

# WATER- AND EXCRETA-RELATED COMMUNICABLE DISEASES

## Part 2 of 5

1.	<p style="text-align: center;"><b>1(b) Water-washed diseases</b></p> <p><b>Caused by lack of adequate volumes of water for personal and domestic hygiene</b> – for example:          typhoid, cholera, shigellosis, enteroviral diseases, giardiasis, ascariasis  <b>– ie, all the “waterborne” diseases</b></p>	<p>We are now going to look at the transmission of water-washed diseases. These water-washed diseases are caused by people having insufficient volumes of water for personal and domestic hygiene; and some of the diseases which can be transmitted by this water-washed route include typhoid, cholera, shigellosis, enteroviral diseases, giardiasis, cryptosporidiosis – all, in fact, of the diseases which we have just described as being waterborne.</p>
2.	<p style="text-align: center;"><b>Waterborne or Water-washed?</b></p> <p>➤ <b>In low income communities water-washed diseases are likely to be more important than waterborne diseases</b></p> <p><b>Why?</b> Because the transmission route is basically the same:  <span style="border: 1px solid green; padding: 2px; display: inline-block;">from the anus of one person to the mouth of another person</span>          ie, both waterborne and water-washed* diseases are <b>FAECO-ORAL</b> diseases  <small>*except skin &amp; eye infections</small></p>	<p>This leads to a very important question: ‘Are these diseases transmitted by a waterborne route or by a water-washed route?’ The answer to this question in low-income communities in developing countries is that water-washed diseases are likely to be much more important than waterborne diseases. Why is this? Basically because the pathogen has to get from the anus of one person to the mouth of another person – that is to say, both waterborne and water-washed diseases are <b>faeco-oral</b> diseases. The exceptions to this are the skin and eye diseases which we will discuss in a minute.</p>
3.	<p style="text-align: center;"><b>Faeco-oral transmission</b></p> <ol style="list-style-type: none"> <li>1. faeces of A → fingers of A → mouth of B</li> <li>2. faeces of A → fingers of A → fingers of B → mouth of B</li> <li>3. faeces of A → fingers of A → food → mouths of B, C...</li> <li>4. faeces of A → water → mouths of B, C...</li> </ol> <p style="border: 1px solid blue; padding: 2px; display: inline-block;">1–3 are water-washed routes, 4 is waterborne</p>	<p>This slide shows some examples of faeco-oral transmission routes. The faeces of person A can get on that person’s fingers and into the mouth of a second person. Picture, for example, two small children playing in the garden. They frequently put their hands in each other’s mouths. The second route: the faeces of person A gets onto that person’s fingers, onto the fingers of somebody else and into that second person’s mouth – people shaking hands, for example. The third route: the faeces of Person A get onto that person’s fingers, into food and then into the mouths of several other people, and this is illustrated by a mother or an elder daughter preparing a meal for the family. Or the faeces of person A can get into water and into the mouths of several other people. <b>The first three transmission groups are water-washed, these very direct transmission routes; and the fourth is the waterborne route.</b></p>

<p>4.</p>	<p><b>Under conditions of water scarcity the water-washed routes are the most likely, and the waterborne route the least likely</b> (but of course possible – for example, a shallow well too close to a pit latrine)</p>	<p>Under conditions of water scarcity the water-washed routes are the most likely and the water-borne route least likely, although it is still possible – for example, if we have a shallow well too close to a shallow pit latrine.</p>																
<p>5.</p>	<p><b>WHICH WATER SUPPLY IMPROVEMENT IS LIKELY TO HAVE A GREATER IMPACT ON HEALTH ?</b></p> <p>Improve water <b>quality</b> or improve water <b>quantity</b>?</p> <p>Fundamental question</p>	<p>This leads to a very important question: which water supply improvement is likely to have the greater impact on health? Do we improve water quality or do we improve water quantity? This is really a fundamental question.</p>																
<p>6.</p>	<ul style="list-style-type: none"> <li>❖ If “waterborne” diseases are actually more commonly water-washed (and they almost always are), then <b>improvements in water quantity will have a greater health impact and so be more cost-effective than improvements in water quality</b></li> <li>❖ So in poor rural areas water treatment (ie, improvement in water quality) may <b>NOT</b> be a good investment</li> </ul>	<p>If waterborne diseases are actually more commonly water-washed, and in developing countries they almost always are, then improvements in water quantity will have a much greater health impact, and so be much more cost effective, than improvements in water quality; and this means, for example, in rural areas investments in a water treatment works, which is an improvement in water quality, may not actually be a good investment.</p>																
<p>7.</p>	<p><b>However.....</b></p> <ul style="list-style-type: none"> <li>• If water quality is <b>very</b> poor, then disease transmission can be substantially reduced by <b>simple household-level treatment</b> – for example: filtration through several layers of ‘old sari’ material</li> </ul>	<p>However, if the water quality is <i>very</i> poor, then disease transmission can be reduced by very simple household-level treatment systems – for example very simple filtration including infiltration through several layers of old sari material. This has been shown, for example, to reduce the transmission of cholera in rural India and Bangladesh.</p>																
<p>8.</p>	<p><b>Diarrhoeal disease (DD) incidence per person per year by region and age in 2000</b></p> <table border="1"> <thead> <tr> <th>Region</th> <th>DD incidence in all ages</th> <th>DD incidence in 0–4 year olds</th> <th>DD incidence in 5–80+ year olds</th> </tr> </thead> <tbody> <tr> <td>Industrialized countries</td> <td>0.2</td> <td>0.2–1.7</td> <td>0.1–0.2</td> </tr> <tr> <td>Developing countries</td> <td>0.8–1.3</td> <td>2.4–5.2</td> <td>0.4–0.6</td> </tr> <tr> <td>Global average</td> <td>0.7</td> <td>3.7</td> <td>0.4</td> </tr> </tbody> </table> <p>Source: WHO</p>	Region	DD incidence in all ages	DD incidence in 0–4 year olds	DD incidence in 5–80+ year olds	Industrialized countries	0.2	0.2–1.7	0.1–0.2	Developing countries	0.8–1.3	2.4–5.2	0.4–0.6	Global average	0.7	3.7	0.4	<p>Diarrhoeal disease is very, very common in developing countries and indeed the world, and this slide shows the incidence of diarrhoeal disease in the year 2000 by region and by age group. The slide shows that most diarrhoeal disease occurs in the under-fives in both industrialised and developing countries, and the incidence in adults in both industrialised and developing countries is much, much lower. Even so, in industrialised countries adults have an incidence of between 0.1 and 0.2 per person per year, that is to say a 10–20 percent chance each year of becoming ill with a diarrhoeal disease, and it is a bit higher in developing countries: 0.4 to 0.6.</p>
Region	DD incidence in all ages	DD incidence in 0–4 year olds	DD incidence in 5–80+ year olds															
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<b>9.</b>	<p><b>EFFECT ON COGNITION</b></p> <p>Repeated diarrhoea (and heavy parasitic infection) in infancy leads to <b>stunting</b> (= low weight-for-age) and, very importantly, to <b>poor cognition in later childhood</b></p>	<p>The really serious effect is on children, the under-fives, because it has an effect on their <b>cognition</b>. Repeated diarrhoea, combined with a heavy parasitic infection, in infancy (that is to say, under 12 months of age) leads to stunting, which is a medical term for low weight-for-age, and very importantly to poor cognition in later childhood. When they are about 9 or 10 they are not able to think as well as those kids who did not have diarrhoea and this has a huge effect on their learning and also, in later life, on their employment prospects and their contribution to the economic development of their country.</p>
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