

# NATIONAL MICROBIAL MONITORING PROGRAMME

2004

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THE RELATIONSHIPS BETWEEN MICROBIAL  
WATER QUALITY AND DIARRHEAL DISEASES  
IN CHILDREN IN DEVELOPING RURAL AREAS

Prof NY Osée Muyima


University of Fort Hare

*omuyima@ufh.ac.za*



# OUTLINE OF THE PRESENTATION

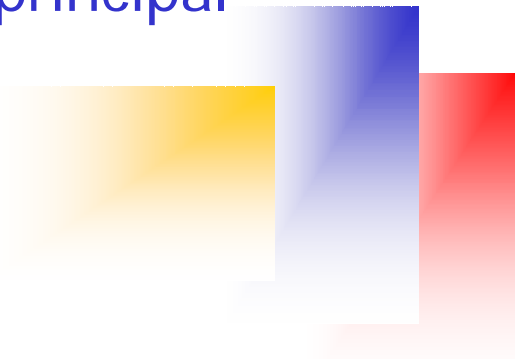
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- What is diarrhea and what causes it?
  - Bacterial basis of diarrheal diseases
  - Bacterial agents of diarrhea – a threat to the quality of domestic water sources in rural areas of South Africa
  - Strategies for the prevention of diarrheal diseases due to the consumption of contaminated water
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# What's diarrhea and what causes it?


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- Diarrhea is the passage of loose or watery stools, usually at more frequent than normal intervals.
  - Diarrhea in children may be caused by a number of conditions including bacterial infections, viral infections, food poisonings and sensitivities, parasitic infestations, reaction to medications, and vitamin deficiency states.
  - Contaminated water and food are the principal vehicles of diarrhea.
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# Bacterial basis of diarrheal diseases

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- *Vibrio cholerae*
  - *Salmonella* sp.
  - *Shigella* sp.
  - Diarrheagenic *Escherichia coli*  
ETEC, EPEC, EHEC, EAEC, EIEC, & DAEC
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# Bacterial agents of diarrhea – a threat to the quality of domestic water sources in rural areas


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- It is estimated that about 43 000 South Africans die every year from diarrheal diseases.
  - Record of recent outbreaks of water related diarrheal diseases in South Africa:
    - **2000** cholera outbreak in KwaZulu Natal, and typhoid outbreak in Eastern Cape
    - **2002** cholera outbreak in Eastern Cape
    - **2004** cholera outbreak in Eastern Cape
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# Bacterial agents of diarrhea – a threat to the quality of domestic water sources in rural areas

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- An analysis of the bacterial community pattern of the domestic water sources in selected rural areas of the Eastern Cape revealed the following:
    - 54 bacterial species were identified
    - 77.5% of the above bacteria proved to be human pathogens
    - 53.2% belonged to the Enterobacteriaceae family
    - 20% were common diarrheagenic waterborne pathogens
    - Order of seasonal diversity: Winter>Summer>Autumn>Spring
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# Strategies for the prevention of diarrheal diseases due to microbial quality of domestic water


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- Good hygiene practices
  - Government responsibilities
  - Individual responsibilities
  - Water and sanitation awareness way forward – the IMB approach
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# Adaptation of the IMB model to meet the need for water and sanitation awareness in rural communities

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- ❑ Information-Motivation-Behavior skill approach for water and sanitation awareness:
    1. Provide tailored information that is relevant to the performance of good practices in water and sanitation;
    2. Motivate individuals to use the good practices;
    3. Develop behavior skills for the performance of these good practices.
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# Vote of thanks

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