppressed.

(2) GAPPD targets for improved water source and sanitation by the end of 2030 is universal access (100%).

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### Table: Pneumonia Scorecard in Nigeria by geopolitical zones

<table>
<thead>
<tr>
<th></th>
<th>Protect</th>
<th>Prevent</th>
<th>Treat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exclusive breastfeeding</td>
<td>Adequate feeding</td>
<td>Pentavalent vaccine 3rd dose</td>
</tr>
<tr>
<td>GAPPD target by 2025</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National coverage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North East</td>
<td>22%</td>
<td>11%</td>
<td>21%</td>
</tr>
<tr>
<td>North West</td>
<td>10%</td>
<td>9%</td>
<td>14%</td>
</tr>
<tr>
<td>North Central</td>
<td>32%</td>
<td>8%</td>
<td>44%</td>
</tr>
<tr>
<td>South East</td>
<td>18%</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>South West</td>
<td>40%</td>
<td>6%</td>
<td>66%</td>
</tr>
<tr>
<td>South South</td>
<td>31%</td>
<td>17%</td>
<td>68.8%</td>
</tr>
</tbody>
</table>

Note: (1) * Fewer than 25 unweighted cases were reported and data was suppressed.

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