



Women, Health and the Environment:

Concepts and Perspectives for the Obstetrician-Gynecologist

EDITORS:

Erlidia F. Llamas-Clark, MD, MPH, PhD

Virgilio B. Castro, MD

Betha Fe Manaois-Castillo, MD



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PREFACE



The Philippines ranks as the 3rd most disaster-prone country in the world out of 172 countries (2018 World Risk Report). As citizens of this country, we need to think and act towards the prevention of negative health consequences and move forward when a disaster happens.

The Hyogo Declaration and Hyogo Framework for Action 2005-2015 is the internationally accepted standard that countries and communities follow in terms of strategic goals, tasks and priorities in implementing disaster risk reduction strategies (UNISDR, 2007). Thereafter, the Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted by UN Member States on 18 March 2015 in Sendai City, Miyagi Prefecture, Japan including the Philippines. The Sendai Framework is the first major agreement of the post-2015 development agenda, with seven targets to reduce by 2030: a) “global disaster mortality, b) the number of affected people globally, c) direct disaster economic loss in relation to global gross domestic product (GDP), d) disaster damage to critical infrastructure and disruption of basic services, e) increase the number of countries with national and local disaster risk reduction strategies by 2020, f) enhance international cooperation to developing countries through adequate and sustainable support g) increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030”. In addition to these are the four priorities for action: “understanding disaster risk, strengthening disaster risk governance to manage disaster risk, investing in disaster risk reduction for resilience and enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.”

The Philippines has incorporated this strong commitment within this framework into the country’s Republic Act 10121 (Republic of the Philippines, 2010). The determination to address this issue through an outcomes-based plan of action on the ground is still a work in progress. Meantime, the overall health and women’s health statistics needs to improve in our country. It is imperative that we pursue a more comprehensive, aggressive and more coordinated policies and programs that will reach families living in precarious conditions.

This book, “Women, Health and the Environment: Concepts and Perspectives for the Obstetrician Gynecologist,” is a reference intended for the POGS member obstetrician-gynaecologist, other doctors and health and non-health disciplines who will at some point, be providing health care services to women. It is the objective of the POGS Adhoc Committee on Women, Health and the Environment to make available this book to all our members in the regional and local areas at the forefront of obstetric and gynecologic care who may even be victims of these disasters too.

This book is our contribution to be able to save lives in challenging situations, particularly in achieving good outcomes for our women and their children. This is an offering to be a resource material to all of us. It is hoped that we learn from the signals and warnings of our planet and the local environment and how it directly or indirectly affects our health. Also, it is our purpose to remind every POGS member, not to forget our humanitarian and altruistic spirit when lending a helping hand, keeping our sincere service, infusing in our membership acts of kindness and volunteerism and giving more despite our seemingly busy lives as professionals. As a disaster can become a tragedy and be a “leveler in life’ amongst people, it can also be an opportunity to work together in revitalizing partnerships through the work of the POGS, the Department of Health, the local government units and non-government agencies. It is envisaged that this material can improve global partnerships in achieving good maternal and child health despite the disasters in the future.

Erlidia F. Llamas-Clark, MD, MPH, PhD

Virgilio B. Castro, MD

Betha Fe Manaois-Castillo, MD

FOREWORD



My dear friends in POGS,

Greetings!

The apparent adverse effects of recent environmental events are a global concern for all. They are results of climate change and/or disregard of humankind to nature leading to emergencies and disasters affecting women's health. In 2017, the creation of the Women, Health and Environment Committee was envisioned to initially address the environmental issues with its complications. The concern was how POGS as an organization will answer the identified need to collaborate with other institutions, government and non-government agencies to work together and be effective in approaching the adverse disaster impacts such infection, abuses and violence against women, unplanned pregnancies, psychological and emotional effects. Unexpected births leading to morbidities and mortalities may eventually occur.

Our collaboration with the Department of Health and Philippine Red Cross was borne out of the spirit of volunteerism to deliver OB-Gyn services through a Memoranda of Agreement with these agencies. In so doing, POGS has now transcended into the realm of helping out where our services might be sought.

I would like to heartily congratulate the WHE Committee for its vigilance, commitment and dedication resulting to a truly work of love on their part to put out this manuscript as a guide. Kudos to its Chair: Dr. Erlidia F. Llamas-Clark and Members: Dr. Joanne Karen S. Aguinaldo, Dr. Potre Mairasna P. Boransing, Dr. Mary Judith Q. Clemente, Dr. Rona F. Rañola, Dr. Ana Maria Carmen L. Zaballero, Dr. Rojannah T. Sahagun for their steadfastness to POGS in devoting a part of themselves, in the spirit of love, for service to our Filipino women.

My Congratulations!

MAYUMI S. BISMARK, MD

President, 2017

Philippine Obstetrical and Gynecological Society (Foundation), Inc.

FOREWORD



My interest in environmental issues started out as a personal advocacy until I came across others who shared the same. It was a blessing that 2018 gave me the biggest opportunity to make this committee continue its advocacy. This initiative has become very timely considering global climate changes that have been affecting the Filipino woman's reproductive health care. Implementation of the different projects of WHE shall stand support, not just to other advocacies close to my heart, but to the government's position on maternal health care in sustainable development goals.

In this light, I would also like to commend the dedication of the men and women behind this collaboration for making these ideas into reality. This is our first step in stirring up change. May this ADHOC committee be supported by succeeding officers that they may become a standing committee dedicated to improve sectors more often than not overlooked so that we may leave no stones unturned and leave no one behind in caring for the health of the Filipino women.

ELISA O. TIU, MD

President, 2018

Philippine Obstetrical and Gynecological Society (Foundation), Inc.

FOREWORD



The Philippine Obstetrical and Gynecological Society Adhoc Committee on Women's Health and Environment (POGS-WHE) was conceived in 2017 as a committee with the task of looking into women's reproductive health in relation to the environment. The environment is our surroundings which includes climate change, disasters, and other conditions that will affect our health. It is the intention of POGS not to leave any stone unturned when caring for women. The committee has gone beyond health care by joining initiatives for environment preservation and linkages with government and non-government organizations (NGOs) in times of disaster.

The book will open our minds to a new perspective on the care of women and its associated complications with the changing climate and presence of disasters. The range of services includes the Minimum Initial Service Package (MISP) as part of reproductive health care in times of humanitarian crisis. The book gives us a flavor of the the actual experiences during disasters in Metro Manila, Legaspi, Albay and Tacloban, Leyte.

My congratulations to the Committee on Women, Health and the Environment for this very laudable undertaking. It is my hope that this book will make our members and readers more aware of the relationship of environment and women's health and that they may take a proactive attitude towards this cause. The better future on women's health care starts with the right attitude and perspectives.

MARIO A. BERNARDINO, MD

President, 2019

Philippine Obstetrical and Gynecological Society (Foundation), Inc.

MESSAGE



The Presidential Adhoc Committee on Women Health and Environment since its inception in 2017, was able to meet the objectives of why the committee was created. Hence, the Philippine Obstetrical and Gynecological Society (POGS) Board of Trustees (BOT) of 2018 have commissioned the committee to write this WHE Book, to document the core of the activities, programs and the engagement of POGS with other key agencies involved in Disaster Risk Reduction and Preparedness.

As the POGS Presidential liaison officer for two years of the WHE Committee, I would like to express my gratitude to 2017-2018 POGS Presidents Dr. Mayumi Bismark and Dr. Elisa Tiu for giving me the opportunity to work with this committee whose optimism, commitment and dedication are indeed unprecedented. I still see up to this time the indefatigable and altruistic traits of the leadership of the Committee Chair, Dr. Erlidia F. Llamas-Clark. This holds true to all the committee members and the regional representatives in their amazing involvement to this particular POGS advocacy.

The POGS 2019 President, Dr. Mario Bernardino, is very supportive and inspiring to the committee through his present liaison officer, Dr. Virgilio Castro. As member of POGS BOT for the past three years, I take pride in this POGS advocacy which is the response to the continuum of reproductive health care for the vulnerable women sector of our disaster-prone country. We hope that this WHE Book will create awareness and interest for POGS members who can also be a victim or resource in times of disaster in the environment we live in. Let us involve ourselves and make a difference.

God Bless! Mabuhay ang POGS!

BETHA FE C. MANAOIS-CASTILLO, MD

POGS BOT, 2017-2019

POGS Chair, Clinical Practice Guidelines Committee 2017-2019

POGS Presidential Liaison Officer, WHE Adhoc Committee 2017-2018

MESSAGE



Notwithstanding the global warming that our planet is facing, the Philippines ranks high among the countries in the world that are disaster-prone due to deadly weather events such as typhoons, flooding, landslides, and earthquakes, bringing catastrophic humanitarian crisis which affect men and women alike in various circumstances. Armed conflicts add further difficulties when dealing with such emergencies.



POGS is advancing women's health and human rights through its Women, Health and Environment (WHE) Committee which has embarked on the formidable task to lessen or reduce the impact of such deadly events by adopting appropriate policy and practical measures to cope with the catastrophic aftermath of these events.

Last August, the WHE Committee held a workshop summit in Tacloban which was 'ground zero' in respect to Typhoon Yolanda (Haiyan), which caused major devastation to the Leyte and Samar region in November 2013.

Kudos to the organizers and participants of this great summit which brought together brilliant minds, speakers and survivors to share their experiences from 2013. POGS members from Region I to Region X were also well- represented.

The lessons drawn from that humanitarian crisis are encapsulated in this publication in an effort to provide a valuable resource material for mitigating the impacts of future disasters on the lives of our fellow Filipinos.

I commend all who have contributed to this publication.

VIRGILIO B. CASTRO, MD

*POGS Adhoc Committee Women, Health and Environment, 2019
Board of Trustee Liaison Officer*

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POTRE MAIRASNA P. BORANSING, MD is an Obstetrician-Gynecologist with subspecialty training in Maternal Fetal Medicine from UP-PGH. She is a fellow of the Philippine Society of Obstetrics and Gynecology, the Philippine Society of Maternal Fetal Medicine, the Philippine Society of Ultrasound in Obstetrics and Gynecology and the Philippine College of Surgeons. She is a Medical Specialist in the Northern Mindanao Medical Center and is a faculty of the Mindanao State University College of Medicine. She currently serves as a member of the Board of Directors of POGS Region 10 and is the Regional Director of PSMFM in BARMM.



MARY JUDITH CLEMENTE, MD is an OB-GYN Infectious Disease Specialist who trained at the University of the Philippines-Philippine General Hospital for both residency and fellowship. She is currently a Clinical Associate Professor at the University of the Philippines College of Medicine, a consultant at the Philippine General Hospital and a part-time Medical Specialist 2 at the Dr. Jose Fabella Memorial Hospital. She is also a practicing OB-GYN in the south of Manila. Some of her passions include teaching, empowering women through appropriate contraceptive choices and prevention of sexually transmitted infections.

CONTRIBUTORS



MARINELLA AGNES GARCIA-ABAT, MD, MBA graduated from the University of the East Ramon Magsaysay Memorial Medical Center (UERMMMC). She had her residency in OB-GYN and fellowship training in reproductive medicine at the UP-PGH. She finished her Master in Business Administration in Health at the Ateneo de Manila University Graduate School of Business. Currently, she is a member of the Board of Directors of the Philippine Society of Reproductive Medicine, as well as the Philippines Society for Gynecologic Endoscopy. She is a fellow of the Philippine Obstetrical and Gynecological Society.



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CONTRIBUTORS



BETHA FE C. MANAOIS-CASTILLO, MD is a fellow of the Philippine Obstetrical and Gynecological Society, the Philippine Society of Ultrasound in Obstetrics and Gynecology and the Philippine College of Surgeons. She is the Chair of POGS Committee on Clinical Practice Guideline from 2017-2019, Presidential Liaison Officer to the POGS Adhoc Committee on Women's Health and Environment from 2017-2018, and served as Regional Director in POGS Region 1 (1998-2001, 2005-2006, 2010-2012). She is also a past Board of Trustee, Regional Director and member of the Board of Examiners in PSUOG. Dr. Castillo is the Chair of the Department of Obstetrics and Gynecology at Dagupan Doctors Villaflores Memorial Hospital. She is a retired Associate Professor in Virgin Milagrosa University Foundation and Lyceum Northwestern University. In 2013 to 2015, as President of Pangasinan Medical Society (PMS), she spearheaded the involvement of the PMS members on Disaster Preparedness and Risk Reduction. She was also a NGO representative to the Dagupan City Disaster Risk Reduction Management Council, Medical Missions and Relief Operations on the series of flooding in the various afflicted cities and municipalities in Pangasinan.



ENRICO GIL C. OBLEPIAS, MD graduated from the University of the Philippines College of Medicine. He had his residency training at the Department of Obstetrics and Gynecology of the Philippine General Hospital, where he also completed his fellowship training from its Section of Reproductive Endocrinology and Infertility where he now holds the position of Section Chief. He is a fellow of the Philippine Society of Reproductive Medicine and served as its President in 2011. He is a member of the Philippine Society for Responsible Parenthood and was Country Representative to the Asia Pacific Council on Contraception from 2009 to 2014. He is also a fellow of the Philippine Obstetrical and Gynecological Society. He has authored several chapters on family planning for obstetric books and clinical practice guidelines.



RONA F. RAÑOLA, MD is a gynecologic oncologist and an active consultant of the Bicol Regional Training and Teaching Hospital in Legazpi City. She is a fellow of the Philippine Obstetrical and Gynecological Society. Since 2002, she has resided in the Legazpi City, Albay and has experienced typhoons and volcanic eruption. In Sept. 30, 2006, the Bicol region was hit by Typhoon Xangsane (Milenyo). Due to this traumatic experience, she became interested with natural disaster preparedness. In November 30, 2006, when Albay province experienced Super typhoon Durian (Reming), she was better prepared and was able to continue serving obstetrical and gynecological patients in the aftermath of the disaster.

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HELEN GRACE C. ROASA, MD is a graduate of Medicine in FEU NRMF 1986, Residency Training in OBGYN at Quirino Memorial Medical Center 1990-1994, Diplomate of POGS 1997, fellow of POGS 1999; Regional Director of POGS Region 8 for 3 terms 1999-2001; 2005-2006; 2013-2014; She was the Chair of the Dept of OB-GYN, Bethany Hospital Tacloban 1994-2013; Active Consultant in OB-GYN Mother of Mercy Hospital 2014 up to present, Allied Care Experts Medical Center August 2019 up to present; Regional Director, Region 8, Philippine Society of Climacteric Medicine. Inc.



PAULYN JEAN ROSELL-UBIAL, MD, MPH became the 28th Health Secretary of DOH. One who rose from the ranks, she started her Public Health career as a Rural Practice Volunteer in Kidapawan, North Cotabato then joined Regional Health Office XII (RHO 12) in Cotabato City. In 1991, she joined the DOH Central Office in Manila, first working with the Expanded Program on Immunization and headed several other programs. She was promoted as Assistant Secretary in April 2008. She was appointed by President Duterte to the Cabinet as his Health Secretary and served for 15 months.

For the past 2 years since she left government service, she has been a consultant on various health projects, her main preoccupation being an Adjunct Professor at the UP College of Public Health, Manila.

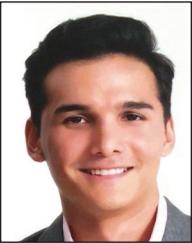


ROJANNAH SAHAGUN, MD is a medical specialist in Obstetrics and Gynecology. She had further training as a fellow in Infectious Diseases at the University of the Philippines – Philippine General Hospital. She is currently a medical officer at the General Emilio Aguinaldo Memorial Hospital in Cavite where she serves as the Hospital Control Chair. Her interest in the role of the environment and its relation to women's health began in 2017 when their local chapter hosted the midyear convention for obstetrician-gynecologists in the Philippines. Since then, she became part of an advocacy in educating fellow clinicians regarding infection prevention measures during disasters.

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REBECCA B. SINGSON, MD is an internationally-certified gynecologic robotic surgeon, with clinics at the St. Luke’s Global City Medical Center, the Makati Medical Center, and the Asian Hospital. She was the first Chairperson of the Department of OB-GYN of the St Luke’s Global City Medical Center and the first Head of Gynecologic Robotic Surgery in 2012. From 1996-2003, she wrote articles on pregnancy and childbirth every month for Baby Magazine. She wrote numerous women’s health articles to empower women regarding published in several magazines and major newspapers and had a regular segment on pregnancy in the show “Magandang Umaga Bayan” from 2004-2007. She organized and served as Charter President from 1994-1996 and is an active of the Rotary Club of Makati and Dasmariñas.



GIOVANNI S. ZAHAR is a 4th year medical student at the University of Santo Tomas. After graduating from a Bachelor of Science degree in Aeronautical Engineering at the Glyndwr University in Wales in 2014, he shifted career towards Medicine wherein he pursued Biology and Advanced Level Chemistry at the Abbey College Manchester in 2015. Thereafter, he worked at the Guys St. Thomas Hospital from 2015 to 2016 as a nursing assistant. He is a Charter Member of the Rotary Club of Makati Dasmariñas – Next Gen and has organized a vaccination mission to prevent the spread of hepatitis in a barangay in Tondo, Manila.



DORACIE ZOLETA-NANTES, PhD finished her MA in Geography at the University of Hawaii in Manoa and her Bachelor of Science in Human Ecology at the University of the Philippines in Los Baños, where she graduated cum laude. She started her career in 1981 as a field researcher of the quasi-governmental NGO – the Environmental Centre of the Philippines. She obtained her Doctoral Degree in Environmental Hazards and Disaster Management at the prestigious higher institution of Rutgers University – the State University of New Jersey in the USA.

Dr. Nantes is serving as the current President of the Southern Luzon State University – Lucban, Quezon, Philippines and has served as a President of the Aurora State College of Technology, Baler, Aurora Province.

TABLE OF CONTENTS

<i>Chapter</i>		<i>Page</i>
<i>1</i>	Climate Change, Disaster and Women’s Reproductive Health	1
<i>2</i>	The Philippine Disaster Risk Reduction and Management System	13
<i>3</i>	DOH Policies and Programs on Women’s Health and the Environment	21
<i>4</i>	History of the Women, Health and Environment Advocacy	28
<i>5</i>	Private Partnerships in Disaster Risk Reduction and Response:	32
	The PRC and POGS Engagement	
<i>6</i>	Obstetric and Gynecologic Complications During Disasters	35
<i>7</i>	Family Planning in Times of Disasters	39
<i>8</i>	Food and Nutrition Security in Emergencies	48
<i>9</i>	Breastfeeding in the Face of a Disaster	52
<i>10</i>	Immunization During Disasters	59
<i>11</i>	Minimizing Risk of Infectious Diseases Post Disaster: Prevention and Treatment	68
<i>12</i>	Sexually Transmitted Infections and Violence in Disaster Settings	76
<i>13</i>	Prevention and Management of Domestic Violence During a Disaster	83
<i>14</i>	Women’s Health Issues in Complex Emergencies	88
<i>15</i>	Local Government Units and State Universities and Colleges Collaboration	97
	on Climate Change Adaptation, Disaster Risk Reduction and Strengthening Livelihood Systems and Community Development Initiatives	
<i>16</i>	The Bicol Experience in Disaster Management	98
<i>17</i>	The 2013 Typhoon Haiyan (Yolanda) Disaster: A Volunteer Doctor’s Story	105
<i>18</i>	“In the Eye of the Storm, through the Eyes of Faith”	113
<i>19</i>	Women and Health and Environment Seminar Outputs and Synthesis – 2017 to 2019 ..	116
<i>20</i>	Moving Forward: Summary and Conclusion	120

CLIMATE CHANGE, DISASTER AND WOMEN'S REPRODUCTIVE HEALTH

Erlidia F. Llamas-Clark, MD, MPH, PhD

Introduction

There are 7.5 billion people in planet Earth with common challenges – economic, social and environmental development. The global scenario suggest climate change and its consequent extreme weather events (EWEs) and associated health impacts is set to increase in the future.¹ Climate change impacts will challenge health care systems and health providers. Slow improvement in the general public and reproductive health continue to be major concerns in developing countries including the Philippines. In many countries of the world there are difficulties in attaining better health outcomes. Many have not factored the role of the changing physical environment and what would be the OBGYN's role in this scenario.

The objectives of this book/chapter are to:

- a. present the evidence that climate change and disasters have an impact on human health and that it has reproductive health implications with differential impact on our women;
- b. demonstrate some examples from the Philippines on how the links between environment and reproductive health operate; and
- c. establish that obstetrician-gynecologists can contribute not only in a clinical setting but also in a public health policy agenda such as climate change that will ultimately impact on reproductive health.

Reproductive health

Reproductive health (RH) is defined within the framework of WHO's health definition with focus on the reproductive processes, functions and system at all stages of life. "RH is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes." Implicit to this definition are the following:

- a. "Ability to reproduce
- b. Freedom to control reproduction
- c. Information about and access to safe, effective, affordable methods of family planning
- d. Successful maternal and infant survival and outcomes
- e. Ability to minimize gynecologic disease throughout life
- f. Satisfying, safe sex life."

Socio-ecological model of health

In 2009, the University College London Lancet Commission concluded that "Climate change is the biggest global health threat of the 21st century".² With this environment, people were reminded that current environmental health problems are products of individual, biological, demographic – including social and economic – environments, and past political choices and decisions. Many of the local and global problems facing humankind are complex and involve many intersecting factors. As such, individual health outcomes are deeply embedded in a web of interconnected systems of a society. Using this premise, a holistic and integrated approach or systems thinking

approach, combining disciplines from the natural/physical and social sciences, is needed to be able to analyze and address these challenges.

An adapted socio-ecological model of health (Figure 1.1) is an example of such an approach.^{3,4} The model is based on the principle that multiple factors influence health. There are four levels in understanding interrelationships: the individual, social environment, physical environment and policy. This model also has different scales, at the micro level, such as individual or households, or at the macro level, in communities, country or global.

This health model acknowledges several perspectives and multiple influences on the different levels of relationships. The physical and social context, which includes individual or group behaviors within institutions and cultures important to health, are considered.⁵ This approach also recognizes the role of socio-cultural values and norms in shaping the attainment of good health. Implicit to this approach is the community social dynamics relative to the policies and programs that influence the condition of the physical environment and the state of people's well-being.

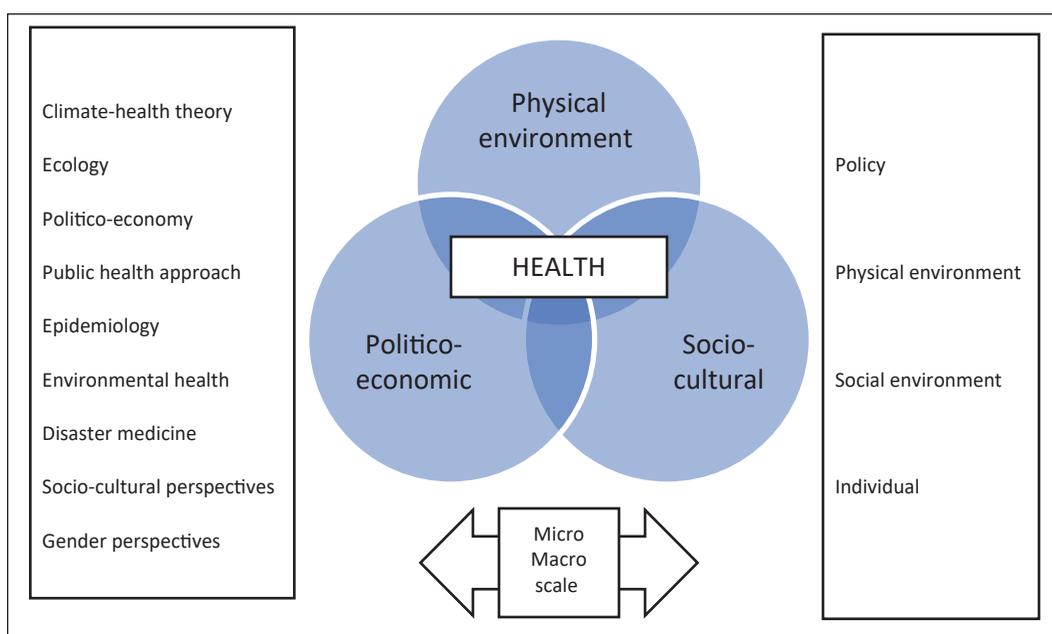


Figure 1.1. Adapted socio-ecological model of health.

Source: Mude, et al. (2009); Sallis et al. (2008).

Climate change and the role of Humans

Global environmental change is increasingly acknowledged as one of the biggest challenges of humankind. There is a growing concern that undernutrition and health will be increasingly threatened by future climate change.⁶⁻¹⁰ Currently, one of the contributors to the global burden of disease and premature deaths is climate change and its effects.¹¹⁻¹³ Millions of people are at risk of increasing shortages of water and food in many parts of the world that have experienced the direct impacts of EWEs – heat, storms and flooding disasters, and others. By the 2080s, an estimated 5–170 million people will be “at risk of hunger and food insecurity due to climate change”.¹⁴ Integrated sustainable approaches are needed to keep up with the food requirement of the world's population.^{15,16}

Climate change is predicted to intensify and increase the frequency of EWEs, magnifying the risk of disasters.¹⁷ Statistically speaking, the probability of occurrence of these unusual and unexpected EWEs is only less than 5 per cent of the time based on the climatological distribution within a given time period and area. There are many forms of EWEs, including climate variables of temperature, rainfall, wind and precipitation showing extreme patterns and trends. Others belong to a more complex interaction of these climate variables, culminating in El Niño Southern Oscillation, droughts, cyclones and floods, among others.¹⁸

Tropical cyclones belong to the climatological and meteorological natural hazard types with hydrological consequences (floods). Several authors have linked increased EWEs to climate change, based on observations over the last 30 years of increasing temperatures and modelling of hurricane intensity under high temperature and carbon monoxide conditions.^{19,20} However, there is still uncertainty and ongoing debate about whether global warming increases tropical cyclones due to other complex factors that can alter variables. The IPCC Special Report on Managing the Risk of Extreme Events states that “there is low confidence in any observed long-term (i.e. 40 years or more) increases in tropical cyclone activity (i.e. intensity, frequency, duration), after accounting for past changes in observing capabilities”.²¹ The current challenge presented by EWEs is their interface with human population that can potentially lead to a disaster event and how preventive and adaptation measures can be put in place.²²⁻²⁶ This era is the Anthropocene Age as humans are accelerating the global environmental change in our planet which is compromising our future human and planetary health.

Understanding Climate Hazards and Disaster

Disaster is defined as “a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering”.²⁷ When the natural hazard is stronger than people's capacity to protect life, health and property, disasters happen.²⁸⁻²⁹

Climate-health impact pathway

In climate change literature, causal pathways through which global climate variability and EWEs influence human health and nutrition operate in complex, interrelated links and varied pathways.³⁰⁻³¹ Environmental exposure to climatic factors can have the immediate effects of deaths, injuries, and the destruction of shelter, infrastructure and services. In the interim and long term, food availability and long-term ability to adequately feed the affected people is a concern.³² Climate change, together with changed human activities such as rapid and unplanned urbanisation, creates a complex condition increasing the frequency and severity of EWE-related disasters, aggravated by poverty and lack of access and underdevelopment.

EWEs have consequent effects on food availability, access to food, and land use, threatening agriculture production and food security. This cascade of events poses a major public health problem to nutrition that is fundamental to the attainment of good health. Undernutrition is a slow and long-lasting legacy of EWEs and climatic disasters. This direct impact can generate indirect health pathways that can be mediated through socio-economic factors.

The entry point of the climate-health impact pathway is in the concept that global environmental stress can induce a cascade of events that, with sufficient strength and influence on different

complex factors, will bring about the outcome of undernutrition.³³⁻³⁵ Future climate scenarios indicate that food supply and availability may be affected due to changing food production patterns, with negative consequences for health and well-being.^{36,37}

The widely accepted climate-health pathway (Figure 1.2) illustrates that one of the direct impacts of climate change is the occurrence of EWEs, which directly impact on food and nutrition security. Pathways through which global climate variability and EWEs influence human nutrition operate at the national level and on smaller scales in the local communities.³⁸ One of the ways that undernutrition can occur is through disturbed ecosystems, resulting in the direct loss of crops, affecting food production and causing food shortages.³⁸⁻⁴² Disruption of food systems can drive higher food prices, which can affect HFS. EWEs can also trigger changed physical conditions that can make people vulnerable to infections that affect nutrition. The direct impact of EWEs can also trigger indirect health pathways that are mediated through economic or social factors, such as loss of jobs, livelihood and displacement that can eventually lead to undernutrition (Figure 1.3).^{43,44}

While the climate-health impact pathway is an accepted hypothesis globally, empirical evidence is lacking in vulnerable localities.⁴⁵ Using this model, individual child nutrition and growth is affected by environmental factors such as EWEs through a chain of events. The influence of climate change via EWEs on child nutritional outcomes, and therefore health, is investigated. The underlying processes need to be understood to implement preventive and protective measures and advocate for health governance a community.

This pathway is increasingly relevant especially for many developing countries that currently have complex problems such as underdevelopment, poverty and malnutrition. These challenges will be even more marked with the increasing effect of global environmental and climate change in the future triggering mass displacement.

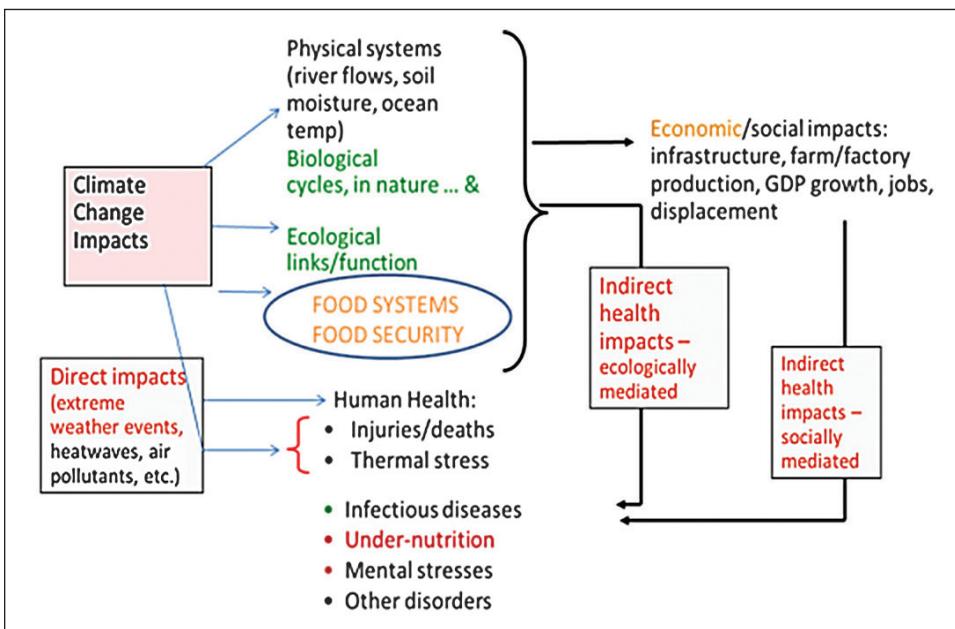


Figure 1.2. Climate-health impact pathway.

Source: McMichael, 2009.

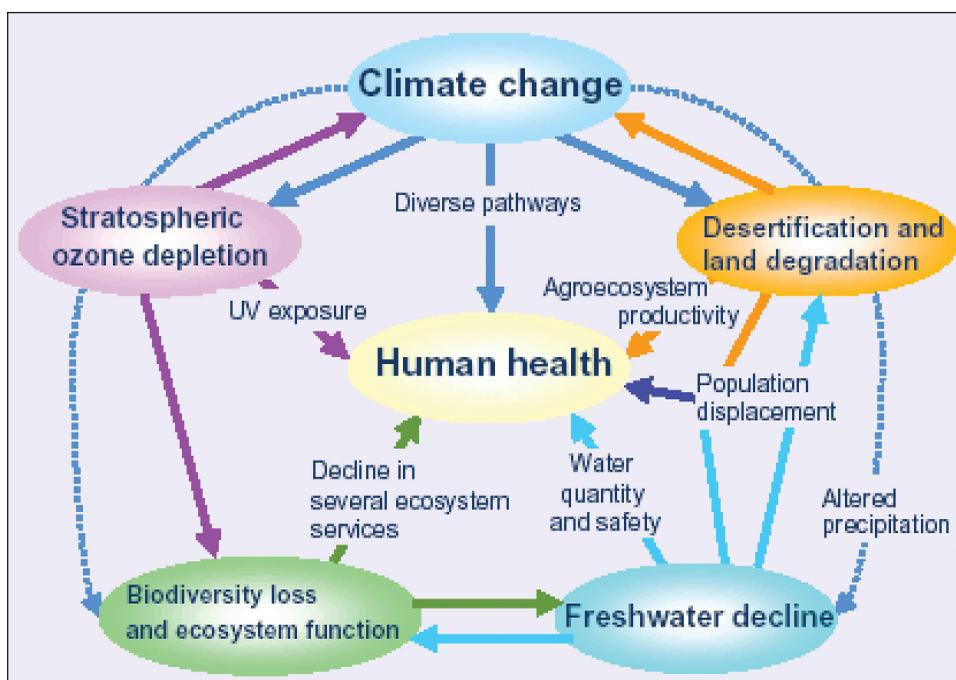


Figure 1.3. Causal links between environmental change and human health.
Source: <https://www.who.int/globalchange/ecosystems/en/>.

All of us are dependent on nature and climate. A changing climate has long existed in human history. However, the unprecedented change we are seeing is disturbing as humans are accelerating the pace of this change which eventually creates poorer health outcomes especially to the most vulnerable including women and children.

Climate Change and the Public Health and Reproductive Health Impacts

What are the impacts of climate change?

The physical impact of climate change is associated with increase in temperature, sea level rise, change in precipitation, increasing storm severity. In addition, with the changed microbiological environment emerging and re-emerging infectious diseases stands to rise. Decreased agricultural production will threaten food and water insecurity.

Where are the impacts of climate change?

Developing countries more than developed countries will be hardest hit by climate change. Places with low elevation coastal zones, flood plains, drylands and mountains will be affected. Those areas with glaciers and snowfall also stand to lose their cover and melt.

Who will be impacted by climate change?

Everyone will be affected by the global environmental change and the changing climate. However, the vulnerable groups are women, children, poor and low-resourced persons for example, the elderly and the people with disabilities.

Reproductive health and Climate Change

There is a need to understand that the scale of impact of climate change exposure effects leading to RH impacts can be observed from global to national then local community to individual concerns. Climate change is now exerting both direct and indirect public health impacts. The health effects range from frequent extreme weather events that will impact food and water availability and safety, changing disease patterns with re-emerging infectious diseases, malnutrition, population issues of poverty, displacement and migration and all its mental and physical health risks (Figure 1.4).

Figure 1.4. Conceptual Framework of Climate Change and Health – RH Impacts.

Health Impacts	Physical Well-being Outcomes		Psychological Well-being Outcomes
Extreme weather events (storms, typhoons and floods. heatwaves, droughts)	Direct death, injury and disability Thirst, hunger Disease	Indirect malnutrition, disease death disability displacement	<ul style="list-style-type: none"> • mental stress, anxiety, depression • Drugs, alcohol and other addictions • Suicide and loss of lives
Diseases – Communicable and Non-communicable	death, injury and disability	malnutrition, death disability	
Food and water insecurity Lack of Supply and Availability Lack of Access Lack of Safety Lack of Quality	Thirst, hunger Disease	malnutrition, death disability	
Social security	Threatened food and water supply changed patterns of diseases economic instability of households and communities forced migrations civil and political conflicts		
All lead to Negative Reproductive Health Outcomes			
<i>Should be cited as Clark, (2015) Conceptual Framework of Climate Change and HEALTH – RH Impacts 24th AOCOG YGAA Session June 4, 2015 Borneo Convention Centre Kuching, Sarawak, Malaysia.</i>			

Population is a key factor in understanding the RH impacts of climate change. The IPCC Framework clearly states the earth and human systems and its interaction along with many other factors affect the climate and vice versa.

RH can influence population size and growth, acting as a multiplier, which matters for future emissions. The bigger the population, an increase in consumption and technology but to the detriment of our natural environment. A sustainable development using science, policies and culture may be useful for better future health. RH affects the attainment of critical goals such as the Sustainable Development Goals that measures progress of populations.

Climate change effects on RH-Safe motherhood

Amongst the maternal health and pregnancy outcomes, these effects may:

- a. increase the risk of maternal and infant mortality
- b. increase birth complications
- c. result in poorer reproductive health

Interestingly, these situations are mostly in tropical developing countries. Malnutrition, infectious diseases, environmental problems and direct heat exposures will lead to several health risks to mothers and children.⁴⁶

Climate-related Health-RH impacts in the Philippines

As an example, after the 2009 typhoon-flooding disaster, I found high prevalence of child undernutrition, infections and increased household, women and children's food insecurity including several RH and gender-based issues. To preserve good RH outcomes there are many factors that involve adequate service access/delivery, community empowerment, sound partnerships and health policy (Figure 1.5).

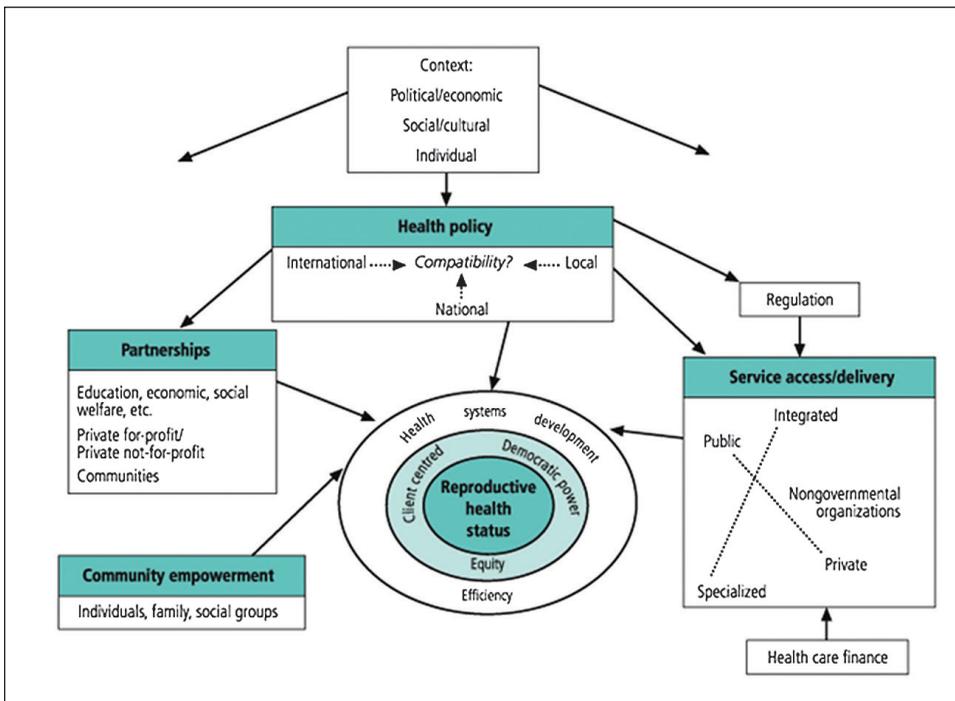


Figure 1.5. Determinants of reproductive health status.

Source: <https://www.askitiians.com/biology/reproductive-health/#definition-of-reproductive-health>.

In the last decade, some success stories of integrated population, health, environment approaches have been demonstrated by NGOs that linked RH to environmental, livelihood and even disaster mitigation and food security issues. The above issues are complex and requires multi-sector cooperation if we want to solve the negative impacts to reproductive health and public health in general.



Source: Dr. E. Clark, 2011

Minimum Initial Service Package (MISP) for Sexual and Reproductive health

In pre-disaster situations, the health sector strives to perform its role to make the population healthy. However, when there is a humanitarian crisis (conflict or natural disaster), the Minimum Initial Service Package (MISP) for Sexual and Reproductive Health (SRH) is implemented. The MISP for SRH is a set of priority activities to be implemented and further scaled up and sustained to ensure equitable coverage throughout the onset of the calamity through to the recovery period. In the interim, long term planning is undertaken to implement comprehensive RH to restore normalcy. The priority RH services contained within the MISP are essential services because when people are affected by humanitarian emergencies, their human right to RH must be upheld. To be able to exercise their right, displaced persons and communities need to be informed about RH and the availability of MISP SRH services.

The MISP is not only for acute emergencies. Its provisions include comprehensive RH services for protracted and post-crisis settings. This should be incorporated into existing RH programs to improve over-all health care services.

Implications to OB GYN/RH Practice

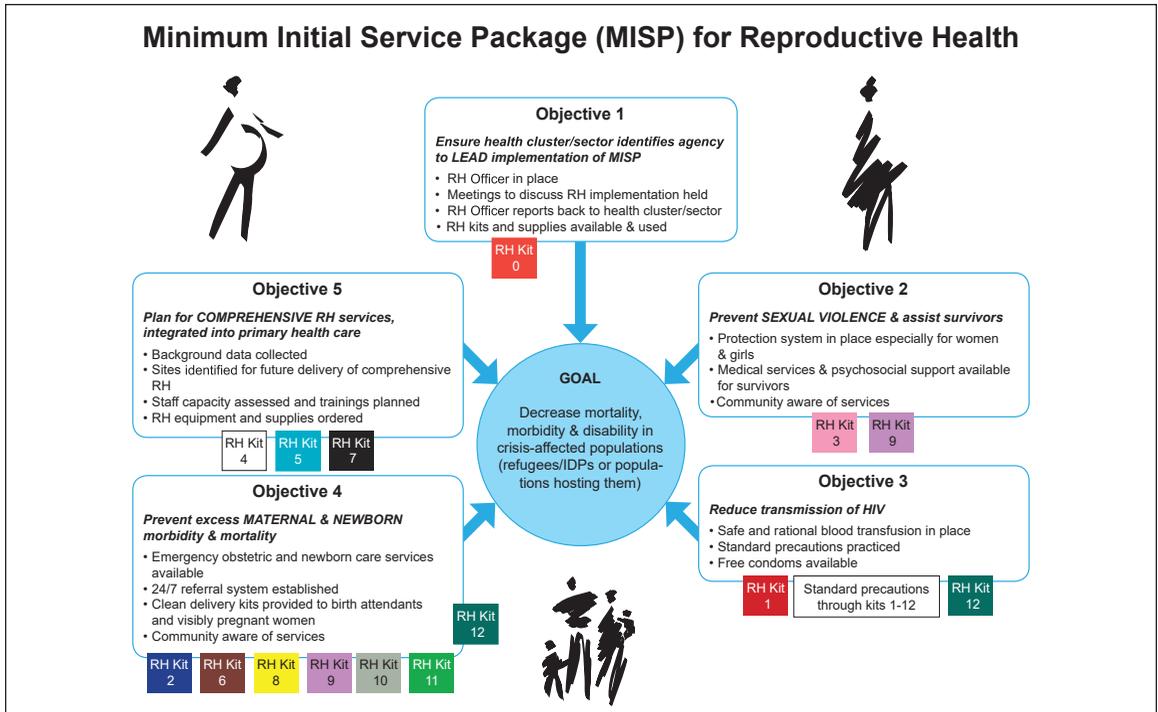
Therefore, the question is, “where is the OB GYN in all this? What is the role of the OB GYN?”. The answers are not easy. We need to maintain our duty of care to the women and children who are our patients. Most of us deal with the individual family and local community. However, some of us may need to step up and go national or global to work with policy makers and other sectors to scale up the cause of improving RH. Others are academic and public health providers; part of our role is an extended advocacy that we all need to recognize the links of climate change to our work in reproductive health.

Through teaching, research and awareness advocacy we can contribute to policy gaps while upskilling using current technology to prepare for future climate-related health problems. Good RH outcomes in our countries are determined mainly by factors that involve adequate service access/delivery, community empowerment, sound partnerships and health policy.

As OB-GYNs, our primary role is to deliver optimal health to mothers and their children and care for women across the life cycle. However, we can address the many barriers to achieving this goal.

As individuals and members of professional organizations, we are positioned to positively influence society by addressing key partnerships in the community that can influence health policy and programs. We must take a proactive stance to look at the bigger picture.

Minimum Initial Service Package (MISP) for Reproductive Health



	CRISIS	POST-CRISIS	
	Crude mortality rate >1 death/10,000/day	Mortality returns to level of surrounding populations	The RH Kit is designed for use for a 3-month period for a varying population number and is divided into three "blocks" as follows: Block 1: Six kits to be used at the community and primary health care level for 10,000 persons / 3 months
SUBJECT AREA	MINIMUM (MISP) RH SERVICES	COMPREHENSIVE RH SERVICES	KIT NUMBERS KIT NAME COLOR CODE
FAMILY PLANNING	<ul style="list-style-type: none"> Provide contraceptives, such as condoms, pills, injectables and IUDs, to meet demand 	<ul style="list-style-type: none"> Source and procure contraceptive supplies Provide staff training Establish comprehensive family planning programs Provide community education 	Kit 0 Administration (Orange) Kit 1 Condoms (Part A is male condoms + Part B is female condoms) (Red) Kit 2 Clean Delivery (Individual) (Part A + B) (Dark blue) Kit 3 Rape Treatment (Pink) Kit 4 Oral and Injectable Contraception (White)
GENDER-BASED VIOLENCE	<ul style="list-style-type: none"> Coordinate mechanisms to prevent sexual violence with the health and other sectors/clusters Provide clinical care for survivors of rape Inform community about services 	<ul style="list-style-type: none"> Expand medical, psychological, social and legal care for survivors Prevent and address other forms of GBV, including domestic violence, forced/early marriage, female genital cutting, Provide community education Engage men and boys in GBV programming 	Kit 5 STI (Turquoise)
MATERNAL AND NEWBORN CARE	<ul style="list-style-type: none"> Ensure availability of emergency obstetric and newborn care services Establish 24/7 referral system for obstetric and newborn emergencies Provide clean delivery packages to visibly pregnant women and birth attendants Inform community about services 	<ul style="list-style-type: none"> Provide antenatal care Provide postnatal care Train skilled attendants (midwives, nurses, doctors) in performing emergency obstetric and newborn care Increase access to basic and comprehensive emergency obstetric and newborn care 	Block 2: Five kits to be used at the community and primary health care level for 30,000 persons / 3 months Kit 6 Clinical Delivery Assistance (Part A + B) (Brown) Kit 7 IUD (Black) Kit 8 Management of Complications of Abortion (Yellow) Kit 9 Suture of Tears (Cervical and vaginal) and Vaginal Examination (Purple) Kit 10 Vacuum Extraction for Delivery (Manual) (Grey)
STIs, INCLUDING HIV, PREVENTION & TREATMENT	<ul style="list-style-type: none"> Ensure safe and rational blood transfusion practice Ensure adherence to standard precautions Guarantee the availability of free condoms Provide syndromic treatment as part of routine clinical services for patients presenting for care Provide ARV treatment for patients already taking ARVs, including for PMTCT, as soon as possible 	<ul style="list-style-type: none"> Establish comprehensive STI prevention and treatment services, including STI surveillance systems Collaborate in establishing comprehensive HIV services as appropriate Provide care, support and treatment for people living with HIV/AIDS Raise awareness of prevention, care, treatment services of STIs 	Block 3: Three kits to be used at referral hospital level for 150,000 persons / 3 months Kit 11 Referral level for Reproductive Health (Part A + B) (Fluorescent Green) Kit 12 Blood Transfusion (Dark Green)

NOTE: Agencies should not depend solely on the Inter-agency RH Kits and should plan to integrate the procurement of MISP/RH supplies in their routine health procurement systems.

RESOURCES:

- Reproductive Health in Humanitarian Settings: An Inter-agency Field Manual: http://www.iawg.net/resources/field_manual.html
- MISP Distance Learning Module: <http://misp.thrc.org>
- SPRINT Facilitator's Manual for SRH Coordination: www.ipfeseaor.org/en/Resources/Publications/SPRINTFacilitatorsManual.htm
- UNFPA/Save the Children Adolescent Sexual and Reproductive Health Toolkit in Humanitarian Settings: A companion to the Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings: www.unfpa.org/public/publications/pid/4169
- RHRC Monitoring and Evaluation Toolkit: www.thrc.org/resources/general_fieldtools/toolkit/
- CDC RH Assessment Toolkit for Conflict-Affected Women: <http://www.cdc.gov/reproductivehealth/Refugee/RefugeesProjects.htm>
- Inter-agency Working Group on Reproductive Health in Crises: www.iawg.net
- Reproductive Health Response in Crises (RHRC) Consortium: www.thrc.org

How to order RH Kits for Crisis Situations booklet:

UNFPA – Contact local country offices or
220 East 42nd Street
New York, NY 10017 USA
Tel: + 1 212 297 5245
Fax: +1 212 297 4915
Email: hnu@unfpa.org
www.thrc.org/resources/thrkit.pdf

How to order RH Kits:

UNFPA Procurement Services Section
Emergency Procurement Team
Midtermolen 3
2100 Copenhagen
Denmark
Tel: +45 3546 7368 / 7000
Fax: + 45 3546 7018
procurement@unfpa.dk

April 2011 © IAWG. Based on Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings.

Figure 1.6. Minimum Initial Service Package (MISP) for Reproductive Health.

Source: https://www.womensrefugeecommission.org/images/stories/MISP_cheat_sheet_12_17_09.pdf

The global environmental changes we see affect the women and their families and how we engage in their care. To change the environment of our OBGYN/RH practice, we need to engage in community and clinical research while we upskill in the clinics. There is a need to reflect on the bigger challenges faced by an increasing global society dependent on each other in matters of life and reproduction but also sustainable development for humankind. WE are all responsible for the next generation.

Health providers including obstetrician gynaecologists must advocate for greater public health concerns that are influenced by climate change: We have new knowledge and technology to improve reproductive health outcomes in the era of global environmental change. All we need to do is to ACT now.

This book is a manifestation of the Philippine Obstetrical and Gynecological Society's commitment to extend its mission to provide health care services and be advocates to Filipino women!

REFERENCES

1. <https://www.sbs.com.au/news/climate-change-is-accelerating-according-to-a-new-un-report> accessed 4 Nov 2019.
2. Costello, A., Abbas, M., Allen, A., & al., e. (2009). Lancet and University College London Institute for Global Health Commission; managing health effect of climate change. *The Lancet*, 373, 937.
3. Mude, A. G., Barrett, C. B., McPeak, J. G., Kaitho, R., & Kristjanson, P. (2009). Empirical forecasting of slow-onset disasters for improved emergency response: An application to Kenya's and north. *Food Policy*, 34(4), 329-339.
4. Sallis, J., Owen, N., & Fisher, E. (2008). Ecological Models of Health Behavior In K. Glanz, B. K. Rimer & K. Viswanath (Eds.), *Health Behavior and Health education Theory, Research, and Practice 4th Edition* (pp. 465-485). 2008: John Wiley & Sons, Inc.
5. Sallis, J., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. (2006). An Ecological Approach to creating active living communities. *Annual Review of Public Health*, 27, 297-322.
6. McMichael, A. J., Powles, J. W., Butler, C. D., & Uauy, R. (2007). Food, livestock production, energy, climate change, and health. *Lancet*, 370(9594), 1253-1263.
7. Nelson, G. C., Rosegrant, M. W., Koo, J., Robertson, R., Sulser, T., Zhu, T., et al. (2009). *Climate Change Impact on Agriculture and Costs of Adaptation*. Washington, D.C.: International Food Policy Research Institute.
8. Parry, M. L., & Rosenzweig, C. (1994). Potential impact of climate change and world food supply. *Nature*, 367, 134-138.
9. Parry, M. L., Rosenzweig, C., & Livermore, M. (2005). Climate change, global food supply and risk of hunger. *Philosophical Transactions of the Royal Society of London. Series B. Biological Sciences*, 360(1463), 2125-2138.
10. Schmidhuber, J., & Tubiello, F. N. (2007). Global Food Security under climate change. *Proceedings of the National Academy of Sciences*, 104(50), 19703-19708.
11. Campbell-Lendrum, D., & Woodruff, R. (2007). Climate change Quantifying the health impact at national and local levels. In A. Prüss-Üstün & C. Corvalán (Eds.), *Environmental Burden of Disease Series, No. 14*. Geneva: WHO Public Health and the Environment

12. Ezzati, M., Lopez, A. D., Rodgers, A., Vander Hoorn, S., & Murray, C. J. L. (2002). Selected major risk factors and global and regional burden of disease. *The Lancet*, 360(9343), 1347-1360.
13. Palmer, T. N., & Raisanen, J. (2002). Quantifying the risk of extreme seasonal precipitation events in a changing climate. *Nature*, 415, 512-514.
14. Parry, M. L., & Rosenzweig, C. (1994). Potential impact of climate change and world food supply. *Nature*, 367, 134-138.
15. Downing, T., & Parry, M. (1994). Introduction: Climate change and world food security. *Food Policy*, 19(2), 99-104.
16. Parry, M. L., & Hawkesford, M. J. (2010). Food security: increasing yield and improving resource use efficiency. *Proceedings of the Nutrition Society*, 69(4), 592-600.
17. IPCC. (2012). *Summary for Policymakers: Managing the Risks of Extreme Weather Events and Disasters to advance Climate Change Adaptation*. Cambridge, UK, and New York, NY, USA.
18. Ebi, K. L., Mearns, L. O., & Nyenzi, B. (2003). Weather and climate: changing human exposures. In A. J. McMichael, D. Campbell-Lendrum, C. Corvalán, K. L. Ebi, A. K. Githeko, J. D. Scheraga & A. Woodward (Eds.), *Climate Change and Human Health: Risks and Responses* (pp. 18-42). Geneva: WHO.
19. Emanuel, K. (2005). Increasing destructiveness of tropical cyclones over the past 30 years. *Nature*, 436, 686-688.
20. Hoyos, C. D., Agudelo, P. A., Webster, P. J., & Curry, J. A. (2006). Deconvolution of the Factors Contributing to the Increase in Global Hurricane Intensity. *Science*, 312(5770), 94-97.
21. IPCC. (2012). *Summary for Policymakers: Managing the Risks of Extreme Weather Events and Disasters to advance Climate Change Adaptation*. Cambridge, UK, and New York, NY, USA.
22. Ebi, K. L., & Schmier, J. K. (2005). A stitch in time: improving public health early warning systems for extreme weather events. *Epidemiologic Reviews*, 27(1), 115.
23. Malilay, J. (1997). Floods. In E. K. Noji (Ed.), *The Public Health Consequences of Disasters* (pp. 287-301). Oxford, UK: University Press Oxford.
24. Noji, E. K. (2005). Public health in the aftermath of disasters. *British Medical Journal*, 330(7504), 1379.
25. O'Brien, G., O'Keefe, P., Rose, J., & Wisner, B. (2006). Climate change and disaster management. *Disasters*, 30(1), 64-80.
26. Sauerborn, R., & Ebi, K. L. (2012). Climate change and natural disasters: integrating science and practice to protect health. *Glob Health Action* 5, 1-7.
27. Guha-Sapir, D., Hoyois, P., & Below, R. (2012). *Annual Disaster Statistical Review 2012 The numbers and trends* Brussels, Belgium: Centre for Research on the Epidemiology of Disasters (CRED) Institute of Health and Society (IRSS) Université Catholique de Louvain.
28. Songer, T. (1999). *Epidemiology of Disasters*, from <http://www.pitt.edu/~epi2170/lecture15/index.htm>
29. Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At Risk: Natural Hazards, People's Vulnerability and Disasters* (2nd ed.). London: Routledge.
30. McMichael, A. J. (2003). Global climate change and health: an old story writ large. In A. J. McMichael, D. Campbell-Lendrum, C. Corvalán, K. L. Ebi, A. K. Githeko, J. D. Scheraga & A. Woodward (Eds.), *Climate Change and Human Health: Risks and Responses* (pp. 1-17). Geneva: WHO.
31. WHO. (1990). *Potential health effects of climatic change—report of a WHO Task Group*. Geneva: WHO.

32. Patz, J. A., McGeehin, M. A., Bernard, S. M., Ebi, K. L., Epstein, P. R., Grambsch, A., et al. (2000). The potential health impacts of climate variability and change for the United States: executive summary of the report of the health sector of the U.S. National Assessment. *Environmental Health Perspectives*, 108(4), 367-376.
33. McMichael, A. J. (2001). Impact of climatic and other environmental changes on food production and population health in the coming decades. *Proceedings of the Nutrition Society*, 60(02), 195-201.
34. McMichael, A. J. (2005). Integrating nutrition with ecology: balancing the health of humans and biosphere. *Public Health Nutrition*, 8, 706-715.
35. McMichael, A. J., Powles, J. W., Butler, C. D., & Uauy, R. (2007). Food, livestock production, energy, climate change, and health. *Lancet*, 370(9594), 1253-1263.
36. Nelson, G. C., Rosegrant, M. W., Koo, J., Robertson, R., Sulser, T., Zhu, T., et al. (2009). *Climate Change Impact on Agriculture and Costs of Adaptation*. Washington, D.C.: International Food Policy Research Institute.
37. Slingo, J. M., Challinor, A. J., Hoskins, B. J., & Wheeler, T. R. (2005). Introduction: food crops in a changing climate. *Philosophical Transactions of the Royal Society of London. Series B. Biological Sciences*, 360(1463), 1983-1989.
38. McMichael, A. J. (2010a). Figure 3.2 Climate-health impact pathway (Discussion: climate-health impact figure for PhD thesis proposal presentation ed.). Canberra.
39. McMichael, A. J. (2001). Impact of climatic and other environmental changes on food production and population health in the coming decades. *Proceedings of the Nutrition Society*, 60(02), 195-201.
40. McMichael, A. J. (2005). Integrating nutrition with ecology: balancing the health of humans and biosphere. *Public Health Nutrition*, 8, 706-715.
41. McMichael, A. J., Powles, J. W., Butler, C. D., & Uauy, R. (2007). Food, livestock production, energy, climate change, and health. *Lancet*, 370(9594), 1253-1263.
42. Rosenzweig, C., Iglesias, A., Yang, X. B., Epstein, P. R., & Chivian, E. (2001). Climate change and extreme weather events Implications for food production, plant diseases and pests. *Global Change & Human Health*, 2(2), 90-104.
43. McMichael, A. J., & Lindgren, E. (2011). Climate change: present and future risks to health, and necessary responses. *Journal of Internal Medicine*, 270(5), 401-413.
44. McMichael, A. J., Nyong, A., & Corvalan, C. (2008). Global environmental change and health: impacts and inequalities and the health sector. *BMJ*, 191-194.
45. McMichael, A. J. (2003). Global climate change and health: an old story writ large. In A. J. McMichael, D. Campbell-Lendrum, C. Corvalán, K. L. Ebi, A. K. Githeko, J. D. Scheraga & A. Woodward (Eds.), *Climate Change and Human Health: Risks and Responses* (pp. 1-17). Geneva: WHO.
46. Rylander, Odland Sandanger (2013). Global Health Action 6: 19538 <http://dx.doi.org/10.3402/gha.v6i10.19538> accessed 4 Nov 2019.

THE PHILIPPINE DISASTER RISK REDUCTION AND MANAGEMENT SYSTEM

Erlidia F. Llamas-Clark, MD, MPH, PhD and Marinella G. Abat, MD, MBA

INTRODUCTION

The Philippines geographic position in Southeast Asia leaves it with an increased propensity toward natural hazards. It is located between two tectonic plates (Eurasian and Pacific) within the “Pacific ring of fire” leading to increased risk of volcanic activity, earthquakes, and landslides. However, a regular occurrence of typhoons, floods, droughts and tsunamis also pose serious risks.

The Philippines is also unique for its high level of exposure to volcanic hazards. The country is home to roughly 300 volcanoes, of which 22 are classified as active and five are classified as highly active. In February 2018, approximately 90,000 people from the province of Albay were affected by the Mayon Volcano Eruption. Approximately 62,000 people were placed in 57 evacuation centers, a hazardous situation that could have precipitated a disease outbreak.

Amongst the natural hazards, typhoons are typically the most destructive that affect the Philippines. An average of twenty tropical cyclones entering the Philippine area of responsibility every year, and nine cyclones making landfall which cause extensive damage. In 2013, the Philippines experienced the most destructive disaster, Typhoon Haiyan (Yolanda), which affected 26 million people and claimed at least 8,000 lives in 2013. Due to its geography, the lack of natural barriers leaves the Philippines without any buffers further intensifying the damage caused by typhoons.

The weather patterns around the world has been undergoing a lot of changes and shifts. Extreme weather events are common in the Philippines. Each year, an average of five typhoons out of the 19-20 make landfall in the country that often leads to catastrophic flooding, landslides, and massive infrastructure and property damage, including the loss of human life.^{1,2}

Apart from the changing climate, earthquakes and volcanic eruption along with human-induced situations such as terrorism and insurgency including occasional political upheavals and unrest make the Philippines a vulnerable but a resilient country. These high profile events attract significant academic and media attention including a large amount of national and local budgets spent on disaster recovery and rehabilitation each year.³

At the same time, other extreme but less visible weather events also affect many parts of the Philippines, such as heavy precipitation, strong winds, or high temperatures associated with otherwise normal weather systems.⁴ These events can vary seasonally (e.g., rainfall variation between rainy and dry periods in the same year), inter-annually (e.g., a given year’s rainy season precipitation differing markedly from the prior rainy season), and inter- or multi-decadally.⁵ Although often less visible than high profile extreme weather events, periods of excessive rainfall or drier than usual conditions threaten human health and well-being in important ways. While excessive rainfall can replenish surface and ground water supplies—providing needed water for agriculture, industry, and everyday human activity—such episodes may also flood local and

national roads, cause localized property damage, and increase the likelihood of waterborne or vector-borne disease.⁶ Extended dry seasons, meanwhile, can diminish water supplies to critical levels, jeopardize food supplies, and negatively impact the health of vulnerable populations.⁷

Since at least 2006, unexpected variability in weather events associated with otherwise normal weather systems has occurred in the Philippines.⁴ Although direct connections between this variability and anthropogenic climate change cannot yet be made, recent climate change scenarios for the Philippines suggest that changes in weather variability—including greater frequency and intensity of related atypical events and extremes—may persist in the future.

In recent years, the Philippines has made important strides toward climate adaptation and resilience building. Community-based disaster management programs have been implemented in many parts of the country, and the federal government now coordinates early warning systems for the public, particularly for typhoons.^{4,8,9}

Relative to high profile extreme weather, however, seasonal and inter-annual weather variability have received less attention in climate adaptation planning (e.g., Climate Change Commission 2012), perhaps due to the slower onset and less national visibility of the impacts of these events.⁴

To inform a better understanding of how disasters need to be weather variability affects households, and toward a more proactive approach to adaptation planning that considers such variation, to what extent people perceive and experience weather variability in different ways, since such perceptions may affect how they prepare for or cope with the consequences of weather events and may thus be useful to gender-informed adaptation planning as well.^{3,10,11}

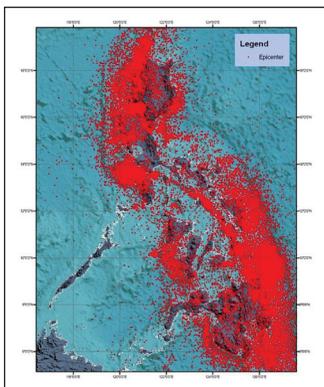
What is a disaster?

As defined in Republic Act 10121, it is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

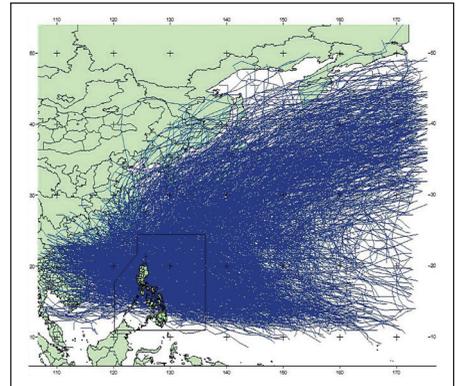
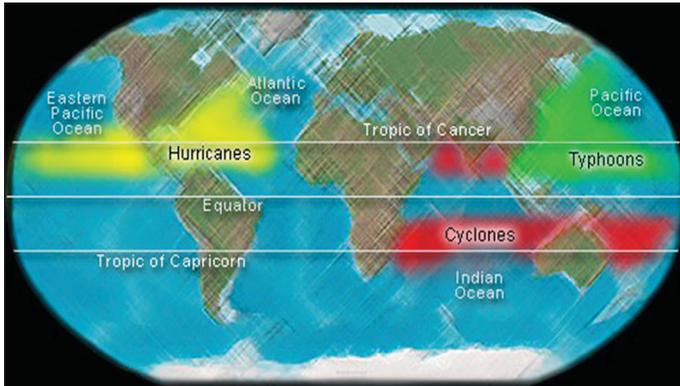
Why do we have disasters?

Pacific Ring of fire - this is an area in the basin of the Pacific Ocean where many earthquakes and volcanic eruptions occur. This is due to the movements of tectonic plates in the area and has around

300 volcanoes, 22 of which are active. The Philippines is well within this Ring of fire. The earthquake activity is due to the nearly 90 destructive earthquakes in the past 400 years.



Pacific typhoon belt – this is an area wherein there is a tendency of tropical cyclones or typhoons to originate and form.



Types of Disasters

Natural Hazards - this would include typhoons, floods, storm surges, earthquakes, tsunamis, volcanic eruptions, landslides and drought. The following pictures will show examples of past major disasters caused by natural hazards in the Philippines



Mt. Pinatubo Eruption, 1991



Guinsaunon Landslide, 2006



Tropical storm Ondoy, 2009



7.2 Magnitude Earthquake in Bohol, 2013



Typhoon Yolanda, 2013

Human-Induced hazards - would include fire, maritime accidents, aircraft crash, land accidents, industrial accidents, pollution, civil disturbance, terrorism and armed conflict. The following images below will show examples of past major disasters caused by human-induced hazards in the Philippines



Wowowee Stampede, 2008



Quirino Grandstand Hostage-taking, 2010



Zamboanga siege, 2013

What are the effects of disasters?

Disasters can disturb the performance of the society or community and can cause human, material, economic or environmental losses that could surpass one's ability to handle using its own resources. Examples would include:

- a. human toll: dead, injured and missing, families displaced,
- b. lost livelihood, damages and losses,
- c. slows down economic development, and
- d. hampers delivery of services

PARADIGM SHIFT IN THE PHILIPPINE DISASTER RISK REDUCTION AND MANAGEMENT

DISASTER RISK REDUCTION

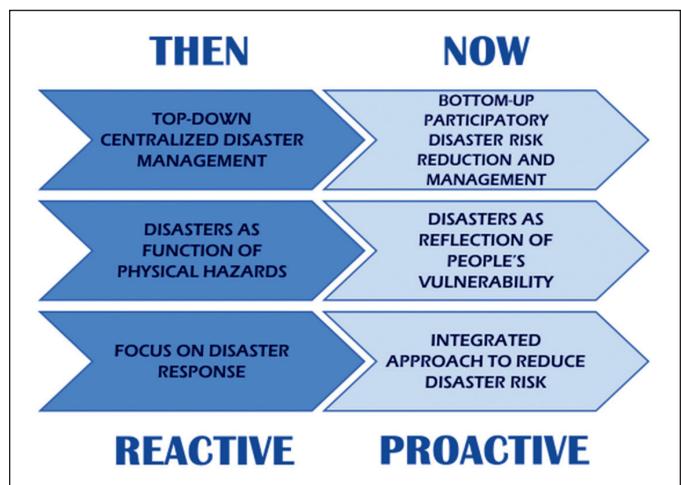
Disaster risk reduction (DRR) is a systemic approach to identifying, assessing, and reducing the risks of a disaster with the objective of reducing socio-economic susceptibilities to disaster as well as dealing with the forces that trigger them. DRR also aims to decrease the damage caused by natural hazards like earthquakes and storms.

As part of the government's efforts to answer these issues the Republic act 10121 was signed in May 27, 2010. This is also known as "an act strengthening the Philippines Disaster Risk Reduction and Management System, providing for the National Disaster Risk Reduction and Management framework and institutionalizing the National Disaster Risk Reduction and Management Plan, appropriating funds thereof and for other purposes".

The aim of disaster preparedness is to reduce the impact of disasters on susceptible populations, to prepare an organization for an entry of activity and to design a coordinated plan that decreases the waste of resources, time and effort.

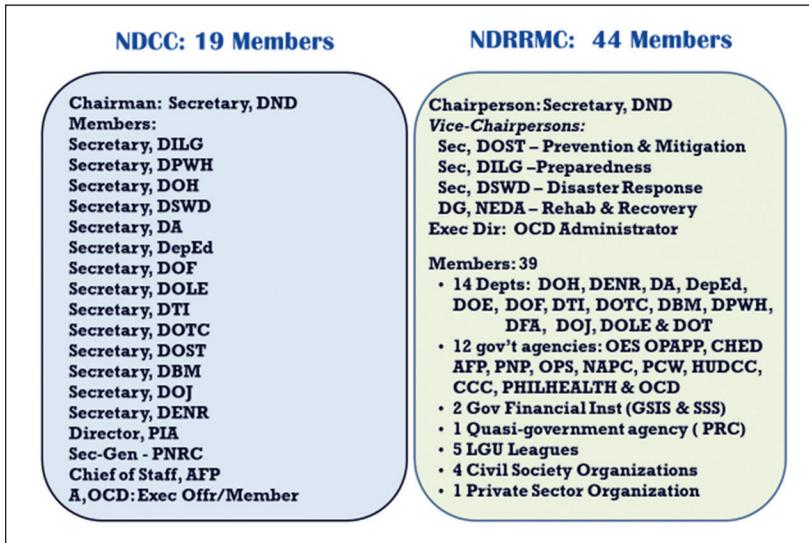
A paradigm shift was brought about by this law. Before, a top-down centralized approach to disaster management is practiced. Now, a bottom-up participatory DRRM approach. Previously, disasters are considered as a function of physical hazards but now there is focus on disaster response. We just don't look at response but instead we take an integrated approach by looking at all aspects to reduce disaster risk. Overall, from reactive we now shifted to the proactive stance in disaster risk reduction and management.

As part of Republic act 10121 of 2010, the government organized the National Disaster Risk Reduction and Management Council (NDRRMC) which was formerly known as the National Disaster Coordinating Council (NDCC). This is a working group which is comprised of different government, non-government, civil sector and private sector. This group is responsible for guaranteeing the protection and welfare of the people during disasters or emergencies. The NDRRMC plans and leads the implementing activities with regards to communication, warning signals, emergency, transportation, evacuation, rescue, engineering, health and rehabilitation, public education and auxillary services in the Philippines. It is tasked to prepare for and respond to natural calamities as well as monitor human-induced emergencies.



Source: Office of Civil Defense

The NDCC used to have 19 members but with the formation of the NDRRMC these members were increased to 44 with the Secretary of National Defense as the chairperson.



The NDRRMC is empowered with the following powers and functions: policy making, coordination, integration, supervision, monitoring and evaluation.

Office of Civil Defense

The Office of Civil Defense is the executive arm and secretariat of the NDRRMC. Its primary mission is to administer a comprehensive national civil defense and disaster risk reduction and management program.

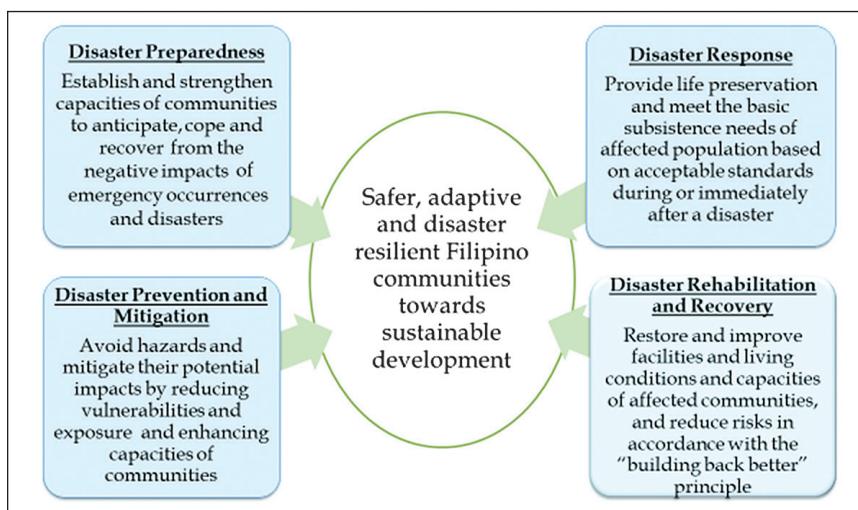
The main headquarters is located at the Camp Aguinaldo EDSA cor Boni Serrano Ave.. The Operations center is open 24/7 for monitoring and coordination. It disseminates situation reports, alerts and communications. Likewise, it facilitates effective management of the consequences of disasters. Below is the DRRM Network:



Local DRMM Offices in every Province, City, Municipality and Barangay set the direction, development, implementation and coordination of DRRM programs in their areas.

FOUR DRRM THEMATIC AREAS

There are four DRRM Thematic Areas which aim to provide safer, adaptive and disaster resilient Filipino communities that can work towards more sustainable development. The four thematic areas are set out below:



The activities under each of the four thematic areas are as follows:

Disaster Preparedness

Planning and policy-making
Prepositioning and stock-piling
Capacitating and organizing responders
Training, drills and exercises
Pre-Disaster Risk Assessment

Disaster Prevention and Mitigation

Early warning systems
Flood forecasting and monitoring
Hazard and risk mappings
Structural interventions

Disaster Response

Rapid Damage Assessment and Needs Analysis
Issuance of advisories and situation reports
Activation of Clusters and Incident Command System
Mobilization of responders
Humanitarian Assistance (eg relief distribution)
Provision of financial assistance
Management of evacuation centers

Disaster Rehabilitation and Recovery

Post-Disaster Needs Assessment
Review of policies and plans
Reconstruction using "build back better" approach
Resettlement
Provision of new sources of livelihood

CHALLENGES MOVING FORWARD

The current Philippine Disaster Risk Reduction and Management System is a significant step forward in managing the country's response to disasters.

Further challenges remain, including the need to continue to:

- seek cooperation and buy-in from stakeholders,
- correct the notion that DRRM is only a government concern,
- encourage people to consider DRRM as a way of life,
- ensure national and local officials to prioritize DRRM, and
- develop, review and improve existing DRRM policies, plans and programs in view of the “new normal”.

Note: This chapter is based on Ms. Sheereen Hombrebueno's presentation at the Office of the Civil Defense National Disaster Risk Reduction and Management Council, Aug. 9, 2018.

REFERENCES

1. Huigen, Marco G.A. & Jens, Isabella C., 2006. “Socio-Economic Impact of Super Typhoon Harurot in San Mariano, Isabela, the Philippines,” *World Development*, Elsevier, vol. 34(12), pages 2116-2136, December.
2. Kubota H, Chan JC (2009) Interdecadal variability of tropical cyclone landfall in the Philippines from 1902 to 2005. *Geophys Res Lett* 36(12):1–4.
3. Bankoff, G., & Hilhorst, D. (2009). The politics of risk in the Philippines: comparing state and NGO perceptions of disaster management. *Disasters*, 33(4), 686-704.
4. Yumul, G.P., Dimalanta, C.B., Servando, N.T. et al. *Climatic Change* (2013) 118: 715. <https://doi.org/10.1007/s10584-012-0661-8>
5. Meinke H, Stone RC. 2005. Seasonal and Inter Annual Climate Forecasting: The New Tool for Increasing Preparedness to Climate Variability and Change In Agroicultural Planning and Operation. *Climatic Change*. December 2005: 1-33.
6. Z. W. Kundzewicz, L. J. Mata, N. W. Arnell, P. Döll, B. Jimenez, K. Miller, T. Oki, Z. Şen & I. Shiklomanov (2008) The implications of projected climate change for freshwater resources and their management, *Hydrological Sciences Journal*, 53:1, 3-10, DOI: 10.1623/hysj.53.1.3
7. Allouche, Jeremy, 2011. “The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade,” *Food Policy*, Elsevier, vol. 36(Supplemen), pages 3-8, January.
8. Allen, K. M. (2006). Community-based disaster preparedness and climate adaptation: Local capacity-building in the Philippines. *Disasters*, 30(1), 81–101.
9. Luna, E. M. (2001). Disaster mitigation and preparedness: The case of NGOs in the Philippines. *Disasters*, 25(3), 216–226.
10. Ajibade, I., McBean, G., Bezner-Kerr, R. (2013): Urban flooding in Lagos, Nigeria: patterns of vulnerability and resilience among women. – *Global Environmental Change* 23(6): 1714-1725.
11. Denton, F. (2002). Climate change vulnerability, impacts, and adaptation: Why does gender matter? *Gender and Development*, 10(2), 10–20.

DOH POLICIES AND PROGRAMS ON WOMEN'S HEALTH AND ENVIRONMENT

Pauly Jean B. Rosell-Ubial, MD, MPH

INTRODUCTION

The Department of Health (DOH) is the lead agency for the country's health sector in developing policies and standards for the various health programs. Through the years, policies on Women's Health and the Environment have evolved and has been based on policy directions from country level development strategies, international agency standards as well as current health data and evidences. Many policies have emerged that sometimes contradict each other. For example, the Skilled Birth Attendant in the 1990s included traditional birth attendants (TBAs) or "hilots" that have undergone a structured training course of 11 days offered by DOH and health NGOs. However, in the 2000s these were reversed so that only health professionals can attend births, whether at home or in health care institutions. Eventually, in 2010s, the policy evolved that there was no concept of "low-risk" births and that all births have risks and complications which cannot be predicted. Hence only facility-based births were allowed. In some instances local governments outlawed home births. It was now illegal to deliver at home even if health professionals attended these. Some sanctions and penalties were sometimes imposed on the family of the pregnant women.

Safe motherhood strategies have also evolved through the years, sometimes focusing on family planning as an important strategy. The campaign on family planning popularized in the 1980s was "Kung Sila Mahal Mo Mag Plano" encouraging all women of reproductive age (15-49 years old) to adopt one form of family planning method or another, raising the contraceptive prevalence of the country to 50% and the drop in Maternal Mortality Ratio (MMR) began. But eventually, family planning was relegated to the sideline as a component of improving MMR, The focus was shifted on to health facility development and skilled birth attendants only by health professionals (Midwives, Nurses and Doctors) as the main strategy to prevent Maternal and Neonatal Deaths in the 2000s.

The introduction of the Reproductive Health Law in 2012 eventually lead to a more comprehensive program for women that no longer focused on maternal health and pregnancy alone but considered services for women throughout the life course. The role of obstetricians and gynecologists likewise expanded to include cancer prevention and treatment, infertility, violence and injuries, and mental health among others.

MATERNAL HEALTH TO WOMEN'S HEALTH

The real challenge for the DOH came with the World Health Organization (WHO) convening stakeholders in Health with environmentalists. The concept of interlink of human health and environmental health became a vital point of integration. A forum on Population, Health and the Environment (PHE) started to emerge as an important interface of policies for health and the environment in the face of the "Climate Change" phenomenon. Policies then changed to consider the interrelationships between health and the environment. In addition, when gender issues were

raised in the Beijing conference on women's health in 1995, policies that identify the intertwining of health, women's and gender issues and environmental concerns began to emerge. This development eventually led to the development of the Sustainable Development Goals (SDGs). The SDGs are more comprehensive than the Millennium Development Goals (MDGs) that was supposed to be attained in 2015. The MDGs had a narrow lens put on maternal health goals only. With the international shifts of policies, the DOH then adopted Women's Health and Environmental policies and interventions recognizing the strong evidence of the links between. The Chapter will explore the evolution of these policies to current standards in health care.

The Chapter will deal with the historical processes and policy development on Women's Health and Environmental Health, leading to the most recent policy pronouncements for the 2017 Manila Declaration on Health and the Environment. It will further deal with the unavoidable links between attaining Women's Health goals and dealing with environmental interventions.

Major concerns to this policy development are stereotypes of women's roles as home maker and child carers, resulting in unique diseases like respiratory tuberculosis and lung cancer due to persistent indoor air pollution due to the use of open-fire cooking. These environmental factors were never considered before as contributory to women's ill-health.

Women more often stay at home longer than men. In most poor households, investments in clean cooking fuel and appliances were never considered vital to improving women's overall health and preventing their continued exposure to indoor air pollution. Policies in this direction, the guidelines on how to have public input and how the Obstetrician-Gynecologist may influence national health directions and policies will be tackled in this Chapter.

Table 1. Philippines Laws and Policies on Women's Health

Year	Type of Law or Policy	Title
1976	Presidential Decree (PD) 996	National Immunization Program including Tetanus Toxoid for Pregnant Women
1988	Republic Act (RA) 6675	The Generics Law
1989	Republic Act (RA) 7719	The Voluntary Blood Donation Law
1990	Republic Act (RA) 7846	Mandatory Hepatitis B Immunization for Children
1991	Republic Act (RA) 7883	Magna Carta for Barangay Health Workers
1991	Republic Act (RA) 7160	Devolution of Services to Local Governments including Health
1996	DOH Administrative Order (AO) 21-A	Women's Health Safe Motherhood Project (WH SMP) Implementation Guidelines
2000	DOH Administrative Order (AO) 79	Safe Motherhood Policy
2001	DOH Administrative Order (AO) 49	Standard Days Method (SDM) inclusion into Natural Family Planning Methods
2003	Republic Act (RA) 7160	Natural Family Planning Strategic Plan 2002-2006
2009	Republic Act (RA) 9710	Magna Carta for Women
2012	Republic Act (RA) 10354	Reproductive Health Law
2013	Republic Act (RA) 10174	People's Fund for Climate Change Mitigation

2013	DOH Administrative Order (AO) 0021	People's Fund for Climate Change Mitigation
2016	DOH Administrative Order (AO) 0005	National Policy on the Minimal Initial Service Package (MISP) for Sexual and Reproductive Health Services in Health Emergencies and Disasters
2016	DOH Administrative Order (AO) 0023	National Policy Framework for Medical Travel and Wellness Tourism Program
2016	DOH Administrative Order (AO) 0035	Guidelines on the Provision of Quality Antenatal Care in Birthing Centers and Health Facilities Providing Maternity Care Services
2016	DOH Administrative Order (AO) 0025	National Policy on the Prevention and Management of Abortion Complications (PMAC)
2017	Executive Order (EO) 12	Zero Unmet Need for Family Planning Services
2017	DOH Administrative Order (AO) 0025	Guidelines in Implementation of MISP for SRH in Health Emergencies and Disasters
2017	DOH Administrative Order (AO) 0035	Revised Implementing Rules and Regulations (IRR) for RH Law
2017	DOH Administrative Order (AO) 0045	Guidelines for Prevention and Management of Post-Abortion Complications (PMAC)
2019	Republic Act (RA) 11036	Mental Health Law
2019	Republic Act (RA) 11223	Universal Health Care Law

Policies and guidelines form the backbone of program implementation in the DOH. These documents shape how health care providers will provide the necessary services to ensure better health outcomes. As a general rule, the DOH formulate policies and guidelines based on existing and relevant evidence as well as latest scientific data and/or researches. These promote the translation of new findings and data into action or positive change to improve health status and situation of communities in particular and the country in general.

MATERNAL AND CHILD HEALTH TO REPRODUCTIVE HEALTH (RH)

Through the years we have seen numerous shifts in policy directions and guidelines on improving women's health and how environmental issues have been brought to the foreground. Due to new discoveries, these two seemingly different fields of study are somehow intertwined and connected. Recent data shows that not only gender issues, but environmental issues also influence women's health and how they access health care services. Many of the by-products of ensuring women's health especially her reproductive health affect the environment such as use of sanitary napkins that produce tons of waste products every year that are thrown to the environment and cause irreparable damages. The way newborns are delivered, cared for and fed also has a lot of deleterious effects.

The lack of access to reproductive health services and their ability to control or space pregnancies is the single most important contributor to environmental health of the planet. As more and more infants are being born, more resources are needed to feed and sustain the growing population. Consequently more wastes are produced which takes a toll on environmental resources.

The Earth's population now stands at 7.5 Billion. It is predicted that its comfortable carrying capacity is only up to 15 Billion. With the current rates of reproduction or births, the population is expected to double in less than 100 years.

As obstetrician-gynecologist (OB-GYN), can we afford to turn a blind eye on this current situation? Many will argue that the problem will fix itself, as forces of nature will balance off the natural fertility rates of human persons. Shall we be comfortable just to wait and see? Or can we do something about it, create positive change, make researches to show evidence of a better outcome and better ways of doing things? In the past 4 decades, even trained hilots or traditional birth attendants (TBAs) were considered SBAs because of lack of health professionals in the country. However, policies in women's and reproductive health shifted to ensure that every birth is attended by an SBA. Currently, only health professionals are allowed to attend to births or deliveries and that these must be done in organized and well-established health facilities.

Teenage pregnancies is another problem we face in this country that has no clear cut policy. The only existing policy for Adolescent Health that may actually be a hindrance to accessing RH information and services is that found in RH Law where parental consent is needed before a minor (less than 18 years old) can access RH and contraceptive information and services. This might result in an increasing rate of teenage pregnancies in the country, the age at sexual debut and the first pregnancy becoming younger.

MGA BANSA SA ASEAN NA MAY MATAAS NA BILANG NG TEENAGE PREGNANCY			
1	PHILIPPINES	6	BRUNEI
2	INDONESIA	7	MYANMAR
3	CAMBODIA	8	MALAYSIA
4	THAILAND	9	SINGAPORE
5	VIETNAM	10	LAOS

Source: United Nations Population Fund, 2011.

Through the years the policies on family planning and the use of contraceptives among women of reproductive age has likewise seen strategic shifts depending on the role of the Executive, Legislative and Civil Society Organizations. Foreign donors and international health partners have likewise influenced the policies on Family Planning and Contraceptive use in this country. In the 1960s and 1970s the USAID provided all forms of contraceptives. Funding was allocated for training of health workers on the use of these contraceptives, as well as media and health promotions activities.

The tagline: “*Kung Sila Mahal Mo, Mag Plano*” (translated: If you love your children, you plan for them) became very popular as this was used in all health facilities nationwide providing FP services. However, in the 1980s-1990s because of a changing leadership, the country's Presidents were encouraging more natural family planning and discouraging openly supporting artificial FP methods. FP users declined during this period and USAID support was shifted to more popular endeavours like Safe Motherhood and Child Survival. A summary of the changing policy landscape of Maternal Health and Family Planning in the Philippines is shown in the next page (Table 2).

Table 2. Summary of the changing policy landscape of Maternal Health and Family Planning in the Philippines

	1960–1970s	1980–1990s	2000–2014	2015–Beyond
<i>Place of Birth</i>	<ul style="list-style-type: none"> Home deliveries allowed 	<ul style="list-style-type: none"> Home deliveries encouraged Lying-In clinic increased 	<ul style="list-style-type: none"> NO home deliveries 	<ul style="list-style-type: none"> Home deliveries Penalized Birthing homes
<i>% Deliveries by Place</i>				
<i>Hospital</i>	30%	40%	50%	70%
<i>Birthing Home</i>	0%	0%	10%	20%
<i>Home</i>	70%	60%	40%	10%
<i>Attendant at Birth</i>	<ul style="list-style-type: none"> Skilled Birth Attendant Include TBAs 	<ul style="list-style-type: none"> Skilled Birth Attendant Only “Trained” TBAs 	<ul style="list-style-type: none"> Only Health Professionals No more TBA trainings 	<ul style="list-style-type: none"> Only Health Professionals TBAs assist only
<i>% Skilled Birth Attendants</i>	40% Professionals 60% Hilots	45% Professionals 30% Trained TBAs 25% Hilots	70% Professionals 20% Hilots	90% Professionals ≤10% Hilots
<i>Risk Classification</i>	<ul style="list-style-type: none"> High risk / low risk not considered in place and attendant at birth choices 	<ul style="list-style-type: none"> Low risk – Home High risk – Hospital Must have birth plan at pre-natal 	<ul style="list-style-type: none"> All pregnancies are AT RISK All births must have referral plan and emergency transport 	<ul style="list-style-type: none"> Low risk – Birthing Homes High risk – Hospital But all births must have referral plan and MOA with nearby hospital
<i>Family Planning</i>	<ul style="list-style-type: none"> Provision of Training and all contraceptives by USAID funded 	<ul style="list-style-type: none"> All contraceptives encouraged “Kung Sila Mahal Mo, Magplano” 	<ul style="list-style-type: none"> Natural FP promoted ProLife Groups very visible 	<ul style="list-style-type: none"> Pro-Choice promoted ALL FP commodities
<i>Funding for Family Planning</i>	Zero funding from GOP	GOP provides funding for FP commodities	No USAID but some foreign and GOP funding for FP/RH	100% GOP funding for FP/RH

WOMEN'S HEALTH TO WOMEN HEALTH AND THE ENVIRONMENT (WHE)

The national policy has changed through the years. It has been influenced by internal and external factors but the DOH continues to be participatory and consultative in crafting these policies. Each policy issuance is vetted to relevant stakeholder and public hearing as well as dialogue with key stakeholders have been the norm since 2004 onwards. This era was when the women's movement and civil society participation became very much felt in Philippine society. The DOH as the main policy and direction setter for the health sector. Continue to involve all sectors in policy formulation, ensuring not only the better health outcomes for the Filipinos but culturally acceptable and client centered health care services.

In the early 2000, the era of Climate Change adaptation and environmental degradation surfaced. The DOH has likewise taken the challenge to adopt policies that will not only produce better health outcomes but also ensure the preservation of natural resources, and maintenance of

ecological balance and secure sustainable development. Preventing diseases and promoting health has been at the forefront of all environmental health interventions and policies. The country has participated and contributed to international fora where environmental risks have been identified that directly or indirectly cause and eventually lead to ill-health. Hence, the concept of Environmental Health was born, as we have identified significant interventions that keep the environment healthy will also eventually prevent disease and keep human populations “Happy and Healthy”. This is where the concepts of WELLNESS began to surface, referring to not just the absence of disease but a state of physical, mental, emotional and spiritual balance is attained with the environment. Keeping the environment healthy is necessary and essential to keeping humans healthy! New policies were developed to usher in this “GREEN Concept”... GREEN Hospitals, GREEN Offices, GREEN Homes, GREEN Schools etc.

In 2015, through United Nations (UN) General Assembly, countries of the world, including the Philippines, committed to the attainment of 17 SDGs by 2030. The SDGs outlines the commitment of each country for improved outcomes in health, economy, human development all anchored in maintaining healthy environment and mitigating climate change or global warming. This UN declaration was concretized in the Asia-Pacific Regional Forum on Health and the Environment held in Manila in October 6-8 2016 now known as the Manila Declaration on Health and Environment, 2016. This historical document outlines steps to do for all member states to ensure environmental health in the Region. It is estimated that 7.3 million deaths annually in the Asia-Pacific Region are due to environmental conditions and a quarter of deaths contribute to the entire burden of disease.

The Philippine data is likewise not far behind. Almost 30% of annual deaths and disease burden are attributable to poor access to fundamental requisites of human existence like safe water, clean air, safe food, proper sanitation and adequate shelter. We can change this scenario only if we work together as a country and all Asia-Pacific as a Region and countries cooperate as a Region and as part of the global community. Concretely, this means understanding that what we burn in one part of the world will eventually affect the health of all. We are interconnected. The waste we throw in our oceans will eventually cause changes in life forms (deaths of marine ecosystems). Ocean currents and weather systems can create stronger typhoons and hurricanes, destroying land ecosystems and gravely affecting human life. This has to change.

Even the practice of Medicine including Obstetrics and Gynecology has to change so we can adopt much more “greener” offices, clinics and hospitals. How do we do that? There is no one in the world with all the answers. As in previous policy shifts and change in practice amongst the health sector led by the DOH, this can only be done through participatory consultation of all stakeholders. Just like the decision of some LGUs to stop the use of single use plastic bags in their locality and to phase out the use of plastic straws in our drinks, these initiatives seem far-fetched at the time it was introduced and may have caused removal or non-reelection of some local politicians, but it can be done. In medicine, can we imagine an operating room with no plastic? Can we imagine a clinic with only reusable materials and supplies, where nothing is disposable? Do we stop the use of disposable sanitary pads and napkins and diapers, and start using reusable “pasador” or cloth? Can we use renewable energy sources for our hospitals and clinics (solar, wind or hydro) or even our cars, or do we now promote using bicycles for all doctors and nurses? Hilarious? Impossible? But think of it that way, we believe it can be done only if we come together and make a firm resolve to help maintain a healthy environment.

During disasters, the policy changes the DOH have adopted continue to evolve. Due to the policy that no pregnant women about to deliver will be allowed in the evacuation centers, these women and some family members will be brought to Maternity Waiting Homes found inside the Hospital compounds. Women and Child Friendly spaces have been established as a necessary part of evacuation camp, as important as sanitary toilets and bathing, cooking and laundry spaces. Mobile birthing vans have been developed in areas where the health facilities (RHU and Hospitals) can no longer be used. The vans will serve as birthing home for pregnant women, but can also be used for emergency transport to the nearest tertiary hospital should the need arise.

Policies on Women, Health and the Environment are evolving as we move towards attaining the SDGs. The DOH usually hold public and stakeholders' consultative fora for each of the new or revised policies and guidelines it issues. The vetting and consultation process on average takes 6 months. We ask POGS to be active in your area during these consultations which usually have NCR, Luzon, Visayas and Mindanao venues. Be active, Be heard and Be involved.

REFERENCES

1. <https://www.who.int/> accessed 3 Nov 2019
2. <https://www.doh.gov.ph/> accessed 3 Nov 2019
3. Danguilan, Marilen J. *The RH Bill Story: Contentions and Compromises*. Quezon City: Ateneo de Manila University Press, 2018.
4. Asia-Pacific Regional Forum on Health and Environment 6–8 October 2016, Manila, Philippines, Manila Declaration on Health and Environment http://www.wpro.who.int/entity/apac_rfhe/manila_declaration.pdf accessed 3 Nov 2019.
5. The Philippine Health Agenda 2016-2022 Monograph https://www.doh.gov.ph/philippine_health_agenda accessed 3 Nov 2019

HISTORY OF THE WOMEN, HEALTH AND ENVIRONMENT ADVOCACY

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The POGS Philippine Obstetrical and Gynecological Society (POGS) Foundation is cognizant of the continuum of reproductive health care for the women sector of our community, not only in a stable environment, but also in times of disasters and climate change. Hence, the 2016 POGS Board of Trustees (BOT) under the presidency of Dr. Blanca De Guia-Fuerte, started to initiate the awareness on Disaster Preparedness and Risk Reduction by having activities for clusters of POGS members and the BOT. Volunteers from the 12 regions of POGS were also enlisted as point persons in case of disaster and natural calamities.

It was in 2017 under the leadership of Dr. Mayumi Bismark, that the Women's Health and Environment (WHE) Adhoc Committee was created on the following premise:

- The committee shall assist in addressing the perceived need to participate in high level engagement to contribute to climate change and disaster risk reduction goals in keeping with the post-2015 Sustainable Development Goals (SDG).
- It shall support POGS advocacy in reducing maternal mortality and morbidity during disasters and emergencies in the spirit of altruism and a shared vision with national government and private institutions and agencies.
- The WHE Committee shall be composed of highly motivated and dedicated POGS members who are knowledgeable on reproductive health issues and problems that may be affected by disasters both natural and man-made. It shall include regional representation because each region may not have the same vulnerabilities and prevalence on the type of disasters.

With all these statements at hand, the 2017 POGS BOT appointed Dr. Betha Fe C. Manaois-Castillo as the BOT liaison officer to the WHE Committee. The POGS BOT then appointed the composition of the said committee as follows:

Chair: Erlidia F. Llamas-Clark, MD, MPH, PhD

Members:

1. Joanne Karen S. Aguinaldo, MD
2. Mary Judith Q. Clemente, MD
3. Rojannah T. Sahagun, MD
4. Rona F. Rañola, MD
5. Ana Maria Carmen L. Zaballero, MD

The committee then updated the list of volunteer POGS members at the regional level through the support of all the 12 POGS Regional Directors.

THE OBJECTIVES OF THE WHE COMMITTEE:

A. General Objectives:

1. To implement awareness seminar workshops that will address the need to institutionalize within POGS, the principles of disaster preparedness and risk reduction through its regional chapter representatives and members nationwide.
2. To further support the Society's engagement in disaster and emergencies including preventative initiatives and projects that will have short and long-term implications to women's health by liaising with key multi-disciplinary and multi-sectoral national level stakeholders.

B. Specific Objectives:

1. To identify through its regional representation the different natural and man-made hazards in their localities, to be able to provide maternity and gynecologic services in coordination with the regional, provincial and local government health units and non-government agencies in a disaster situation.
2. To identify key agencies to further the aim of making POGS members aware and knowledgeable to engage in disaster risk reduction and response principles and to respond to women's health needs when there is a local or national calamity or disaster.
3. To sign Memoranda of understandings/agreements as appropriate between the POGS and national level agencies that will assist in the engagement of POGS membership who wish to become volunteers in times of disasters/calamities.
4. To establish a coordinated disaster and calamity tracking system and volunteer registry between and among POGS and the other national level agencies involved with disaster mitigation, response and rehabilitation.
5. To assist volunteer POGS members in the timely and safe deployment to the disaster locations where obstetrical and gynecological expertise is needed.
6. To evaluate if the volunteer registry system will work through regional reports.

The major activity of the committee in 2017, was a seminar-workshop for all regional POGS volunteer members held on August 10, 2017 at POGS Building. The POGS WHE Chair, Dr. Erlidia Llamas-Clark, invited multisectoral resource speakers from the major national key agencies involved in Disaster Risk Reduction Management (DRRM) including the Chair of the FIGO Climate Change Committee, Dr. Ditas Cristina D. Decena to be the resource speakers in the seminar training. The committee members acted as facilitators in the workshop proper. This seminar-workshop opened the avenues on how POGS could collaborate with national agencies involved in DRRM on specific areas where POGS can be most effective on its healthcare delivery to the vulnerable women sector of the community. The identified agencies were the Philippine Red Cross (PRC) and the Department of Health (DOH). The Memorandum of Agreement (MOA) was signed on October 26, 2019, between POGS Foundation, Inc., 2017 POGS President, Dr. Mayumi Bismark and the Chairman and CEO of PRC, Senator Richard J. Gordon.

This was the start of the formal partnership of the two private agencies on the healthcare delivery system in line with the DRRM principles.

The WHE committee in the year end of 2017, started to conceptualize and planned the 2018 activities.

In January 2018, POGS President Dr Elisa Tiu, integrated in the WHE Committee, the FIGO Climate Change Committee headed by Dr Ditas Cristina Decena since 2015, which had international representation at the FIGO Vancouver, Canada. This WHE Subcommittee is now known as the Reproductive, Development and Environmental Health (RDEH) deals with the impacts of the environment on health particularly on women's and reproductive and developmental health concerns. The RDEH Subcommittee was created during the presidency of Dr. Mayumi Bismark as an off shoot of POGS participation in FIGO 2015 in the Summit of Planetary Earth. The RDEH sub-committee composition are as follows:

Chair: Dr. Ditas Cristina Decena

Members:

1. Dr. Grace Cayabyab
2. Dr. Erlidia Llamas-Clark
3. Dr. Andrea Santiago
4. Dr. Mary Anne Tabaquero

Since its inception, the subcommittee directed their efforts by spreading the RDEH advocacy through lectures in conjunction with the Committee on Continuing Medical Education. In 2018, the RDEH Primer was published with guest editor Dr. Bernadette Octavio.

The DRRM group of the WHE Committee on the other hand conducted the WHE Seminar-Workshop at Hotel Venezia, Renaissance Gardens Washington Drive, Legaspi City, Albay in August 9, 2018 with the theme "Empowering Women in Disasters: Learning from Regional Disaster Preparedness and Response Experiences". Multi-sectoral and multidisciplinary resource speakers from POGS, PRC, Albay Public Safety and Emergency Management Office, NDRRMC, DOH regional and provincial government offices comprised the seminar-workshop faculty. This was well attended by the WHE team from the 12 regions of POGS and Region V members. The seminar was very much appreciated by the participants as to the shared experiences, on the efficiency of networking and resilience of the people of Albay with the series of volcano eruptions, typhoon and other natural calamities that beset the region. The participants expressed enthusiasm for the 2019 Seminar –Workshop in Tacloban, another area who had great experience with super typhoon Yolanda which coincides with its 5th year commemoration.

The year end of 2018 was indeed a continuum of the subsequent activities for the following year and planning for the 2019 seminar-workshop in Tacloban was started. In addition, the POGS BOT commissioned the WHE Committee envisioned to publish the WHE Book as a document on what has been done by the committee and will serve as reference and guidelines for POGS members who wish to volunteer on this altruistic endeavor of POGS.

In 2019, the WHE portfolio BOT was assigned to Dr. Virgilio Castro. He replaced Dr. Betha Fe Castillo who was reassigned to start up another portfolio at the POGS. Dr. Mario Bernardino, the 2019 POGS President was the signatory to the long-negotiated DOH MOA which was signed last May 2019 with Dr. Virgilio Castro and Dr. Llamas-Clark. A series of meetings and

preparations for the WHE book production and for the 3rd WHE Seminar Workshop in Tacloban City which was held last August 9, 2019. The WHE DRRM group has been commended for its very successful work expanding now into not just natural disasters but towards enabling our OB GYNs to be advocates and address pressing concerns of complex emergencies such as the recent Marawi siege that put our women in fragile situations affecting their health.

The WHE Committee has now modestly expanded to increase its membership to have representation from different subspecialties and POGS members who would like to share their perspectives and interests in matters that concern Women, Health and the Environment.

As 2019 draws to a close, the WHE DRRM Team offer the WHE book entitled, “Women, Health and the Environment: Concepts and Perspectives for the Obstetrician Gynecologist”. The WHE Committee members are hopeful that the group may be allowed to continue on with this endeavor to deliver health care services and serve the women and their families who are caught in the most challenging times of their life.

PRIVATE PARTNERSHIPS IN DISASTER RISK REDUCTION AND RESPONSE: THE PRC AND POGS ENGAGEMENT

Betha Fe Manaois-Castillo, MD

The Philippine Obstetrical and Gynecological Society (POGS) Foundation, Incorporated through the Adhoc Committee on Women’s Health and Environment, started the identification of multi-sectoral agencies such as government, non-government, private institutions, media companies among others, for effective collaboration and participation of POGS volunteer members in the national program of disaster risk reduction and responses. One of the identified partners is the Philippine Red Cross.

The Philippine Red Cross (the PRC) is an international humanitarian organization primarily engaged in various emergency response activities including rescue, relief and rehabilitation in events caused by disasters, natural calamities, emergencies and other mass casualty incidents (MCIs), duly mandated under Republic Act No. 10072 otherwise known as the “Philippine Red Cross Act of 2009”.¹

The PRC has identified the need for volunteer obstetrician/gynecologists because every time there is a disaster women and mothers are affected. In October 26, 2017, POGS and PRC entered into a Memorandum of Agreement for the implementation of efficient healthcare delivery system in times of emergencies that will involve the mutual assistance and support for its members and chapters in the regions where there is a calamity.²

With this agreement, members of POGS commit that whenever there is a disaster and emergency, members with various women’s health fields of expertise needed on the ground are ready to be mobilized in coordination with the PRC volunteers in healthcare delivery in the different regions. To streamline the organization, the WHE committee created in each POGS 12 regions, the Preparedness and Risk Management Committee.

The PRC on the other hand has 104 Chapters nationwide, equipped with an Operation Center overseeing its operations and has the capacity and logistics to deliver basic health services.

Objectives of the Partnership:

To:

- a. ensure that in case of mass casualty incidents (MCI), disasters and emergencies, there shall be volunteer doctors to be deployed in medical facilities or areas where their specialized services would be needed.
- b. ensure that PRC and POGS are able to maximize their services and emergency response systems in cases of emergencies, disasters and MCIs.
- c. assist the affected population thru adequate, timely medical services, triage and other emergency medical response services.
- d. train and drill PRC and POGS personnel in disaster health operations, emergency coordination, communications, and reporting.
- e. provide an opportunity to build stronger partnerships for both parties on emergency activities

Philippine Red Cross Commitments:

To:

- a. assign focal points to POGS at National headquarters and Chapter Level for better coordination purposes.
- b. provide appropriate emergency operations, training, drills and equipment for volunteer doctors.
- c. organize meetings on all levels (leadership and technical up to the regional level).
- d. input/update POGS key contacts to PRC Operation Center for quick communication during emergencies.
- e. transport Volunteer Doctors to areas of emergency operations/health care facilities needing assistance.
- f. ensure that key directories/contacts of POGS volunteer doctors shall remain private/confidential and shall be accessed only by authorized personnel when needed.
- g. collaborate other non-emergency programs/activities of PRC related to public health which POGS Foundation can be involve with.

Philippine Obstetrical and Gynecological Society (Foundation), Inc. Commitments:

To:

- appoint a liaison officer to directly coordinate with the PRC for the implementation and fulfillment of the objectives of the partnership
- call upon its members to become volunteers who will be deployed and mobilized in cases of emergencies, disasters and MCIs to provide medical and surgical services within their capacities in PRC emergency medical units such as Field Hospitals, Basic Health Care Units and/or other medical facilities which would need such services;
- ensure that volunteer members of the POGS Foundation regularly train, familiarize and drill with PRC personnel and volunteers on emergency and disaster preparedness and response protocols especially on emergency medical units, EFH operations and emergency communications and transportation protocols for members
- provide resource persons to PRC activities on topics related to the fields of expertise of POGS Foundation members.
- constantly inform and encourage their volunteer members to make themselves available to provide their specialized medical services to the injured or wounded in times of emergencies, disasters and MCIs
- provide the PRC with a list of its volunteer members with addresses and contact details.
- inform their volunteer members that in case of emergencies, disasters and MCIs, members of the PRC shall be deployed to fetch them wherever they are and bring them to areas of operations and other medical facilities which lack doctors with obstetric and gynecologic skills;
- regularly update the PRC on changes in their officers and contact details of POGS Foundation members
- advocate members to participate in regular program of PRC either in community or workplace.
- encourage POGS members to support PRC's effort in providing services to vulnerable communities through health and hygiene-related activities during non-emergency activities

Together, the POGS Foundation and Philippine Red Cross partnership can deliver effective health services during emergencies and disaster

REFERENCES

1. Republic Act No. 10072 otherwise known as the “Philippine Red Cross Act of 2009” <https://www.officialgazette.gov.ph/2010/04/20/republic-act-no-10072/> accessed Oct 23, 2019.
2. POGS and PRC Memorandum of Agreement October 26, 2017.

OBSTETRIC AND GYNECOLOGIC COMPLICATIONS DURING DISASTERS

Rona F. Rañola, MD

INTRODUCTION

Disaster is an event or occurrence disrupting the normal condition of the community or society necessitating a request for a national or even international level of external assistance. To be categorised as a disaster, the event must meet at least one of the following: a) ten or more people reported killed, b) one hundred or more people reported affected or c) a declaration of a state of emergency or call for international assistance.¹

The Philippines by virtue of its geographic location is prone to natural disasters. The country is located in the Pacific Ring of Fire where many of the worlds typhoons, floods, earthquakes and volcanic eruptions occur. The World Risk Report ranked the Philippines 3rd in the list of top 15 countries with highest exposure to natural disasters.²

Around 50.3% of the total land area and 81.3% of the Philippine population are vulnerable to natural disasters.³ Between 2000 and 2016 natural disasters in the Philippines caused over 23,000 deaths and affected roughly 125 million people. The associated socioeconomic damage was about \$20 billion with average annual damages of \$1.2 billion.⁴

In 2013, the Philippines was struck by typhoon Haiyan/Yolanda the deadliest to hit the country causing massive damage to people's lives, properties, livelihood and infrastructure. Typhoon Haiyan affected 26 million people and claimed at least 8,000 lives. The total estimated economic impact of Typhoon Haiyan was \$14 billion.

EPIDEMIOLOGY

The present Philippine population is 104 million and more than 80% are at risk during a disaster. As such it is important to identify the vulnerable population during disasters. Vulnerability is defined as the characteristics of a person or group and their situation that influences their capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster.⁵ It is important to identify who the amongst the population are most vulnerable to the impact of the disaster. This includes children, pregnant women, elderly, malnourished people and people who are ill or immunocomprised.⁶

It is estimated that one in five women of childbearing age is pregnant in a disaster setting and their needs should be addressed in such situations. Several studies have shown poor pregnancy outcomes in disaster settings including early pregnancy loss, birth defects, low birthweights, preterm birth and placental abruption.⁷

Maternal and child mortality is increased by 10 to 30% in an humanitarian context during disaster compared with non disaster setting.⁸ The American College of Obstetricians and Gynecologists (ACOG) noted that lack of resources including food, water and shelter during a disaster adversely impact pregnancy and pregnancy outcome. ACOG stated that during a disaster there should be emergency preparedness which should include continuous prenatal care, prepared emergency delivery kits for patients, developing evacuation plans, providing shelters that are safe and contraception. This chapter will deal with obstetric emergencies during disasters.

DISASTER PREPAREDNESS FOR OBSTETRICIANS

In times of disaster, pregnant women should be assured that prenatal care and obstetrical services are always available for them. However, physicians should never make heroic efforts to provide care outside of an organised team of responders. POGS members who are interested in providing care during disasters should first obtain proper training on caring for themselves and others in austere environments.

Since there are very few obstetrician trained in such situations there should be an identified hospital with an established basic and comprehensive emergency obstetrical and newborn care. There should be an obstetrician-gynecologist who should assume leadership role in assessing the availability and set-up necessary for continuous obstetric care.

There can also be physical barriers for example, landslide, demolished bridges that can hinder pregnant women in accessing the identified hospital. In these circumstances, there should be an effort to team up with Rural Health Units (RHU) that these women can access. The RHU should be provider with emergency birth kits prior to the anticipated disaster.

EVALUATING THE PREGNANT PATIENT

The type of the disaster, the phase of the disaster response, the physical set up of the hospital, the resources available and the medical and surgical condition of the pregnancy patient can impact history taking, physical examination and assessment by the medical team. There should be a safe and protected area to protect the woman's privacy and thus be able to gain her trust.

A complete history taking is not different for pregnant and non pregnant patient. It is important to ask about vaccination history especially tetanus and influenza vaccines if the pregnant patient is injured or there is an increased risk for respiratory infection during the disaster.

The social history is also important during disaster. Inquiries about living condition, source of income, access to clean water and food, transportation and access to hospital, intimate partner/ domestic abuse and safety of her present surroundings should be obtained and recorded. It is also important to ask pregnant patients about history of exposure to toxic fumes. Some examples are volcanic ash during eruptions or chemical or biological warfares during insurgencies.

Patients' data should be recorded. If computers are available, electronic data is preferred. If only paper recording is available, the hospital personnel should make use of the record and make sure these are protected from storage damage.

OBSTETRICS CONDITIONS DURING DISASTERS

1. Pregnant patients with trauma

The initial evaluation of a pregnant trauma victims follows the same principle of any trauma patients. However, the presence of the gravid uterus makes it difficult to assess the extent of injuries. The primary goal is still evaluation and stabilisation of the mother. Basic rules of resuscitation is followed. Once the mother is stabilised, she should be evaluated for fractures, internal injuries including uterine rupture, fatal and placental injuries. Ultrasound if available will provide adequate information about the uterus, fetus and placenta.

2. Placenta abruptio

Placenta abruptio should be ruled out especially when the pregnant patient is suffering from trauma. Abruptio placenta develops immediately following trauma, and the mother should be hooked once stable to an electronic fetal monitor (EFM) within 4 hours of trauma. Almost 20% of women with frequent contractions every 10 minutes has an abruptio. It is reasonable to observe the mother for 4 hours with normal tracings and with no other findings such as bleeding or uterine tenderness.⁹

3. Preterm labor

Preterm labor is defined as strong, regular uterine contractions which can bring about cervical change before 37 weeks. It can also be defined as more 4 contractions in 30 minutes or more than 6 contractions in 60 minutes with cervical change before 37 weeks. During disaster, the pregnant woman is at risk for infections due to limited resources and space or she can have anxiety, stress or even depression. These situations put her at risk for preterm labor.

Management of preterm labor should include evaluation for the underlying cause. Infectious process like diarrhea or urinary tract infection should treated accordingly. Administration of dexamethasone or betamethasone should be advised. Tocolytic agents should be administered.

(Please refer to POGS CPG for further discussion on management of preterm labor.)

4. Labor and delivery

Women in labor should be brought to the identified referral hospital. If is not feasible, she should be brought to an RHU which can provide Basic Emergency Obstetrics and newborn Care (BEmONC).

Pregnant women in labor should be managed accordingly. Routine episiotomy should not be done and instead practice restrictive episiotomy. Immediate skin to skin contact or placing the newborn on the mothers chest covered with warm blanket will help initiate breastfeeding. If possible, delayed cord clamping should be done to prevent neonatal anaemia.

RECOMMENDATIONS

1. The designated referral hospital should provide and continue care for pregnant patients including prenatal care.
2. The designated hospital should have integrated a network system with the local RHU and POGS members.
3. The hospital should have an obstetric protocol to be followed during disasters.

4. Disaster training should be offered to all POGS members interested in caring for women in austere situations.

It is necessary to continue routine prenatal in disaster situation. This will give assurance to pregnant women that they are being taken care of. Routine prenatal care should include counselling on proper nutrition, vitamins, exercise and infection prevention.

REFERENCES

1. WHO. Emergency and essential surgical care: disaster and emergencies
2. Philippines: Disaster Management reference Handbook (March 2018)
3. Policy Brief Senate Economic Planning. May 2017
4. Jha S, Martinez A, Quising P, Ardaniel Z, and Wang L Natural Disaster, Public Spending, and Creative Destruction: A Case Study Of the Philippines. ADBI Working Paper Series. March 2018
5. William Donner and Havidan Rodriguez. Disaster Risk and Vulnerability. The Role and Impact of Population and society.
6. WHO. Environment Health in Emergencies
7. Zotti ME, Williams AM, Robertson M et al. Post disaster reproductive health outcomes. Maternal Child Health J. 2013 17:783
8. United Nations Office for the Coordination of Humanitarian Affairs. World humanitarian data and trend. 2016
9. William obstetrics. Hogan MC, Foreman KJ Naghavi M et al. Maternal Mortality for 181 countries. 1980-2008:

FAMILY PLANNING IN TIMES OF DISASTER

Enrico Gil C. Oblepias, MD, FPOGS

I. INTRODUCTION

In crisis situations, survivors have to deal with lack of resources, less than ideal living conditions, and minimal medical attention. In reality, a disaster situation demands more of the health resources and support. Admittedly, women are more vulnerable to all of these than men. Unlike men, women have unique health needs including risk for unintended pregnancies.

While no one would want to be pregnant during a crisis situation, pregnancies are still possible. Aside from the unprotected sexual encounters that may be employed by survivors as a comfort-seeking activity in a stressful situation, women's individual and sexual protection may also be put at risk with the potential social disruptions that may ensue after a disaster.^{1,2} If conception does take place, there is likely no ideal prenatal, intrapartum and post-partum care available, or any kind of medical care for that matter, that it endangers both the mother and child.² Hence, family planning is a serious matter needing attention in times of crisis.

II. CONTRACEPTION IN CRISIS SITUATION

Contraception in order to be ideal needs to be acceptable on many levels. It has to be easy to use, reliable, safe, and readily accessible.³

A. Ease of Use

During a disaster, the ease of use greatly influences compliance, proper use, and efficacy of contraceptives.^{4,5}

1. Condoms

Condoms are an example of a barrier method that is easy to handle. When kept sealed in its original packaging away from heat and humidity, they can last for years. Condoms also have the advantage of being the only contraceptive method that offers protection against sexually transmitted infections. During disasters, they can be easily distributed. Health workers can put them in relief bags, give them away in street corners, or even drop them with relief goods from a helicopter and people would already know what to do with them.

In terms of use, it is self administered and does not need the assistance of a health provider.¹ However, because its use is linked to the sex act itself, effective use is very much user dependent. The couple has to be able to negotiate that they will use it before coitus. Unfortunately, its efficacy is greatly compromised in case of poor compliance.²

2. Oral Contraceptive Pills

Oral contraceptive pills (OCPs), both the combined hormonal contraceptives (CHCs) and the progesterone-only pills (POPs), are packed securely in compact and easy to use blister packs. OCPs need to be kept in room temperature away from light and moisture. Similar to the condoms, they can easily be distributed. However, OCP use require disciplined self-administration and an understanding of its side effects. Therefore, efficacy is also user dependent. OCP use, unlike the condoms, is not linked to the sex act. Its efficacy involves religiously taking one pill a day, in sequence and preferably at the same time everyday. This daily requirement may become cumbersome and can be subject to forgetfulness. In crisis situations, poor compliance is likely to happen.¹

3. Injectables

Depot medroxyprogesterone acetate (DMPA), also known as injectables, is another form of contraceptive that is widely used.

DMPA can be stored in a wide range of temperature but ideally should be kept at temperatures below 30°C. In the Philippines, ambient temperature may reach 40°C. Temperature control requires equipment and electricity. During calamities, power and electricity may not be consistently available in disaster areas.

Although DMPA can be self-administered by those with the skills to do so, this is usually administered by medical personnel.² It is fairly long acting with an effectivity of 3 months, which may be all that is needed until the crisis situation is stabilized. An advantage for disaster situations is that when DMPA is given to women at the start of the crisis period, fresh supplies will only be required three months later. If replenishment is provided for shortly before the prescribed period, then storage will not be an issue. During the said period, the woman may be sexually active at any time and as frequently as she wants or needs without fear of getting pregnant. DMPA may just be the ideal contraceptive in these situations.¹

4. Implants

The etonogestrel subdermal implant is one of the truly long-acting reversible contraceptives (LARCs) that is contained in a slow-release silastic receptacle. In many ways, it has similar characteristics to the DMPA, the implant has a long contraceptive coverage of 3 years.

Administration of the implant would need the special skills of a medical personnel with training.² Skilled administration could be expedient and require only the minimum of medical supplies. The implant also a potential contraceptive method in crisis settings. However, cost may be an issue.

5. Intrauterine Devices

Intrauterine devices (IUDs), both the Copper T and the levonorgestrel releasing intrauterine system (LNG-IUS), are even longer-acting with a contraceptive coverage of 5-10 years. The device however has to be inserted into the uterine cavity through the vagina and the cervix, which requires more specialized training/experience and more than the usual medical supplies

that might not be available in make-shift hospitals in times of disasters.² IUDs, like implants, are considered Long-Acting Reversible Contraceptives. Although effective contraceptives, it may just be impractical as an initial method in a first-response situation.

6. Sterilization

Surgical sterilization by bilateral tubal ligation (BTL) and vasectomy offers effective contraception.⁶ But because of the surgery and the post-surgical care needed, offering this option may not be appropriate during a disaster/emergency situation. Apart from the distinct advantage of it being permanent, other more practical, more convenient methods may be adequate for the meantime until surgical sterilization may be appropriately availed of if still desired.² Surgical sterilization in the context of disaster/crisis management might have to be postponed until later when family planning counselling services resume

B. RELIABILITY

Typical and Perfect Use

Reliability would be a function of the efficacy of the method to prevent conception. The convenience of its use and the extent of user dependence may be a major concern in the aspect of compliance and ultimately, its efficacy. The effectiveness of the different methods may be based on perfect use and on typical use. All contraceptives would be more effective when used as designed or intended. Success rates of these will be affected with typical use since many factors can affect less ideal compliance patterns.⁶

Natural methods are more reliable compared to no contraceptive method used at all.⁶ However, during disaster while couples may still practice natural methods, compliance for perfect use in a disaster situation may be difficult to carry out because of the loss of normalcy and order.

The condoms are better than natural, but the disparity between the effectiveness with perfect use and the effectiveness with typical use of this method is very much user-dependent.⁶ Again, this may pose an issue in less than ideal settings.

The hormonal methods appear to be most reliable, individually and as a group. Whether used perfectly or even typically.⁶ For this reason, from this point on, we will now focus our discussion on the hormonal contraceptive methods.

Types of Delivery System

The delivery system may appear secondary in the selection of which hormonal contraceptives would be best. Nevertheless, it has been found that preparations providing the longer contraceptive coverage with the least effort on the part of its user are most effective.^{6,7}

Across the board, all hormonal contraceptives perfectly used are effective enough to have at most only 0.3% unintended pregnancy within first year of use.⁶ Among them, with typical use, since administered daily, the OCPs have a higher unintended pregnancy rates.^{6,7} It is not by any

means ineffective, but only because other utilized non-hormonal methods have higher failure rates when used typically.^{6,7} The unintended pregnancy rate may be low enough for use in times of disasters, but the longer acting hormonal contraceptive have been found to have lower rates even with typical use. For example, DMPA, given every three months, have a lower failure rate at 3% with typical use compared to OCPs' 8% within the first year of use.⁶

For the LNG-IUS with 5 years and the implant with at least 3 years coverage, failure rates are just 0.2% to only 0.05% within the first year of use respectively. These two are just as effective typically or perfectly used since users will only require a single motivational act to avail of its full and long-term contraceptive benefits.^{6,7}

Therefore, by virtue of their delivery systems, progesterone-only contraceptives (POCs) which include the injectable DMPA, the etonogestrel implant and the LNG-IUS are more reliable than the daily OCPs. Comparing the different POCs, the longer acting levonorgestrel IUDs and the etonogestrel implants are understandably more reliable than the injectable DMPA.^{7,8}

C. SAFETY

As far as safety of these contraceptives is concerned, it might just be an issue of the hormonal contents.

The choice between combined hormonal contraceptives (CHCs) and progesterone-only contraceptives (POCs) is an issue that needs clarification.⁹ The best reference for this would be The World Health Organization's Medical Eligibility Criteria (WHO MEC) which is a systematic guide for prescribers using evidence-based recommendations for safe prescription of contraception to women with existing medical conditions.¹⁰

In times of disasters, determining the eligibility of women for certain hormonal contraceptives having some medical contraindication would be difficult because of the circumstances and limitations in medical facilities. It would be best to prepare, use, and stock up on contraceptives that would be safe for use by most women with medical co-morbidities. Contraceptives that can generally be used with less harm despite the woman having a medical condition is preferred over contraceptives that are likely to be restricted for use by women with a common or a serious existing medical problem.

The WHO MEC classifies the contraceptive in consideration whether the method can be used safely anytime by a woman with a given medical condition (Category 1); the method could generally be used but with some precautions (Category 2); the method is not usually recommended unless with close monitoring and other more appropriate methods are not available or acceptable when contraception is very much desired (Category 3); and the method is strictly contraindicated and should not be used under any circumstances (Category 4).¹⁰

Based on this and in line with the above suggestion of investing on largely safe contraceptives for disaster stricken areas, contraceptives considered Category 1 or 2 are more ideal in crisis situations.

A color coded scheme has been given to the 4 categories to ease the use of some handy charts like the one developed by the Family Health International 360 (FHI 360), and funded and distributed by the US Agency for International Development (USAID) that can be provided for on site (*see Appendix*). Green and light green for categories 1 and 2 would mean the contraceptive may be used safely by a woman with an identified medical condition even with limited clinical judgment, and pink and red to stand for Categories 3 and 4 which would mean use would be risky or unsafe. At a glance, it is not difficult to notice that on the quick reference guide below that there are more reds and pinks with CHCs than POCs against the more common and more serious medical conditions likely to be encountered in any situation.

Basically all the conditions that put a woman at increased risk for venous thrombus embolisms (VTE) itself, like smoking or obesity after the age of 35, aural migraine, and hypertryglyceridemia, or other serious medical conditions that can be worsened or precipitated by venous thrombus embolisms (VTE), like stroke, and myocardial infarction are known contraindications for CHC use.¹⁰

Breast cancer, liver diseases, diabetes associated vascular diseases and unexplained vaginal bleeding on the other hand are the known important contraindications for POCs. These are also serious contraindications for CHC use.¹⁰

CHCs when used properly can be safe and effective contraceptives in ideal conditions. However, CHCs need to be used and dispensed of more cautiously than POCs in times of disaster, during which time medical judgement may be limited or even hampered.

Long Acting Reversible Contraceptives

Strictly speaking, LARCs only include IUDs and implants. For the purpose of this topic, DMPA injectables will be included in this group. IUDs and implants are good and convenient methods for those who are unable to remember daily intake or even an every 3 months injection with DMPA.

The LARC have the following characteristics²:

- need only a single motivational act for administration
- do not require episodic, daily, weekly, monthly user initiative
- give continuous 24/7 contraceptive protection
- most effective reversible methods available
- among the safest contraceptive method with fewer WHO MEC Category 3 or 4
- superior continuation rates and highest patient satisfaction among methods
- close alternative to surgical sterilization, yet temporary
- most cost effective and cost saving methods with long term use
- pro-gestational and will not cause birth defects or cause harm to the fetus if given to patient who happens to conceive or is already pregnant
- do not affect breast milk production for women who happen to be breastfeeding at the time of contraceptive initiation (not earlier than 6 weeks after childbirth)
- can cause amenorrhea with prolonged use reducing need for additional sanitary products.

D. ACCESSABILITY

In disasters, accessibility of resources will be dependent on the budgeting of Disaster/Crisis Management Program which would in turn influence the provision and choice of contraceptive method available. Affordability is also an issue in its availability and eventually in its access by women in times of crisis.

A survey of the market prices of the different contraceptives have been done and compared here if they were to be used for 3 straight months.

For condoms, it was arbitrarily computed with the couple having sex 6 times a month or at an average of once every 5 days for a cost of P150 per 3 months. The use of generic contraceptive pills will be just as expensive as using condoms regularly. At this rate, condom or OCP use are already more expensive than a single injection of DMPA which at P120 already has a contraceptive coverage of 3 months. On the other hand, while the overhead for the IUDs and implants may be cost-effective in the long run as a long-term contraception, it may be too expensive for the first three months of crisis management at P4,000 to P15,000 per administration.

III. RESUMPTION/SHIFTING

What about disruption of prior contraceptive use? After a disaster, there is uncertainty of a woman's next dose. many unintended pregnancies occur during lapses in contraceptive use. It is important that a woman has continued contraceptive coverage, either by resumption of prior method or shifting to a new method. Proper guidance through transition is imperative.¹

Women may restart or shift contraception anytime, even when previous schedule has been disrupted, as long as the woman is not pregnant. The health provider should instruct them to abstain or use barriers for at least 7 days on the current hormonal contraception if menses/missed scheduled dose is remote or unrecalled.¹¹

IV. EMERGENCY CONTRACEPTION

Due to expected interruptions in the use of regular contraception, supply, and family planning services, not to mention the potential for sexual violence, the use of emergency contraception (EC) is at times called for. EC should be made accessible to emergency responders.^{1,2}

Preferably levonorgestrel-only formulation should be used because of fewer side effects and greater effectiveness. Doing the Yuzpe Method, combined oral contraceptive pills may also be used as emergency contraception. Initiated within 72 to 120 hours from the unprotected coitus at least a 75% success rate may be anticipated.¹² Meaning pregnancy would be avoided in 60 out of 80 of the 1000 women who would have gotten pregnant if they were to have sex within a week before or after the believed day of ovulation.

Emergency contraception should only be used on per need basis. This should not to be used as a regular method. A regular, reliable contraceptive method should be established in the next menstruation.

V. RECOMMENDATIONS

With due consideration of the presented concepts and contraceptive methods options, the following recommendations are proposed for rational contraceptive use during disasters:

1. Efforts must be taken to make reproductive health a recognized concern, a permanent component of crisis management. A budget must always be allotted for reproductive health (RH) providers and RH supplies. Local RH providers in disaster prone areas must be trained and choose a sustainable FP method to make available at any time. For first response contraceptive, choose DMPA. It's affordable, easily administered, has less contraindications, and lasts for three months at a time. For the recovery and rehabilitation period, you may choose to continue with DMPA. However, if money is not an issue, implants may be given for anticipated longer use. It will be the most reliable and most cost-effective reversible contraceptive in the long run.
2. Although IUD insertions and surgical sterilization are reliable and worry-free contraception in selected cases, these may not be readily feasible during the early stages of a disaster situation. There are other more convenient options in a crisis setting to choose from. All the options must be offered whenever appropriate once the situation has been stabilized and resources become available.
3. Always make condoms available to couples for unplanned, unscheduled sexual encounters even in pre-disaster situations. In cases of unprotected sexual encounters during the woman's suspected fertile period, emergency contraception may be offered. She needs to be started on a regular contraceptive method if pregnancy does not take place thereafter.

VI. CONCLUSION

There is a misconception that sex would be the farthest thing on people's minds during a crisis. On the contrary, it may be a form of intimacy and tension release in times of stress. Pregnancy is a reality in these emergency situations when and where it is least favorable. Special attention and preparation must be in place to address prevention of pregnancies during disasters. The Disaster/Crisis Management Program will determine the availability of appropriate choices of contraceptive methods which may just hold the key to the prevention of pregnancy and complications in precarious situations.

REFERENCES

1. Ellington SR, et al. Contraceptive Availability During an Emergency Response in the United States. In *JOURNAL OF WOMEN'S HEALTH*, Volume 22, Number 3, 2013 Mary Ann Liebert, Inc. DOI: 10.1089/jwh.2012.4178
2. Department of Health. *The Philippine Clinical Standards Manual on Family Planning* (2nd ed.) Manila, Philippines. 2014. 437 pages.
3. Rachel A. Bonnema, MD, MS, Megan C. Mc Namara, MD, MSc, Abby L. Spencer, MD, MS, *Contraception Choices in Women with Underlying Medical Conditions Am Fam Physician*. 2010 Sep 15;82(6): 621-628
4. Kost K, Forrest JD, Harlap S. Comparing the health risks and benefits of contraceptive choices. *Fam Plann Perspect*. 1991;23:54-61

5. Burkman RT. Compliance and other issues in contraception. *Int J Fertil Womens Med.* 1999;44:234–40
6. Trussell J. Understanding contraceptive failure. *Best Pract Res Clin Obstet Gynaecol.* 2009;23(2):199–209. doi:10.1016/j.bpobgyn.2008.11.008
7. Trussell J. Contraceptive efficacy. In Hatcher RA, Trussell J, Nelson AL, Cates W, Stewart FH, Kowal D. *Contraceptive Technology: Nineteenth Revised Edition.* New York NY: Ardent Media, 2007.
8. Mestad RE, Kenerson J, Peipert JF. Reversible contraception update: the importance of long-acting reversible contraception. *Postgrad Med.* 2009;121(4):18–25. doi:10.3810/pgm.2009.07.2025
9. Stoddard A, McNicholas C, Peipert J. Efficacy and Safety of Long Acting Reversible Contraception. *Drugs.* 2011 May 28;71(8):969-980
10. Department of Reproductive Health, World Health Organization. *Medical Eligibility Criteria for Contraceptive Use.* 5th ed. 2015.
11. World Health Organization. Department of Reproductive Health and Research. *Selected Practice Recommendations for Contraceptive Use.* 3rd ed. Geneva, Switzerland: World Health Organization; 2016.
12. Trussell J, Rodríguez G, Ellertson C. New estimates of the effectiveness of the Yuzpe regimen of emergency contraception. *Contraception.* 1998 June; 57(6):363-369

APPENDIX

Category	With Clinical Judgement	With Limited Clinical Judgement
1	Use method in any circumstances	Yes (Use the method)
2	Generally use the method	
3	Use of method not usually recommended unless other more appropriate methods are not available or acceptable	No (Do not use the method)
4	Method not to be used	

Note: Color coded legend for chart modified if with limited clinical judgment.

FOOD AND NUTRITION SECURITY IN EMERGENCIES

Erlidia F. Llamas-Clark, MD, MPH, PhD

INTRODUCTION

Nutrition in emergencies focuses on safeguarding the nutritional status of vulnerable populations to prevent disease, malnutrition and even death.^{1,2} A substantial body of literature concerns nutrition in complex emergencies.^{3,4} Natural disasters could also potentially increase occurrence of complex emergencies, mass movements and nutrition crises.

In disasters, malnutrition is not just a consequence of lack of food. Similar to non-disaster states, a combination of factors and circumstances brings forth a nutrition crisis. Lack of food, loss of shelter and clothing, destruction of crops and livestock and disruption of the routine way of life of people occur in calamities. Apart from food unavailability, a rise in infectious diseases or development of outbreaks, inadequate care and poor feeding practices, inadequate access to health care services and hazardous environments promote malnutrition in calamities.⁵

Hunger, food insecurity, malnutrition and disasters

Hunger has been defined as an “uneasy and painful sensation caused by the lack of food”.⁶ Traditionally, hunger has been viewed with a focus on the lack of food such that food availability and amount of food intake have long been used as precursors to and potential indicators of hunger.⁷ Others defined it as “the recurrent and involuntary lack of access to food”.⁸ Hunger can be defined either by its causes or outcomes, or by both. Another way of defining hunger relative to food insecurity is in the prevalence of failure of physical growth among children in developing countries, which is widely used by the WHO and UNICEF.⁹ Measurement of food insecurity and development of hunger tools in many countries also evolved alongside their definitions.¹⁰

Hunger is a universal concept, but there is lack of agreement on how it may be defined meaningfully. This observation is substantiated by a report that states that “Hunger has come to mean rather different things to different people”.¹¹ For the purpose of this publication, hunger is defined as a sensation and a manifestation of an extreme form of food insecurity and is over time manifested in physical signs of deprivation in growth and development.

Acute malnutrition is the main concern during disasters. However, because of prevailing micronutrient deficiencies and chronic malnutrition in areas of crises, emergency interventions are more likely.¹² Standard nutritional assessments are conducted at the earliest possible time and monitoring of the situation is performed throughout the period of the disaster.¹³⁻¹⁵ Several nutrition interventions are put into action in an emergency situation to prevent acute malnutrition and support income-generation and employment in the affected communities.¹⁶

There are some difficulties in the implementation of nutrition interventions during disasters because of the challenging environment in these situations, and lack of coordinated efforts with different sectors in relief, recovery and rehabilitation, as well as the lack of agreed treatment protocols in a nutrition crises.¹⁷ Household and community preparedness is advocated for better



Figure 1. Relief goods and food distribution.
Photo credit: Dr ELC.

outcomes.¹⁸⁻²² The minimum standards for addressing these issues have recently been addressed by the Sphere project and its use is encouraged by the global community.²³

Minimum Standards in Food Security and Nutrition Security

Malnutrition can be rampant in emergency situations if early response does not occur. Wasting (acute malnutrition), deficiencies of iodine, Vitamin A and iron are common in emergency-affected populations. More importantly, after the acute phase, the recovery of the household and community play a vital role in the development of chronic malnutrition in the affected population.

The level of risk of malnutrition in an emergency depends on several factors:

- a. The degree of civil security
- b. Food availability and accessibility
- c. Access to health services and ready use of therapeutic foods and
- d. Adequacy of assistance delivery in the locality

In many disaster situations, there is a set of minimum standards that is expected to be fulfilled in relation to food and nutrition security.²⁴

There are four sets of minimum standards:” with “These include:

- Food security and nutrition assessment
- Infant and young child feeding
- Management of acute malnutrition and micronutrient deficiencies
- Food security



Figure 2. Pregnant woman drying wet palay post-Yolanda.

Photo credit: Dr ELC.



Figure 3. Scavenging sources of food post-Yolanda.

Photo credit: Dr ELC.

While the above standards are used mainly in humanitarian response to a disaster, these core components are used for disaster preparedness and during the recovery phase. The technical support and front line partners organizations such as UNHCR, World Food Programme and UNICEF work with national and local governments in the prevention and management of severe malnutrition, setting up of patient stabilization units in health facilities, guidance on nutrition standards and food ration/ration composition, guidance on nutritional needs and relief of staff and policy making on infant feeding in emergencies.

Relief good and food distribution can be challenging, and a systematic process needs to be developed when disaster strikes. The local government staff who know the community usually makes the administrative and logistical coordination with partner agencies to effect an ideal equitable distribution.

REFERENCES

1. Davis, A. P. (1996). Targeting the vulnerable in emergency situations: Who is vulnerable? *The Lancet*, 348(9031), 868-871.
2. Kim, N. (2012). How much more exposed are the poor to natural disasters? Global and regional measurement. *Disasters*, 36(2), 195-211.
3. Bagchi, K., Musani, A., Tomeh, L., & Taha, A. (2004). Nutrition in humanitarian crises. *Eastern Mediterranean Health Journal* 10(6), 747-753.

4. White, P. (2005). War and Food Security in Eritrea and Ethiopia, 1998–2000. *Disasters*, 29, S92-S113.
5. The Johns Hopkins and the International Federation of Red Cross and Red Crescent Societies. (2008). *Chapter 9 Food security and nutrition in emergencies*
6. Oxford Dictionary. (1999). New York Oxford: Oxford University Press.
7. FAO. (1987). *The Fifth World Food Survey*. Rome: Food and Agriculture Organization of the United Nations.
8. Anderson, S. A. (1990). Core Indicators of Nutritional State for Difficult-to-Sample Populations. *Journal of Nutrition*, 120(11S), 1559–1600.
9. Masset, E. (2011). A review of hunger indices and methods to monitor country commitment to fighting hunger. *Food Policy*, 36(2011), 5102-5108.
10. Frankenberger, T. (1992). Indicators and Data Collection Methods for Assessing Food Security. In S. Maxwell & T. Frankenberger (Eds.), *Household Food Security: Concepts, Measurements and Indicators A Technical Review*. New York: UNICEF and International Fund for Agricultural Development.
11. US President’s Task Force on Food Assistance. (1984). Report of the United States President’s Task Force on Food Assistance (pp. 297 pages).
12. Webb, P. (2009). Malnutrition in emergencies: The framing of nutrition concerns in the humanitarian appeals process, 1992 to 2009. *Food and Nutrition Bulletin*, 30(4), 379-389.
13. Bagchi, K., Musani, A., Tomeh, L., & Taha, A. (2004). Nutrition in humanitarian crises. *Eastern Mediterranean Health Journal* 10(6), 747-753.
14. Dodge, C. P., & Wiebe, P. D. (1980). Practical Application of Nutritional Assessment: Malnutrition in the flood area of Bangladesh 1974. *Disasters*, 4(3), 311-314.
15. Graitcer, P. (1981). 5.4. Basic assessment of nutritional status in emergencies. *Disasters*, 5(3), 222-228.
16. Wright, M. E., & Vesala-Husemann, M. (2006). Nutrition and disaster preparedness: focusing on vulnerability, building capacities. *Online Journal of Issues in Nursing*, 11(3), 6.
17. Young, H. (1999). Public Nutrition in Emergencies: An Overview of Debates, Dilemmas and Decision-making. *Disasters*, 23(4), 277-291.
18. Abarquez, I., & Murshed, Z. (2005). *Community-based Disaster Risk Management: Field Practitioners’ Handbook*. Bangkok: Asian Disaster Preparedness Center.
19. Babu, S. C., & Mthindi, G. B. (1995). Developing decentralized capacity for disaster prevention - Lessons from food security and nutrition monitoring in Malawi. *Disasters*, 19(2), 127-139.
20. Bevaola, K., & Alam, Q. (2012). Local wisdom-based disaster recovery model in Indonesia. *Disaster Prevention and Management*, 21(3), 351-369.
21. Delica, Z. G. (1993). Citizenry-based Disaster Preparedness in the Philippines. *Disasters*, 17(3), 239-247.
22. Levac, J., Toal-Sullivan, D., & O’Sullivan, T. (2012). Household Emergency Preparedness: A Literature Review. *Journal of Community Health*, 37(3), 725-733.
23. Young, H., Taylor, A., Way, S. A., & Leaning, J. (2004). Linking rights and standards: The process of developing ‘rights-based’ minimum standards on food security, nutrition and food aid. *Disasters*, 28(2), 142-159.
24. <https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/7.minimum-standards-in-food-security-and-nutrition.pdf> accessed Nov 2, 2019.

BREASTFEEDING IN THE FACE OF A DISASTER

Rebecca B. Singson, MD

INTRODUCTION

Breastfeeding is nature's tool to effectively protect the mother and her child's health while promoting optimal health and development in early childhood. Protecting, empowering and enabling women to breastfeed should be at the core of every nation's efforts to enable children to thrive and therefore build healthy, smart and productive societies.¹

Optimal breastfeeding can have an impact. It has the potential to prevent 1.4 million deaths of children less than five and to reduce acute respiratory tract infections and diarrheal deaths by 50–95%.^{2,3}

In the early months of life, breastfed children have a **six-fold greater chance of survival** than non-breastfed children. An exclusively breastfed child is 14 times less likely to die in the first six months than a non-breastfed child, inasmuch as breastfeeding drastically reduces deaths from acute respiratory infection and diarrhea, two major child killers.⁴ In addition to improving child survival and protecting against life-threatening and chronic illnesses, breastfeeding supports healthy brain development. Breastfeeding is associated with higher performance in intelligence tests among children and adolescents across all income levels.⁵

Breastfeeding provides not only short-term and long-term health benefits but also economic and environmental advantages to children, women, and society.⁶ Not breastfeeding is associated with lower intelligence and economic losses of about \$302 billion annually or 0.49% of world gross national income.

Despite its established benefits, analyses of data from 123 countries show that in low- and middle-income countries, 4 per cent, or 1 in 25 babies, are never breastfed. In high-income countries, 21 per cent of babies, or more than 1 in 5, never receive breastmilk.¹

A study found that combined implementation of pro-breastfeeding interventions within health systems and the community have the potential to increase exclusive breastfeeding rates by 2.5 times.⁶

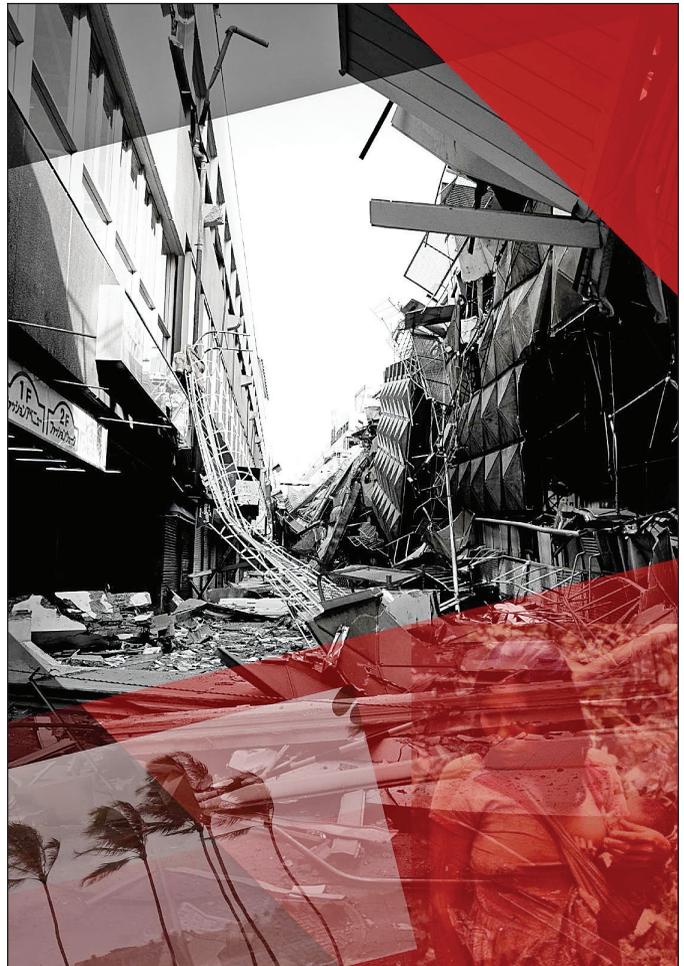
Breastfeeding and Disaster

The United Nations defines disaster as “A serious disruption of the functioning of a community or a society causing widespread human, material, economic, or environmental losses which exceed the ability of the affected community or society to cope using its own resources.”⁷ Among the people afflicted with disasters, women and children will be the most vulnerable, accounting for more than 75% who will be in need of food, safe water, shelter, clothing, and medicine, all of which can be challenging to supply after a disaster.^{8,9,10} Food insecurity is of particular concern for young children with reports indicating that women stop breastfeeding in the setting of stress, displacement and poor nutrition.¹¹

Under normal circumstances, there are many barriers to breastfeeding. A disaster can have a negative impact on a breastfeeding mother and her child. The safe breastfeeding requirements become challenging in a disaster situation.

Infants will have a higher chance of dying due to diarrhea if they are fed with infant formula during disasters. Those who are most susceptible to dying of diarrhea are those who are already at higher risk of exposure to contaminated water and feeding utensils since they were not breastfeeding prior to the disaster.¹²

According to the Center of Disease Control, infant formula must be prepared with meticulous, hygienic handling, starting from careful hand washing before even attempting to mix the formula. In addition, sterilized nipples, bottles, cups and safe, clean water are needed. Even the amount of water added must be the right proportion since too little water can stress the baby's digestive and renal systems and cause dehydration. After preparation, infant formula must be consumed within 2 hours and within an hour from when feeding begins since the contact with the baby's mouth already introduces bacteria which can cause spoilage. Once prepared, infant formula, must be refrigerated and discarded within 24 hours to prevent bacteria from multiplying. Any milk leftover must be discarded and the bottle sanitized before the next use. Otherwise, contamination can occur with the feeding bottles and cause diarrhea in the infant.^{13,14}



Maternal barriers to breastfeeding:

- o Depression due to loss of property and lives of loved ones and friends.
- o Physical injury like fractures, especially to the hands that make lifting or cuddling the infant to breastfeed difficult. Death of the mother in disasters may also happen leaving the child a breastfeeding orphan.
- o Fear of ongoing disasters e.g. of aftershocks after an earthquake or more hurricanes/typhoons, floodwaters, tsunami, landslides, volcanic eruptions, or terrorist attacks expected can perpetuate stress and affect the milk letdown reflex.^{15,16}
- o Misperception that her milk is insufficient and that the baby persistently cries because her milk is inadequate.¹⁷

- o Lack of privacy can be a hindrance since women are used to breastfeeding in a safe, secure, gender-sensitive and private environment. After a disaster evacuation, living in a tent or camp with hundreds of others may hamper breastfeeding due to cultural and religious beliefs about privacy while breastfeeding.
- o Lack of social support of a breastfeeding mom from the husband or her mother may weaken a mother's resolve to persist in breastfeeding. Their opinions are strong determinants of a mother to continue breastfeeding. Massive distribution of formula milk may undermine a mother's decision to breastfeed.¹⁸

Infant barrier to breastfeeding:

- o Mental and emotional trauma to the child as a result of the disaster leading to crying and restlessness.
- o Nipple confusion once babies are shifted to glass feeding.
- o Inadvertent separation of the mother and child either temporarily or permanently due to death, illness, injury or absence), or because mothers believed they were no longer able to breastfeed.¹⁷



Management barriers to breastfeeding:

- o Infant feeding is not usually seen as a lifesaving priority by healthcare professionals and others but rather as something to be dealt with in later stages of the emergency response after shelter, curative care, water and food had been provided.
- o On the human resource side, program managers in the disaster site are not usually familiar with reproductive health issues during an emergency. Disaster volunteers get on the ground without understanding that infants need immediate access to either breast milk, or that safely prepared breast milk substitutes are provided only if the mother is unable to breastfeed, and that no other food options are suitable. The need for qualified people such as midwives and nurses to educate mothers about lactation is a recurring obstacle.
- o Lack of proper oversight by relevant organizations on the distribution and the quality of formula in the affected area can threaten continuous breastfeeding activities in the affected community.
- o Some health care workers are paid incentives to prescribe breast milk substitutes for new mothers, and sometimes, formula milk was included in indiscriminate distributions to all caregivers, which demotivated breastfeeding mothers. Distributions sometimes only included a one-week supply of Breast Milk Substitute (BMS), and rarely included water, detergent, brushes and fuel to clean or sterilize feeding bottles and boil water to prepare the BMS safely.
- o Disaster Teams/organizations are not trained to handle situations where mothers express that they no longer *desired* to breastfeed. Feeling that it was not the right time to question a mother's autonomy, healthcare professionals carry out the mother's choice without discussing the risks of shifting her baby from breastfeeding to formula.¹⁸

Key Messages

Based on an advocacy brief on breastfeeding in emergency situations released by the Global Breastfeeding Collective, which is a partnership of more than 20 prominent international agencies led by UNICEF and WHO, the following are pivotal points to consider in the face of a disaster:

1. **In emergencies, breastfeeding remains the safest, most nutritious and reliable food sources for infants under the age of 6 months.** Because it is readily available in a receptacle that requires no sterilization and provides all the nutritional needs of a baby from 0-6 years old and continues to provide nutritional support from 6-23 mos. as children progress to solid food.
2. **Breastfeeding in emergencies saves lives.** Because breastmilk has antibodies that protect a child's immune system, it offers the most primary as well as the best support against diarrhea, pneumonia and other deadly infections.
3. **Breastfeeding mothers need support during emergencies.** Mothers have the right to breastfeed in a private and safe environment. Support is valuable from health workers counselling them and empowering them psychologically to breastfeed.
4. **The nutritional needs of lactating mothers should receive sufficient attention in emergency response.** Mothers must have access to clean water and fluids to remain hydrated and capable of producing milk. With proper nutritional support coupled with psychological support, virtually all mothers can continue to breastfeed despite the adversities of a disaster.
5. **The need for breastmilk substitutes in humanitarian situations must be carefully assessed by skilled personnel, free from conflicts of interest.** There may be circumstances when it is impossible to continue to breastfeed and the child needs to be shifted to formula. It is recommended that under such conditions, breastmilk substitutes required for an emergency response should be purchased. This is make sure that the purchase and distribution of these products are done in compliance with international guidance. However, in complex emergencies, infant formula and powdered milk continue to be commonly donated in the guise of emergency when they may actually be intended for commercial/marketing interests or purely from a lack of awareness. The short term consequence is that breastmilk substitutes can disincentivize a woman to breastfeed. The long term consequence is that the mother becomes dependent on formula to feed her child. Then, once the donations come to an end and the mothers can no longer afford them, they may be forced to resort to inadequate alternatives that can lead to malnutrition.

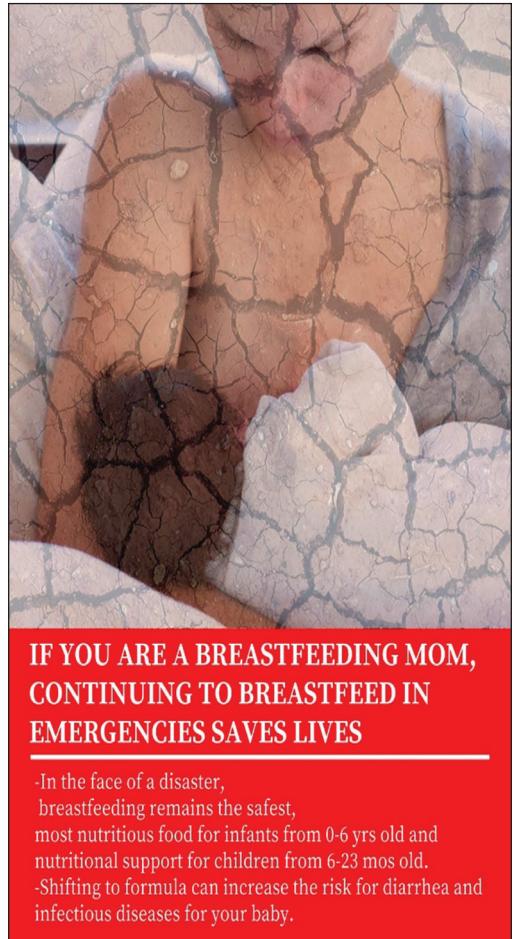


Whenever donations of breastmilk substitutes or feeding equipment are received, they should be reported, collected and managed by the government or the designated coordinating agency.

Be Involved

- o Before any country can protect their breastfeeding mothers and children during a disaster, there must be a high level of breastfeeding even before any emergency strikes. Programs and policies to reinforce a “breastfeeding culture” must be ingrained so that a disaster cannot easily overturn it.
- o Enact legal measures to regulate the marketing and donation of infant formula and other breastmilk substitutes, bottles and teats, during disasters.
- o Create agencies responsible for monitoring donations on infant breastmilk substitutes.
- o Create global level partnerships, for guidance and resource mobilization to support coordinated rapid emergency response where the scale of emergency is so large that no single agency or national authority can address it alone
- o Spearhead and facilitate efforts to raise awareness around the benefits of exclusive breastfeeding in times of emergency and the risks involved in using breastmilk substitutes.⁴
- o Within the United Nations (UN) Inter-agency Standing Committee (IASC) cluster approach to humanitarian response, UNICEF is the likely UN agency responsible for co-ordination of Infant Feeding in emergencies in the field. Also, other UN agencies and NGOs have key roles to play in close collaboration with the government so coordination has to be established.
- o The World Health Organization states that if a mother’s own milk is not available then the next best thing is the milk of another woman. In times of disaster, wet nursing or cross nursing, which is the act of breastfeeding someone else’s child is still safer than giving formula milk. Human milk banks can provide safe breast milk to infants in emergency situations in times of disasters.^{19,20,21}
- o Disaster drills must be done regularly and with it “Breastfeeding Mom” drills designed to ensure adequate protection of the mother and the child. Creating a safe and private environment in a camp or disaster site should be priority to ensure continuity of breastfeeding.
- o Disaster coordinators should be trained not only in the generalities of disaster management but on the specifics of reproductive health issues as well to ensure adequate breastfeeding protection, promotion and support during emergencies.
- o Both health care providers and disaster victims need special training on breastfeeding issues in the post-disaster phase so everyone is aware that maintaining breastfeeding is the best way to protect the baby against infectious diseases and malnutrition.
- o Rally socio-civic organizations and non-governmental organizations like Rotary International, Jaycees, Lions, Zonta, Quota, etc. to create projects to address disaster management and to include breastfeeding initiatives in these projects to protect the mother and child from shifting to formula. These organizations can also assist in monitoring donations of breastmilk, breastfeeding equipment and utensils, especially those coursed through their organizations, to make sure these are properly channeled or coordinated with government agencies to ensure that the distribution will not undermine a breastfeeding mother’s decision to continue breastfeeding and that international standards are complied with in handling these donations.
- o Every Oct 13 of each year, the United Nations International Day for Disaster Risk Reduction is celebrated. In line with this, several projects that can be initiated are the following:
 - A breastfeeding disaster awareness project to inform everyone that mothers should continue to breastfeed in times of disaster, in the form of a poster promoting that Breastfeeding Saves Lives During Disasters, to be distributed in hospitals, offices, bus and train terminals, elevators, etc.

- Create Disaster Teams, trained on protecting mothers and children during an emergency.
- Create Facebook, Instagram and Twitter advertisements to be released on Oct 13 nationwide to campaign on Breastfeeding during disasters and to create awareness that breastfeeding can protect babies against infectious diseases and malnutrition and that indiscriminate formula milk distribution during emergencies can thwart a breastfeeding woman’s resolve to continue breastfeeding.
- Rally the entertainment industry to Tweet, Instagram or Facebook messages to their followers about Breastfeeding in Disasters. Incorporate themes, messages and scenes depicting the proper handling of Breastfeeding in Disasters whenever relevant in a TV or movie scene.
- o Creating a culture on Breastfeeding starts from a child in school. This must be incorporated in their curriculum and Disaster/Fire drills must include facts about how breastfeeding can preserve the life of their little sibling, or any child among their relatives, neighbors or acquaintances.



Lives are tumbled into chaos when unexpected grievous emergencies happen. The breastfeeding mom and her child are, in particular, thrown in a precarious state. Relief organizations, healthcare workers and volunteers must be trained so that they understand and prioritize the delicate needs of the mother and the child who depends on her. In supporting her and her feeding initiatives, we address not only the nutritional needs of the child but also affect his/her short and the long term health and development. Only in strengthening advocacies, awareness, support, assessment and surveillance can we truly be prepared to protect this vulnerable population when disaster strikes.

REFERENCES

1. Breastfeeding: A Mother’s Gift, for Every Child. UNICEF (2018). https://www.unicef.org/publications/files/UNICEF_Breastfeeding_A_Mothers_Gift_for_Every_Child.pdf
2. Ministry of Health Federal Democratic Republic of Ethiopia: Alive and thrive, Ethiopia, author. Infant and young child feeding quick reference book (0–24 months) 2010. [2017 January 8]. Available at <http://aliveandthrive.org/wp-content/uploads/>
3. UNICEF, author. Global Strategy on Infant and Young Child Feeding. Geneva: WHO; 2003. [January 20]. Available at <http://whqlibdoc.who.int/publications/2003/9241562218.pdf>. [Google Scholar]

4. Breastfeeding. UNICEF July 2015. https://www.unicef.org/nutrition/index_24824.html
5. Global Breastfeeding Advocacy Initiative, ADVOCACY BRIEF: Breastfeeding and Early Childhood Development. UNICEF, https://www.unicef.org/nutrition/files/BAI_bf_eed_brief_final.pdf, accessed 29 April 2018.
6. Rollins, et al., Why invest, and what it will take to improve breastfeeding practices? *Lancet* 2016; 387: 491-504.
7. <http://www.un-spider.org/risks-and-disasters>
8. Tsuboyama-Kasaoka N, Purba MB. Nutrition and earthquakes: experience and recommendations. *Asia Pac J Clin Nutr.* 2014;23(4):505-513.
9. Sohrabizadeh S. A qualitative study of violence against women after the recent disasters of Iran. *Prehosp Disaster Med.* 2016;31(4):407-412.
10. Pyone T, Dickinson F, Kerr R, Boschi-Pinto C, Mathai M, Broek Nvd. Data collection tools for maternal and child health in humanitarian emergencies: a systematic review. *Bull World Health Organ.* 2015;93(9):648-658.
11. World Alliance for breast feeding action (WABA) Fact Sheet on feeding babies in an emergency, 2004). World Alliance for Breastfeeding Action Fact Sheet on Breastfeeding babies in an emergency, 2004 <http://waba.org.my/> accessed Oct 29, 2019.
12. Arvello, W, et al. Case-control study to determine risk factors for diarrhea among children during a large outbreak in a country with a high prevalence of HIV infection. *International Journal of Infectious Diseases* 14 (2010) e1002–e1007.
13. Ma L, Zhang G, Swaminathan B, Doyle M, Bowen A. Efficacy of protocols for cleaning and disinfecting infant feeding bottles in less developed communities. *Am J Trop Med Hyg* 2009;81:132–9.
14. <https://www.cdc.gov/nutrition/infantandtoddlernutrition/formula-feeding/infant-formula-preparation-and-storage.html>
15. EW Harville, X Xiong, P Buekens. Disasters and Perinatal Health: a Systematic Review. *Obstet Gynecol Surv.* Author manuscript; available in PMC 2012 Oct 16. Published in final edited form as: *Obstet Gynecol Surv.* 2010 Nov; 65(11): 713–728. doi: 10.1097/OGX.0b013e31820eddbe PMID:PMC3472448
16. Mohd Shukri NH, Wells JCK, Fewtrell M. The effectiveness of interventions using relaxation therapy to improve breastfeeding outcomes: A systematic review. *Matern Child Nutr.* 2018;14:e12563 <https://doi.org/10.1111/mcn.12563>
17. MirMohamadali I, M., Khani Jazani, R., Sohrabizadeh, S., & Nikbakht Nasrabadi, A. (2019). Barriers to Breastfeeding in Disasters in the Context of Iran. *Prehospital and Disaster Medicine*, 34(1), 20–24. doi:10.1017/s1049023x18001243
18. Ververs, M & Huang C. Barriers to infant feeding in emergencies programming in middle and high-income countries. <https://www.enonline.net/fex/61/barrierstoinfantfeeding>.
19. <https://www.laleche.org.uk/sharing-breastmilk/>
20. http://apps.who.int/gb/archive/pdf_files/WHA55/ea5515.pdf
21. <https://www.unicef.org/philippines/stories/how-human-milk-bank-works>

IMMUNIZATION DURING DISASTERS

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NATURAL DISASTERS AND INFECTIONS

Natural disasters, regardless of type, are rarely associated with infectious outbreaks. Infectious outbreaks from natural disasters happen only when there is substantial population displacement resulting in exacerbation of various synergistic risk factors for infections (Kouadio et al, 2012). The importance and overall risk of communicable diseases and communicable disease outbreaks differ between different disaster types. It is particularly low in geological disasters (earthquakes, volcanic eruptions), higher for flooding and much worse again in refugee crises or complex humanitarian emergencies (Hammer et al, 2019).

Population displacement increases risk of outbreaks and is dependent on availability of safe water and sanitation facilities, degree of crowding, underlying health status of the population including level of immunity to vaccine preventable diseases and availability of healthcare services. The ecological changes that occur after disasters favor breeding of vectors and affect vector population density. These changes in the environment also result in the introduction of new pathogens or increased opportunity for previously existing pathogens to cause infections (Muneer et al, 2014).

Deaths from infectious diseases after natural disasters are less common and largely depend on the type of natural disaster. Water borne infections such as diarrhea and Hepatitis A and E may result from contamination of food and water sources from flooding and tropical cyclones. Crowding from evacuation areas may cause an increase in airborne infections such as measles, meningitis and acute respiratory infections. The aftermath of flooding from typhoons also increase the risk for vector borne infections such as leptospirosis and dengue fever. Tetanus often increase during outbreaks in association with contaminated wounds, especially in populations where vaccination coverage is low.

In a review done by Kouadio et al (2012) involving the risk factors and occurrence of infectious diseases after natural disasters, results showed that epidemics or outbreaks are inexistent during the impact phase of disaster. Instead, outbreaks occur several weeks or months in the post impact or recovery phase. Hence, there is a necessity to establish a good surveillance system before, during and after disasters.

Locally, the Department of Health utilizes the Surveillance in Post Extreme Emergencies and Disaster (SPEED). It is an early warning system (EWS) designed to monitor diseases, injuries and health trends. It is a powerful tool used by health emergency managers in getting vital information for appropriate and timely response during emergencies. This EWS allows for evidence-based decision making and more focused and targeted response during emergencies.

The SPEED surveillance involves syndromic reporting of 21 conditions including those symptoms which can be attributed to communicable diseases. A review of their reports showed an increasing incidence of acute respiratory infections, fever, watery/bloody diarrhea, leptospirosis and

measles after Typhoon Yolanda and the Bohol earthquake. The same surveillance also revealed that animal bite is among the top 5 causes of consultation post disaster and is likely due to the displacement of animals during emergencies (Pan American Health Organization, 2000).

There can be an escalation of infectious diseases post disasters, hence, prevention and control of these diseases is a must. Implementation of all public health measures must be initiated as soon as possible to reduce the risk of disease transmission. A reliable disease reporting system must be organized to identify outbreaks and promptly initiate control measures. Post disaster, a rapid investigation of disease outbreaks should be done. (Connolly et al, 2004)

IMMUNIZATION DURING DISASTERS

Preventive public health measures are critical issues to consider in response to humanitarian emergencies. Though it is not often a priority, vaccination complements other public health and preventive measures in response to disasters and emergencies.

Vaccination is one of the most basic and critical health interventions for protecting vulnerable populations during emergencies. In the acute phase, the goal of vaccination focuses on rapid reduction of risk from diseases therefore limiting the number of preventable deaths. In the chronic phase, the restoration of the expanded programs for immunization ensures long term protection against a given disease through progressive increase in population immunity (Lam et al, 2015).

Existing immunization services are particularly vulnerable during disasters and complex emergencies. Transport and storage of vaccines and immunization services are often compromised during natural disasters and conflicts. Despite this, there is extremely good evidence that with appropriate strategy and resources most vaccine preventable diseases can be rapidly controlled through almost all phases of the emergency.

The benefits of vaccination have been highlighted in various public health studies exploring the effects of emergencies whether natural or complex in terms of occurrence of infections. Countries involved in conflict and disasters have seen their health infrastructure destroyed and vaccine coverage progressively dropping. Developing countries are often disproportionately affected by outbreaks as compared to developed countries in Europe and North America. Increasing vaccine coverage in developing countries prone to emergencies may cause a significant reduction in morbidity and mortality (Culver et al, 2017).

What Vaccines Are Recommended During Disasters?

Among the vaccines available, measles vaccination coupled with vitamin A supplementation is the most recommended (WHO, UNICEF 2004). This is particularly useful especially in emergencies where crowding potentiates airborne transmission of measles and when documented vaccine coverage is less than 90% of the population. Simultaneous introduction with other vaccines is not generally recommended but campaigns can include polio vaccination where outbreaks or threats to eradication programs exist.

Immediate vaccination for measles, polio and tetanus for those with open wounds is recommended. After the outset of outbreaks, hepatitis A, meningococcal meningitis and yellow fever vaccination may be initiated (Connolly et al, 2004).

Table 1 summarizes the vaccine recommendations for emergencies.

For disaster responders, Centers for Disease Control (CDC,2019) recommends immunization against tetanus and Hepatitis B. Responders should receive a tetanus booster if they have not been vaccinated during the past 10 years. Hepatitis B vaccine series should be administered for persons who will be performing direct patient care or otherwise expected to have contact with bodily fluids.

Expanded programs on immunization (EPI) can often become non-functional during humanitarian emergencies. Routine immunizations and EPI should be implemented once the condition of the emergency stabilizes or during the rehabilitation phase after the disaster (WHO, 2017). To address these, multiple opportunities for vaccination including catch up vaccination campaigns can be used to boost population immunity and facilitate reintegration of expanded immunization programs in the area. Early community involvement is also recommended for easier adaptability and sustainability of various immunization programs.

Table 1. Summary of Vaccine Recommendations During Emergencies

Vaccine	Organization	Summary of Recommendations	Risk Factors for Disease	Timing of Vaccination
Measles	WHO UNICEF UNHCR US CDC Various Organizations	<p>Measles immunization is a priority health intervention in emergencies and may be considered the only essential immunization in the early stages of an emergency.</p> <p>Should be administered to children 6 months through 15 years. In some cases, groups older than 15 should be considered in the target age based on risk assessment.</p> <p>With limited resources, priority groups are children <5 years old and those that are high risk (e.g. malnourished).</p> <p>Recommended coupling with Vitamin A supplementation to reduce the complications of measles and is proven to reduce the incidence of acute respiratory infections.</p> <p>Immunization should be done preferably using the combined measles–mumps–rubella vaccine especially in case of limited or inexistent laboratory facilities.</p>	<p>Displacement</p> <p>Severe food shortage</p> <p>Malnutrition</p> <p>Overcrowding</p>	<p>Immediate</p> <p>6-8 weeks of crisis or as soon as possible</p>

Immunization During Disasters

Hepatitis A	Various	<p>Not recommended for mass immunization and may be considered for high risk persons only.</p> <p>In cases of an outbreak, targeted vaccination for populations at risk and may be considered for contacts.</p>	Lack of safe water, sanitation and hygiene	In cases of outbreaks only
Influenza	US CDC WHO	<p>Recommended for evacuees in a crowded group settings after a natural disaster.</p> <p>Seasonal influenza vaccine is not recommended for an outbreak of a novel influenza virus in displaced populations.</p>	Crowded group setting	Not stated
Cholera	WHO UNHCR UNICEF US CDC	<p>The use of cholera vaccine in emergencies continues to be under dispute.</p> <p>It is not recommended for use after the start of an epidemic. Risk assessment and decision making with the help of expert advice is recommended prior to its use.</p> <p>It may be considered preventatively in a stable, endemic environment but is of limited use once the epidemic has begun. High risk populations may be targeted for preemptive use.</p>	<p>Overcrowding</p> <p>Inadequate sanitation facilities and contamination of water sources</p> <p>Poor hygiene</p> <p>Poor nutritional status</p> <p>Low immunity prior to infection</p>	Before a cholera outbreak has begun
Varicella	US CDC	For evacuees in crowded group settings	Crowded group settings	Not stated
Meningococcal Meningitis	WHO, UNHCR Johns Hopkins	Meningitis vaccine offers effective control in epidemics. Should be implemented only after expert advice and when surveys suggest necessity, and only at the outset of outbreak to children >2 years old.	Overcrowding in areas where disease is endemic	At outset of outbreak
Polio (OPV)	WHO Johns Hopkins	<p>Polio transmission is a threat to eradication programs and is linked to poor water and sanitation.</p> <p>At the outset of an outbreak, all children should receive at least 1 dose with a second round of mass vaccination after 30 days.</p>	<p>Famine, malnutrition</p> <p>Crowded refugee camps</p> <p>Low preexisting vaccine coverage</p> <p>Conflict</p> <p>Floods</p>	Immediately after onset of emergency or at the outset of an outbreak

Tetanus	UNICEF UNHCR Johns Hopkins WHO	<p>For pregnant women and women of child bearing age. In post emergency, EPI should include either tetanus toxoid or tetanus diphtheria for at least 2 doses.</p> <p>For open wounds. Mass tetanus vaccination is not recommended. Targeted active and passive vaccination to individuals who sustain open wounds or are involved in clean up after disaster.</p> <p>Immediate provision of tetanus diphtheria vaccine and tetanus anti toxin to persons injured during earthquake and undergoing emergency surgeries</p>	Unhygienic conditions, sustainment of injury and wounds with potential contamination	Early stages of emergency and in post emergency stages
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Sources: WHO-UNICEF, 2004; UNICEF, 2005; IFRC, 2007; CDC, 2019; WHO, 2005 and 2008; Connolly, 2005; Warrach, 2011

VACCINE IMPLEMENTATION DURING DISASTERS

Implementing immunization programs during disasters is a complex decision. Aside from the fact that it is not often prioritized during disaster response, numerous factors have to be weighed before its implementation. Due to its complexity, decision making tools regarding vaccine implementation during disasters is limited.

The decision to engage in a vaccination response depends on several factors, including the risk for a vaccine preventable disease in the emergency situation, the characteristics and availability of vaccines for response and prioritization of vaccination in relation to other public health interventions. Once a decision is made for vaccination response, additional issues need to be addressed including regulatory barriers for unlicensed products, vaccine supply and stockpile access, appropriate cold chain capacity, and designation of roles and responsibilities depending on the country’s capacity and its global partners (WHO, 2017). Among these, vaccine availability and funding are the most influential factors to decide whether or not vaccination campaign is an option.

What Are the Necessary Steps in Implementing Vaccine Campaigns During Disasters? (WHO, 2017)

Step 1: Epidemiological assessment and/or assessment of risk to determine and grade the risk of each vaccine preventable diseases

Assessing the risk of increased cases or outbreak is the most common and the most important variable considered in planning or justifying a recommendation of a vaccination campaign. The goal is to identify those vaccine preventable disease (VPD) for which specific vaccination intervention should be considered and come up with a shortlist to be carried over into the subsequent step of the framework.

In this step, the level of risk for the vaccine preventable due to general risk factors and due to risk factors specific for the disease is taken into consideration. Thus, assessing for the overall risk for each VPD is considered and hence the need for vaccination is determined.

For example (see Figure 1), in a given acute emergency scenario, the presence of several general risk factors (e.g. overcrowding and insufficient water, sanitation and hygiene) could result in the risk of cholera being graded “high”, the risk of Japanese encephalitis being graded “low”, and the risk of diphtheria being graded “medium”. Consideration of specific risk factors for each disease (e.g. levels of vaccination coverage and the location of the emergency) might result in a grading of “medium” for cholera, “high” for Japanese encephalitis, and “low” for diphtheria. The resulting classifications would therefore be: “definitely consider” for cholera, “possibly consider” for Japanese encephalitis, and “do not consider” for diphtheria.

Step 1:

Determine and grade risk of the VPD

Is there an increased risk of the VPD?

		Level of risk due to general risk factors		
		High	Medium	Low
Level of risk due to factors specific to the VPD	High	Definitely consider	Definitely consider	Possibly consider
	Medium	Definitely consider	Possibly consider	Do not consider
	Low	Do not consider	Do not consider	Do not consider

Figure 1. Risk assessment of vaccine preventable diseases (WHO, 2017).

“Definitely considering” vaccination for specific VPDs mean that the disease has the potential to be one of the leading cause of mortality or epidemic. “To possibly consider” vaccination would indicate that the disease is probably not a leading cause of mortality but could cause a considerable number of excess deaths and/or a large outbreak. Vaccine appraisal is thus recommended for the next step. “Do not consider” denotes that the disease is unlikely to cause considerable excess mortality or outbreak thus a vaccination intervention should not be considered further in the framework unless a review of the risk assessment results in a change of classification.

Risk assessment is an ongoing process due to the dynamics inherent in an emergency. Review for each diseases should be performed at least every 3 months or as soon as possible if important new information arises on any VPD or if the general situation warrants immediate action.

Step 2: Assessment of the main characteristics of vaccines and their amenability to mass vaccination campaigns

In this step, relevant vaccines (i.e. those which was definitely or possible considered based on the previous step) and their amenability for service delivery is assessed.

Vaccine characteristics also factor in when deciding to engage in vaccination response. Key vaccine characteristics that should be considered include its efficacy using the recommended full schedule as well as when it is used less than the full schedule; the method of vaccine

administration; safety considerations and contraindications; vaccine formulation and storage requirements, and adequacy of supplies and vaccine cost.

Vaccine implementation takes into consideration the geographical area, target population and the timing of vaccination. Mass vaccination campaigns involve setting up vaccination sites mostly in non-traditional health care locations in order to reach a large number of people over a short period of time. In areas experiencing complex emergencies, safety of vaccination team needs to be considered. Planning and logistics that include activities associated with maintenance of cold chain storage and safe transport of vaccination is also factored in during vaccine implementation.

Monitoring as part of vaccine implementation is essential to provide feedback on implementation and identify potential problems and shortcomings. It provides an opportunity to keep track of intervention progress to allow adjustment in planning as needed.

Step 3: Assess contextual considerations

The final decision as to the inclusion of a vaccination intervention in an emergency response will be influenced both by the political and social context in which the emergency is unfolding. Specific contextual factors include: ethical and political considerations, security concerns, availability of human resources, financial considerations and the size of the target population.

Each emergency setting is unique and what applies in one will not necessarily be appropriate to another. Any one of these contextual factors and needs may be debated upon by decision makers to approve or defer vaccination intervention altogether. Deferral of vaccination could relate only to a specific vaccine or could function as a “blanket decision” on immunization. Documentation is highly recommended.

A summarized algorithm of vaccine implementation is provided in the next page (Figure 2).

CONCLUSION

The presence and aggravation of risk factors places people at risk for infectious diseases following any natural or complex disasters. Among others, population displacement coupled with collapse of public health infrastructure and health services increase the chance of outbreak occurrences. Being in a developing country where resources can be limited and prioritization of needs can be a perennial problem, implementing vaccination pre and post disaster can be challenging.

Barriers to vaccination programs post disaster may range from target population issues, logistic constraints related to economic insecurity, destruction of infrastructure and maintenance of cold chain. Monitoring and documentation of vaccine coverage along with lack of manpower may also affect decision making regarding immunization.

Lessons learned from disasters occurring worldwide highlight the importance of a strong pre-existing health infrastructure, a well implemented immunization program to assure acceptable coverage from vaccine preventable diseases and improved access to vaccines locally. These and a well implemented local risk reduction procedures during disasters may help limit morbidity and mortality from infectious diseases following disasters.

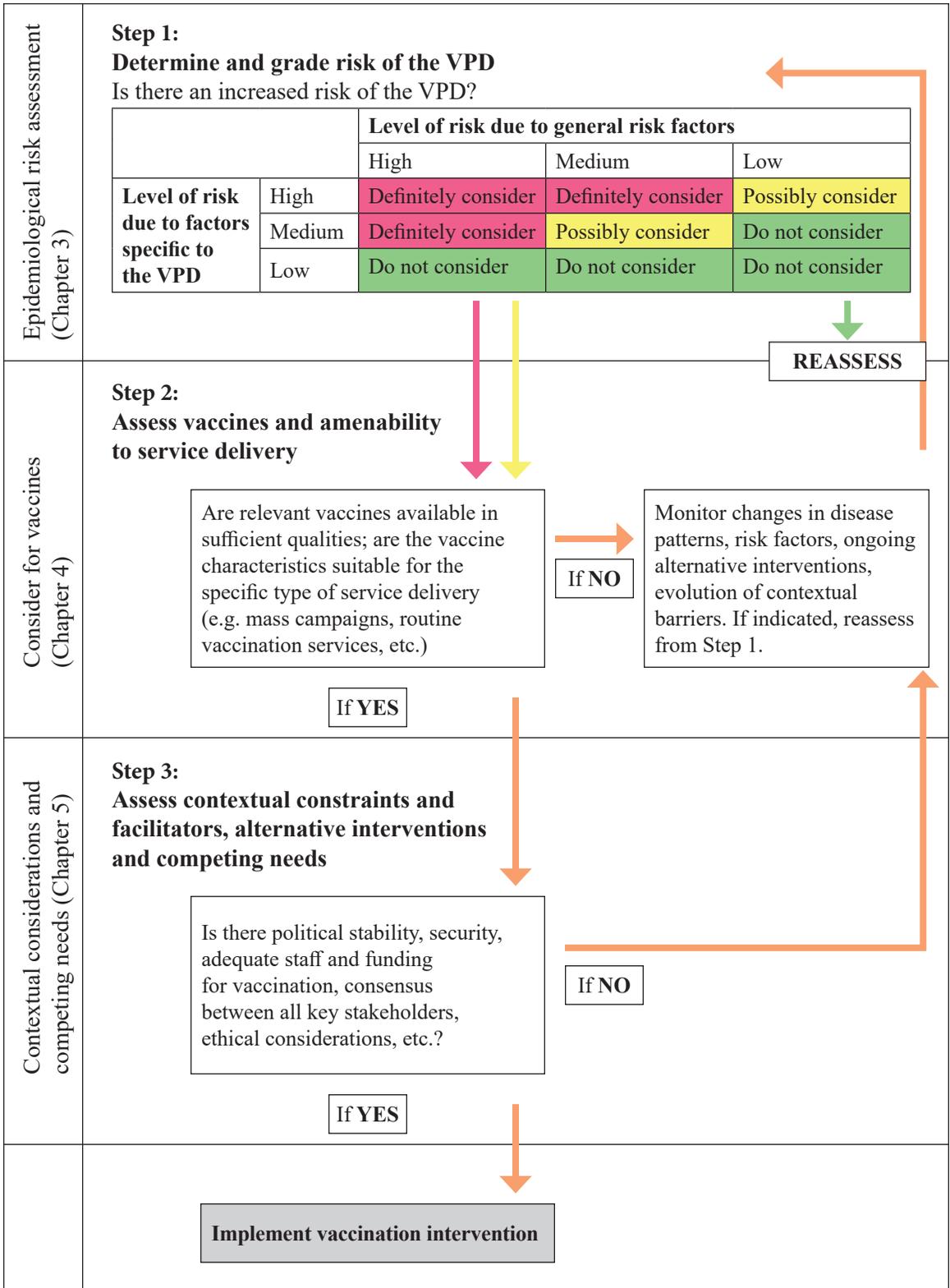


Figure 2. Algorithm for Vaccine Implementation During Disasters (WHO, 2017).

REFERENCES

1. Centers for Disease Control and Prevention. 2019. Interim Immunization Recommendations for Individuals Displaced by a Disaster.
2. Connolly M, Gayer M, Ryan M et al. 2004. Communicable diseases in complex emergencies: impact and challenges *Lancet*; 364: 1974-83)
3. Connolly MA, ed. 2005. Communicable disease control in emergencies: a field manual. Geneva. World Health Organization,ed.
4. Culver A, RoCHAT R and Cookson T. 2017. Public health implications of complex emergencies and natural disasters. *Conflict and Health*. 11:32
5. Hammer CC, Brainard J and Hunter PR. 2019 Risk factors for communicable diseases in humanitarian emergencies and disasters: Results from a three stage expert elicitation. *Global Biosecurity*, 1(1) 1-14)
6. International Federation of the Red Cross and Red Crescent Societies. 2007. The Johns Hopkins Red Cross Red Crescent Public Health Guide in Emergencies, Second Edition.
7. Isidore K Kouadio, Syed Aljunid, Taro Kamigaki, Karen Hammad & Hitoshi Oshitani. 2012 Infectious diseases following natural disasters: prevention and control measures, *Expert Review of Anti-infective Therapy*, 10:1, 95-104,
8. Lam E, McCarthy A and Brennan M. 2015. Vaccine preventable diseases in humanitarian emergencies among refugee and internally displaced populations. *Human Vaccines and Immunotherapeutics*. 11:11, 2627-2636.
9. Muneer A, Ali A, Iqbal S and Khan N. Prevention of Communicable Diseases after Disaster. 2014. *Disaster Recovery Journal*
10. Pan American Health Organization. 2000. Natural Disasters: Protecting the Public's Health. Scientific Publication No. 575. Washington D.C.
11. SPEED, Epidemiology Bureau, Department of Health
12. UNHCR. 2007. Handbook for Emergencies: Third Edition.
13. UNICEF. 2005. Emergency Field Handbook: A guide for UNICEF staff.
14. Warraich H. 2011. Pakistan: the final frontier for a polio free world. *Lancet*. 377 (9761): 207-208
15. World Health Organization, UNICEF. 2004. WHO/UNICEF Joint Statement: Reducing Measles Mortality in Emergencies.
16. World Health Organization. 2005, Flooding and communicable diseases fact sheet: Risk assessment and preventive measures.
17. World Health Organization. 2008 Pandemic influenza preparedness and mitigation in refugee displaced populations: WHO guidelines for humanitarian agencies, Second edition
18. World Health Organization. 2010. Oral cholera vaccines in mass immunization campaigns: guidance for planning and use.
19. World Health Organization. 2017. Vaccination in acute humanitarian emergencies: a framework for decision making.

MINIMIZING RISK OF INFECTIOUS DISEASES POST DISASTER: PREVENTION AND TREATMENT

Giovanni S. Zahar and Erlidia F. Llamas-Clark, MD, MPH, PhD

INTRODUCTION

According to the 2012 UN World Disaster report the Philippines is the 3rd most disaster-prone country in the world, next to Tonga and Vanuatu.¹ From 1900 to 2012, our country has been hit by 531 disasters from 1900 to 2012, affecting more than 160 million people and causing about US\$ 10.5 billion in damage.

Along with natural hazards, we have accumulated a number of man-made hazards such as deforestation and complex emergencies and occasional civil unrest particularly in the South. Between January and September 2011, more than 50 incidents of flash flooding and flooding and more than 30 landslides occurred, mostly caused by increased rainfall aggravated by illegal logging.²

INFECTIOUS DISEASES POST CALAMITY IN THE PHILIPPINES

According to the study by Salazar, et al. in 2016 on the health impacts post disaster, the most common syndromes for all three syndrome groups following typhoons, earthquakes, and floods were:

- a. acute respiratory infections (ARIs),
- b. wounds, and
- c. high blood pressure.

This study used disease surveillance through Surveillance in Post Extreme Emergencies and Disasters (SPEED) which is a public health surveillance system that uses SMS reporting as a delivery system to be able to report and collect data on a nationwide scale. The top six syndromes for all disasters combined were:

1. ARIs [32.9 (95% CI: 28.237.6)],
2. open wounds, bruises, and burns [5.2 (95% CI: 4.36.2)],
3. high blood pressure [4.6 (95% CI: 3.85.3)],
4. Skin disease [4.1 (95% CI: 3.44.8)],
5. fever [3.0 (95% CI: 2.43.5)], and
6. acute watery diarrhea [2.2 (95% CI: 1.92.5)].³

DEATH

Natural disasters usually claim lives of victims through trauma, burns or drowning. They are no more likely than the local population to have acute or epidemic causing infections hence the risk that dead impose on the public is small and that the sources of infection is more likely to be the survivors than those killed by natural disasters.^{4,5}

Although, people involved in close contact with the dead victims post calamity must be appropriately trained, vaccinated, and adequately equipped with ideal precautions, such as body bags, disposable gloves, disinfectants for the equipment, as they are still susceptible to chronic infectious hazards such as hepatitis B, hepatitis C, HIV, enteric pathogens and *Mycobacterium tuberculosis*.⁶

RISK FACTORS ASSOCIATED WITH DISEASE OUTBREAK

The risk of disease outbreak was associated with the size of the population displaced, the level of immunity to vaccine preventable diseases, the sudden displacement of the population leading to crowding, inadequate water and sanitation, poor nutritional status, as well as environmental changes increasing the breeding sites for vectors, thereby increasing risk of communicable disease transmission.^{7,8}

INFECTIOUS DISEASES

Waterborne diseases

Diarrheal disease. Diarrheal diseases are a leading cause of death (40%) in disaster and camp settings.⁹ It can be said that natural disasters do not import diseases, including diarrheal diseases. Only diseases that are endemic to the local setting can occur naturally post disaster. Diarrheal disease epidemics (more than 17,000 cases) have been reported after population displacement by flooding in Bangladesh in 2004.¹⁰ In Iran, 1.6% of the 75,586 persons displaced by the Bam earthquake in 2003 were infected with diarrheal diseases. This was due to poor hygiene, crowding, lack of potable water and ineffective sanitation.¹¹ An investigation conducted after floods in Indonesia between 2001 and 2003 revealed that diarrheal case-patients with *Salmonella enterica* serotype paratyphi A were four times more likely to have been exposed to the disaster.¹²

Hepatitis A/E. Transmitted almost exclusively by fecal oral route, with person to person spread, enhanced by poor personal hygiene and overcrowding. The most feared complication of viral hepatitis is fulminant hepatitis (massive hepatic necrosis); fortunately, this is a rare event. Fulminant hepatitis is seen primarily in hepatitis B, D, and E, but rare fulminant cases of hepatitis A (0.1% as compared to 1-2% for hepatitis E) occur primarily in older adults and in persons with underlying chronic liver disease. Usually Hepatitis E is generally mild, self-limited, usually preceded by floods and heavy rain. Although generally mild like hepatitis A, it is worth noting that in pregnant women, case fatality rates can reach up to 25%.^{13,14}

Leptospirosis. Because leptospires can survive in a humid environment for many months, water is an important vehicle in their transmission. Epidemics of leptospirosis are not well understood. Outbreaks may result from exposure to flood waters contaminated by urine from infected animals, as has been reported from several countries. Transmission occurs through cuts, abraded skin, or mucous membranes, especially the conjunctival and oral mucosa. Floods facilitate the proliferation of rodents and the spread of leptospires in a human community.¹⁵

Crowding diseases

ARI - ARIs remain to be the most commonly reported syndrome according to the study by Salazar et al. in typhoons, floods and earthquake events within the Philippines. The risk of ARIs may be increased due to overcrowding, poor ventilation and poor nutrition, and in crowded shelters specifically in cold weather.¹⁶ Lack of access to health services and to antibiotics for treatment further increases the risk of death from ARI.¹⁷

Measles outbreaks post disasters highly depends on pre disaster immunization coverage among the affected population. Clusters of more than 400 measles cases were found following the earthquake in Pakistan in 2005, mostly in communities living in crowded shelters with existing low vaccination coverage conditions.¹⁸ A measles outbreak in the Philippines in 1991 among people displaced by the eruption of Mt. Pinatubo involved more than 18 000 cases.¹⁹ Abortion, preterm delivery, and low-birthweight neonates is noted with maternal measles.²⁰ If a woman develops measles shortly before birth, there is considerable risk of serious infection developing in the neonate, especially in a preterm neonate.²¹

Meningitis - Meningitis caused by *Neisseria meningitidis* (meningococcal) is a major cause of morbidity and mortality in childhood especially in Africa and Asia.²²

Vector borne diseases

Malaria - the protozoan disease is transmitted by the bite of infected *Anopheles* mosquitoes and coincides with increasing breeding in rainy seasons. The Philippines being a Malaria endemic country predisposes it to outbreaks after flooding. Additionally, overcrowding in displaced populations may increase bite frequencies thereby accelerating transmission rates. Many instances, like the earthquake with subsequent flooding in Costa Rica back in 1991 and flooding in Dominican Republic at 2004, has led to a finality of Malaria outbreaks.

Dengue - is a virus transmitted by the vectors such as mosquitoes within the *Aedes* genus. The mosquitoes breed in stagnant waters and studies have established rainfall as a predictor of seasonal timing of dengue epidemics. Events such as floods with displacement of population as well as increased rainfall create opportunity for vector breeding sites.

Others

Tetanus - Tetanus is caused by the anaerobic bacillus *Clostridium tetani* which produces a toxin that affects the nervous system and autonomic nervous system causing skeletal muscle spasms. This bacteria can be found in soil and dust and is capable of living many years. This is a completely vaccine preventable disease. Although tetanus is not common after injury from flooding, cases within disasters from earthquakes such as the 2005 earthquake in Pakistan and can be attributed to crush injuries and contaminated wounds. Hence mass tetanus vaccination programs are not indicated for injuries from flooding.

MANAGEMENT

Infectious disease transmission or outbreaks may be seen days, weeks or even months after the onset of the disaster. Hence the disease outbreak control activities need to be carried out continually to prevent the future epidemic.²³

Water-borne Disease Management

After a disaster, when you suspect that the water source may be contaminated, avoid drinking, using to brushing teeth, washing hands or dishes, or cooking. Use of bottled water is safest until with utmost certainty that the local supply is not contaminated.^{24 25 26}

Chlorination of water is one of the most cost effective, widely available and easy to use agent against all waterborne pathogens. Boiling is the safest method of treating water as long as the water is brought to a boil for at least 1 full minute. Although both boiling and chlorination will kill most microorganisms, it will not remove other contaminants such as heavy metals, salts and other chemicals. Distillation involves boiling water, and collecting the condensing vapor back to water and will not include impurities as mentioned.²⁷

Leptospirosis

Prevention

Preventing leptospirosis would entail a number of different measures. Basic protection like wearing protective clothes and equipment, and hygiene habits such as disinfecting contaminated surfaces, avoiding contaminated water, boiling drinking water for at least 10-15 minutes and ultimately clinical prophylaxis for flood exposure. Antibiotics to be used - Doxycycline (200mg PO once a week) or Azithromycin (250mg PO once or twice a week).²⁸

Antibiotic Treatments

For Mild cases

Doxycycline (100mg PO bid) or
Amoxicillin (500mg PO tid) or
Ampicillin (500mg PO tid)

For Moderate-Severe cases

Penicillin (1.5 million units IV or IM q6h) or
Ceftriaxone (2g/d IV) or
Cefotaxime (1g IV q6h) or
Doxycycline (loading dose of 200mg IV then 100mg IV q12h)
All regimens are given for 7 days. Doxycycline should not be given to pregnant women or children.¹³

Vaccinations prior to disaster

Vaccination is “the administration of a vaccine to assist the immune system develop protection from a disease”. Vaccines may contain the whole or a part of a microorganism or virus such that it is in a weakened or killed state. Other vaccines may use a protein or toxins from the organism. When the body’s immune system adapts, they help prevent sickness from an infectious disease. An important principle is herd immunity. It is when a large percentage of a population has been vaccinated that herd immunity results. For a complete discussion of immunization during disasters, please see Chapter 4.

Appropriate post exposure prophylaxis

Measles vaccination

People exposed to measles with no solid evidence should be given PEP - giving either MMR vaccine within 72 hours of exposure or Ig within 6 days of exposure. Do not administer MMR and Ig simultaneously.²⁹

Pregnant women without evidence of measles immunity should be administered intravenous immune globulin (IVIG), 400 mg/kg within 6 days of a measles exposure. Active vaccination is not performed during pregnancy. However, susceptible women can be vaccinated routinely postpartum, and breast feeding is not contraindicated. The virus does not appear to be teratogenic.²²

Tetanus vaccination

The timely administration of post-exposure prophylaxis following an injury can prevent clinical tetanus from developing or lessen the severity of infection.³⁰

Risk of disease factors in the type and condition of the wound and immune status of the patient. Assessment of wounds can stratify management accordingly. Wounds may be clean, contaminated, or dirty. Wounds should be cleaned, dirt and foreign material removed, and adequately debrided - depending on the case. Evaluation of immunization status is a must.

For persons with unknown or uncertain history of previous doses of tetanus vaccine, can be considered to have had no previous vaccination.

For persons with known completed tetanus vaccination series:

- If the last dose of vaccine was less than 5 years, consider them protected.
- If the last dose of vaccine was 5 or more, then administer a booster dose of an age appropriate tetanus toxoid containing vaccine.

Persons who have contaminated and dirty wounds with a tetanus prone high risk, with or without or an incomplete vaccination status: give TIG

- For those fully immunized - no need to give vaccination.
- For those incomplete - give a vaccination dose.
- For those who are unknown or with no vaccination - give a reinforcing dose of vaccine at different sites, and arrange further vaccination as required to complete the course.

There is no need to use antibiotic for tetanus prophylaxis.^{31,32}

Vector borne disease control

Prevention of vector mediated disease is key intervention for reducing overall disease prevalence. A few methods can be implemented to decrease transmission. Nets and insecticide treated mosquito nets are preferred for prevention of Malaria as well as indoor spraying with insecticides are appropriate for permanent housing structures with mosquitoes inside the premises. If malaria is suspected, early detection through thick and thin blood smears are to be done and repeat smears to be done every 12-24 hours for 2 days. Artemisinin-based combinations (ACTs) to be given as first line treatment for uncomplicated falciparum malaria.³³

For dengue control, most have to do with waste disposal and appropriate water storage practices such as covering water containers or throwing out stagnant water.

RISK ASSESSMENT IN EVACUATION CENTERS

In Japan, following the Kumamoto Earthquake, the Aso District Disaster Medical Recovery Organization Infection Control Team (ADRO ICT) undertook a risk assessment of evacuation centers and shelters to prevent outbreaks of infectious disease. The ADRO ICT risk assessment check list outlines “nine tips for infection prevention” for all evacuation centers and shelters. The nine tips are:

- a. try to eat heated food as much as possible,
- b. drink clean water only and use clean cups and glasses,
- c. hand hygiene with water or alcohol before eating and after using restrooms,
- d. used diapers should be disposed of in designated area and wash hands after changing diapers,
- e. take off your shoes when entering living sections in shelters,
- f. conduct and follow cough etiquette,
- g. consult a doctor, nurse, or manager of the site when you have upper respiratory symptoms, fever, nausea, vomiting, and abdominal symptoms, especially when you feel that an increasing number of individuals are complaining of same symptoms,
- h. wear a mask if you have fever and/or cough or taking care of such individuals,
- i. consult a doctor, nurse, or manager of the site in case you have possible pneumonia with symptoms such as severe cough, yellowish sputum, dyspnea, malaise, and a pale complexion.³⁴

CONCLUSION

Disasters create great havoc to people’s lives from the sheer destruction of homes, infrastructure and lives. Post catastrophe transmission of infectious diseases can add insult to injury by worsening morbidity and mortality. Information dissemination on basic hygiene principles, provision of clean water, vaccination, and close coordination of government and non-government agencies are key strategies to alleviate the spread of infectious diseases during calamities.

REFERENCES

1. http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf accessed 3 Nov 2019
2. https://reliefweb.int/sites/reliefweb.int/files/resources/Philippines_2018-0318.pdf accessed 3 Nov 2019
3. Miguel Antonio Salazar, Arturo Pesigan, Ronald Law & Volker Winkler (2016) Post-disaster health impact of natural hazards in the Philippines in 2013, *Global Health Action*, 9:1, 31320, DOI: 10.3402/gha.v9.31320
4. https://publications.paho.org/pdf/dead_bodies.pdf accessed 3 Nov 2019
5. Management of dead bodies in disaster situations. Washington, DC, Pan American Health Organization, 2004 (PAHO disaster manuals and guidelines on disaster series, No. 5).
6. https://publications.paho.org/pdf/dead_bodies.pdf accessed 3 Nov 2019
7. Watson, J. Connolly, M. and Gayer, M. Communicable diseases following natural disasters Risk assessment and priority interventions. WHO Programme on Disease Control in Humanitarian Emergencies, Communicable Diseases Cluster.
8. Marahatta S. B. (2015). Control of the Outbreak of Disease Aftermath Earthquake: An Overview. *Nepal journal of epidemiology*, 5(2), 468–469. doi:10.3126/nje.v5i2.12828
9. Connolly MA, Gayer M, Ryan MJ et al. Communicable diseases in complex emergencies: impact and challenges. *Lancet* 364, 1974–1983 (2004).
10. Qadri F, Khan AI, Furuque ASG et al. Enterotoxigenic *Escherichia coli* and *Vibrio cholerae* diarrhea, Bangladesh. *Emerg. Infect. Dis.* 11, 1104–1107 (2005).
11. Akbari ME, Farshad AA, Asadi-Lari M. The devastation of Bam: an overview of health issues 1 month after the earthquake. *Public Health* 118, 403–408 (2004).
12. Vollaard AM, Ali S, Van Asten HA et al. Risk factor for typhoid and paratyphoid fever in Jakarta, Indonesia. *JAMA* 291, 2607–2615 (2004).
13. *Harrison's Principles of Internal Medicine, 20th. ed.* Author: Jameson, et. al. *Publisher:* McGraw-Hill. Publish Year: 2018
14. Aggarwal R, Krawczynski K. Hepatitis E: an overview and recent advances in clinical and laboratory research. *Journal of Gastroenterology & Hepatology*, 2000,15:9–20
15. Isidore K Kouadio, Syed Aljunid, Taro Kamigaki, Karen Hammad & Hitoshi Oshitani (2012) Infectious diseases following natural disasters: prevention and control measures, *Expert Review of Anti-infective Therapy*, 10:1, 95-104, DOI: 10.1586/eri.11.155
16. World Health Organization. Flooding and communicable diseases factsheet. Risk assessment and preventive measures. www.who.int/hac/techguidance/ems/flood_cds/en/.
17. Watson, J. Connolly, M. and Gayer, M. Communicable diseases following natural disasters Risk assessment and priority interventions. WHO Programme on Disease Control in Humanitarian Emergencies, Communicable Diseases Cluster.
18. World Health Organization. Acute jaundice syndrome. *Wkly Morb. Mortal. Rep.* 23, 8 (2006).
19. Surmieda MR et al. Surveillance in evacuation camps after the eruption of Mt. Pinatubo, Philippines. *Morbidity and Mortality Weekly Report*, 1992, 41:9–12.
20. Siegel M, Fuerst HT. Low Birth Weight and Maternal Virus Diseases: A Prospective Study of Rubella, Measles, Mumps, Chickenpox, and Hepatitis. *JAMA*. 1966;197(9):680–684. doi:10.1001/jama.1966.03110090044013
21. *Williams Obstetrics, 20th Ed.* Appleton & Lange, U.S.
22. *Neisseria: Molecular Mechanisms of Pathogenesis.* Genco C, Wetzler L (Eds). Caister Academic Press, Norfolk, UK (2010).

23. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4727545/> accessed 3 Nov 2019
24. <https://www.cdc.gov/healthywater/emergency/drinking/disinfection-wells-bored.html> accessed 3 Nov 2019
25. <https://www.cdc.gov/disasters/floods/floodsafety.html> accessed 3 Nov 2019
26. <https://www.cdc.gov/disasters/foodwater/facts.html> accessed 3 Nov 2019
27. https://www.redcross.org/content/dam/redcross/atg/PDF_s/Preparedness___Disaster_Recovery/Disaster_Preparedness/Food_Safety/Food_and_Water-English.revised_7-09.pdf accessed 3 Nov 2019
28. <http://www.pidsphil.org/download/post%20disaster%20advice%20to%20prevent%20leptospirosis%20in%20children%20final.pdf> accessed 3 Nov 2019
29. <https://www.cdc.gov/measles/hcp/index.html> accessed 3 Nov 2019
30. Miyagi K., Shah A.K. Tetanus prophylaxis in the management of patients with acute wounds. *J Plast Reconstr Aesthet Surg.* 2011;64(October (10)):e267–e269.
31. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4672608/#bib0055> accessed 3 Nov 2019
32. <https://www.cdc.gov/tetanus/clinicians.html> accessed 3 Nov 2019
33. Delmas G, Courvallet M. *Public Health Engineering in Emergency Situations.* MSF, Paris, France (1994).
34. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6328906/> accessed 3 Nov 2019

SEXUALLY TRANSMITTED INFECTIONS AND VIOLENCE IN DISASTER SETTINGS

Mary Judith Q. Clemente, MD

INTRODUCTION

During times of disaster, reflex responses often include calls for the more traditional needs of the devastated community. Appeals for food, water, shelter, and sanitation take priority and understandably so these needs should be met for basic survival. In the aftermath of the disaster, however, arise many other needs which are not as obvious as the others. One problem which is not given enough attention in these settings is the well-documented increase in sexually transmitted infections (STIs).

The direct relationship between calamities and STIs is not a novel observation. As documented by a study made by Dr. Angela Silveira for the Johns Hopkins Bloomberg School of Public Health there are numerous reviews examining various STIs and disasters. Her paper showed that a majority of studies on this topic were during conflicts or man-made disasters. Most of the data gathered were from studies involving the so-called “global south countries” or developing countries including Pakistan, Kenya, Sudan, Burma, Uganda, Lebanon, etc. The most frequently studied STI found in 64% of the reviewed literature was HIV/AIDS, followed by syphilis, chlamydia, gonorrhea and trichomonas.¹

FACTORS ASSOCIATED WITH AN INCREASE IN STIs

Many studies have shown the link between STIs and calamities, whether natural or man-made. Although the reason behind this is complex and far-reaching, a close correlation has been made between the rising incidence of violence and STIs.

Violence is an important issue happening in the aftermath of a disaster. The magnitude of the problem has not been thoroughly measured but it cannot be denied that this phenomenon affects the community. The reasons for the increase in violent acts are manifold and some are even obvious. There is an increased feeling of stress due to loss of loved ones, property, and livelihood. Post-traumatic stress disorder and other types of mental health problems abound in disaster settings. The lack of basic provisions drives people to do extreme acts of desperation most of which may be illegal. And finally, the destruction of social structures and social support can cause people to succumb to stress and a compensatory action may be acts of violence.^{2,3}

Other possible reasons causing an increase in STIs are the overcrowded living conditions which offer no privacy for women. The loss of livelihood can drive women to engage in transactional sex in order to survive. In some instances, sexual violence can actually be perpetrated by outsiders arriving in the guise of helping these victims (military, relief, reconstruction personnel, etc.). And finally, in rarer instances, blood-borne STIs such as HIV can be transmitted through the improper handling of blood products due to the less than ideal situation in these areas.³

ASSOCIATION OF VIOLENCE WITH STIs

What types of violence directly affect the incidence of STIs? Child abuse (both physical and sexual), intimate partner or sexual violence usually directed to the female spouse, sexual exploitation and human trafficking are some types of violence which increase the incidence of STIs. Case in point is the evidence seen after the Mount Pinatubo eruption where there was an increase in intimate partner violence among the victims of the disaster.² Women who were victims of abuse prior to the calamity may even experience worse abuse post-disaster. Displaced women and children may also be easy victims of abuse such as trafficking because of loss of property and livelihood.^{2,7}

Knowing that violence with a concurrent rise in STIs is a definite problem in disaster settings, what then can be done?

In the acute phase or during or immediately after a disaster, priority should be given to the physical safety of victims. Health services for victims of rape should be equipped to treat or address the following:

1. Treat physical injuries (ex.: lacerations, contusions)

Addressing life-threatening injuries should be the health worker's first and primary Goal. Only after ascertaining that the patient is stable should the health worker proceed with the next steps.

2. Provide resources for pregnancy prevention if appropriate

For patients deemed at risk of being pregnant from the assault, resources to prevent pregnancy is recommended. This is accomplished through the intake of high-dose of hormones in an attempt to prevent ovulation.

3. Provide prophylaxis or treatment for selected STIs

The Centers for Disease Control and Prevention has released a 2015 STI Manual with a section on the treatment of victims of sexual abuse. In this guideline, nucleic acid amplifications tests for both chlamydia and gonorrhea are recommended; however, these tests are not readily available especially with their prohibitive cost, more so in a disaster setting. What is probably more feasible at the ground is to give prophylactic antibiotics in order to prevent possible transmission of certain STIs to the victim. Empiric antimicrobial treatment for chlamydia, gonorrhea and trichomonas should be available with the doses as follows:⁴

Trichomonas	Metronidazole 2 grams as a single dose orally
Chlamydia	Azithromycin 1 gram as a single dose orally
Gonorrhea	Ceftriaxone 250 milligrams IM as a single dose

The objective of giving single dose as opposed to a multiple dose regimen is to ensure that the patient is able to complete the treatment at the time of consultation.

Hepatitis B and Human Papillomavirus vaccination is also recommended in the CDC guidelines; again, since the cost is prohibitive this is not readily done in our setting. STI screening for Hepatitis B, syphilis and HIV are ordered for the patient with results to be brought on her follow up.⁴

SYNDROMIC APPROACH

Diagnostic confirmation of existing STIs is challenging in resource-limited situations. Laboratory tests are expensive and may not even be available. In these situations, the syndrome-based approach to the management of STIs is a better and more practical alternative. The WHO has developed and promoted this approach in settings with limited resources, which is consistent with the situation during calamities. The syndromic approach is based on determining consistent groups of symptoms and obvious signs, providing treatment targeted towards the most likely or the most serious organism in the absence of confirmatory laboratory diagnosis. Using this approach enables health care workers to have a low threshold for the diagnosis of STIs and to institute treatment before serious sequelae occur.⁵

The syndromic approach made by the WHO was meant for use by first-level health facilities such as health centers, mission hospitals, or STI clinics. This approach has obvious benefits: it offers treatment “on-the-spot” and it obviates the need for expensive and sophisticated laboratory tests. The choice of antimicrobial regimen will depend on the major pathogens responsible for the syndrome. A review of the syndromes in a certain geographical area periodically to ensure that the treatment regimens are still current and that no resistance is detected.⁵

The WHO training program for health care workers consist of seven syndromes:

1. urethral discharge in men
2. genital ulcer
3. inguinal bubo
4. scrotal swelling
5. vaginal discharge
6. lower abdominal pain in women
7. neonatal conjunctivitis

For the purpose of this handbook, the discussion will include syndromes in women namely genital ulcer, vaginal discharge and lower abdominal pain.

The traditional approach in diagnosing STIs is to arrive at an etiological diagnosis where a causative organism is identified and treatment is prescribed based on this result. This is the ideal approach when diagnostics are available. On the other hand, it also has drawbacks since treatment cannot be given until results are on hand. In the meantime these untreated patients are capable of continuously transmitting the infection to their sex partners. As mentioned earlier, the availability of diagnostic tests also pose a problem in low resource settings. Some common STI pathogens are notoriously difficult to diagnose using conventional laboratory techniques. *Chlamydia trachomatis*, the causative agent for cervicitis, some genital ulcers and pelvic inflammatory disease, is extremely difficult to isolate and identify using common laboratory methods. The same is true for the spirochete causing syphilis. The gold standard for syphilis is dark field microscopy which requires visualizing the organism using a sophisticated microscope.⁵

The key features of the syndromic case management are the following:

1. Problem-oriented (It responds to patient's symptoms)
2. Highly sensitive and does not miss mixed infections
3. Treats patients at the first visit
4. Makes STI care more accessible as it can be implemented at the primary health care level
5. Uses flowcharts that guide the health care worker through logical steps
6. Provides opportunity and time for education and counseling.

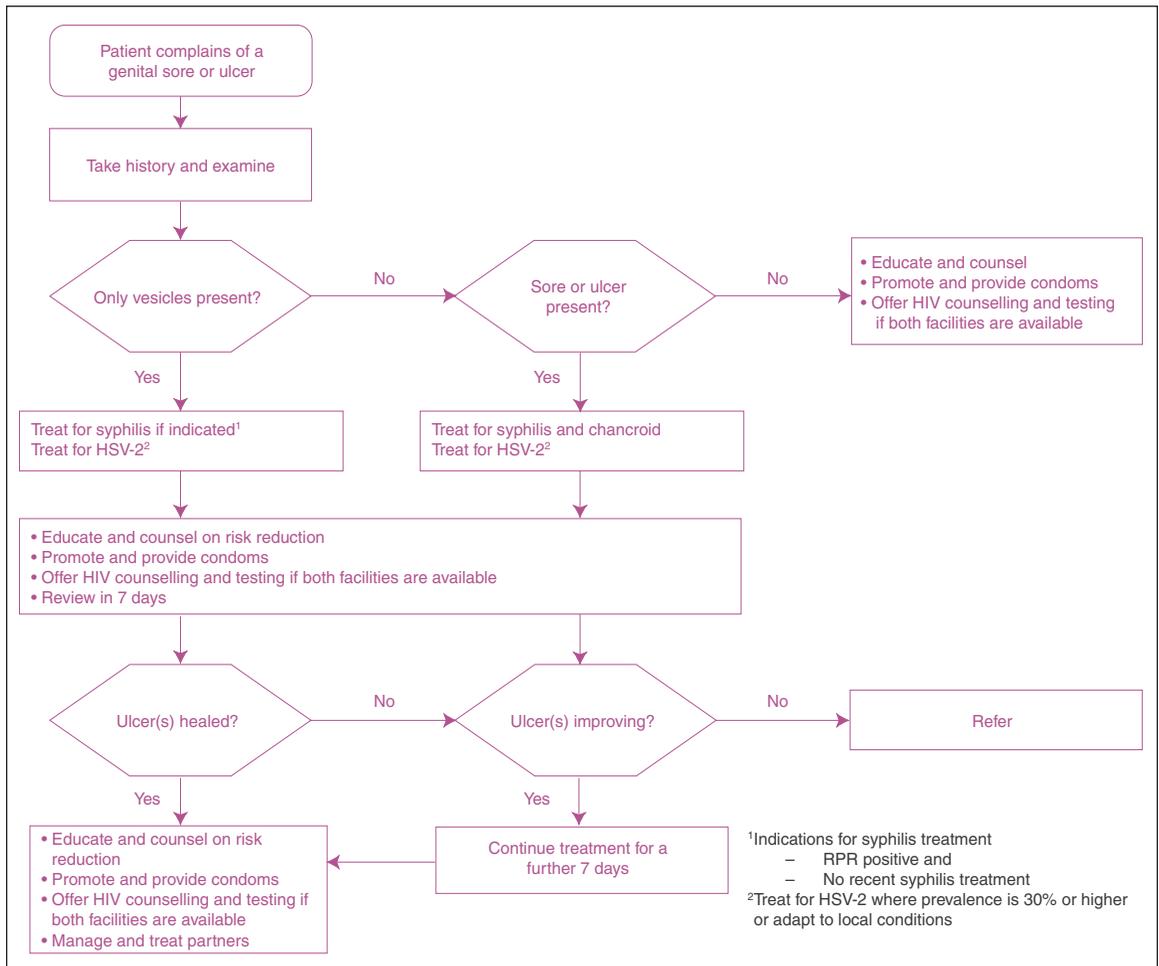


Figure 1. WHO syndromic management for genital ulcers.

Reference: *Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd edition Module 4 Diagnosis and Treatment, World Health Organization. 2007. Page 13.*

The flowchart above describes the syndromic management strategy for patients complaining of a genital ulcer. The flowchart greatly emphasizes the importance of the history and the physical examination, especially noting the appearance of the ulcers. By far, genital herpes is the most common infectious cause of genital ulcers. The diagnosis of genital herpes is further strengthened by the visualization of only vesicular lesions. In contrast to the recommendations in high-resource settings, this strategy promotes the treatment of all three possible infectious etiologies of genital ulcers (herpes, syphilis, chancroid) once a sore or an ulcer is seen. Syndromic management obviates the need for confirmatory testing as recommended by the CDC.

The following table shows the recommended treatment for the infectious causes of genital ulcers.

Primary syphilis	Benzathine Penicillin G 2.4 million units IM as a single dose
Genital Herpes (1 st clinical episode)	Acyclovir 400 mg TID for 7-10 days OR Valacyclovir 1 gram BID for 7-10 days
Chancroid	Azithromycin 1 gram PO as a single dose

Source: Centers for Disease Control and Prevention, *Morbidity and Mortality Weekly Report*. (2015). *Sexually Transmitted Diseases Treatment Guidelines, 2015*. (64)3. pp. 104-105. (See CDC 2015 Guidelines for a complete list of treatment regimens)

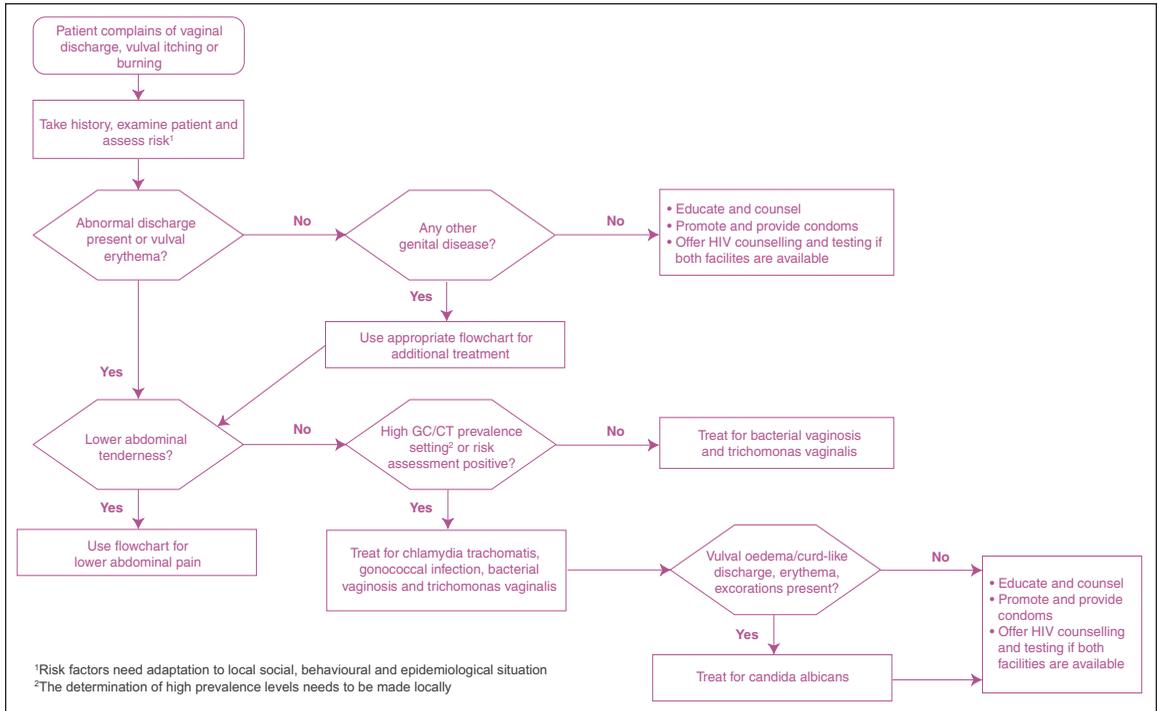


Figure 2. WHO syndromic management for vaginal discharge.

Reference: *Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd edition Module 4 Diagnosis and Treatment*, World Health Organization. 2007. Page 18.

The syndromic management strategy for vaginal discharge considers both infectious vaginitis and cervicitis. It also takes into account the possibility of an upper genital tract infection (note of lower abdominal pain). Again, the treatment of multiple possible infections is evident, with recommendations to treat for chlamydia and gonorrhoea in a high prevalence area and/or if there are risk factors present in the patient. Furthermore, there is no attempt to differentiate between bacterial vaginosis and trichomoniasis. Instead, outright treatment for both is recommended.

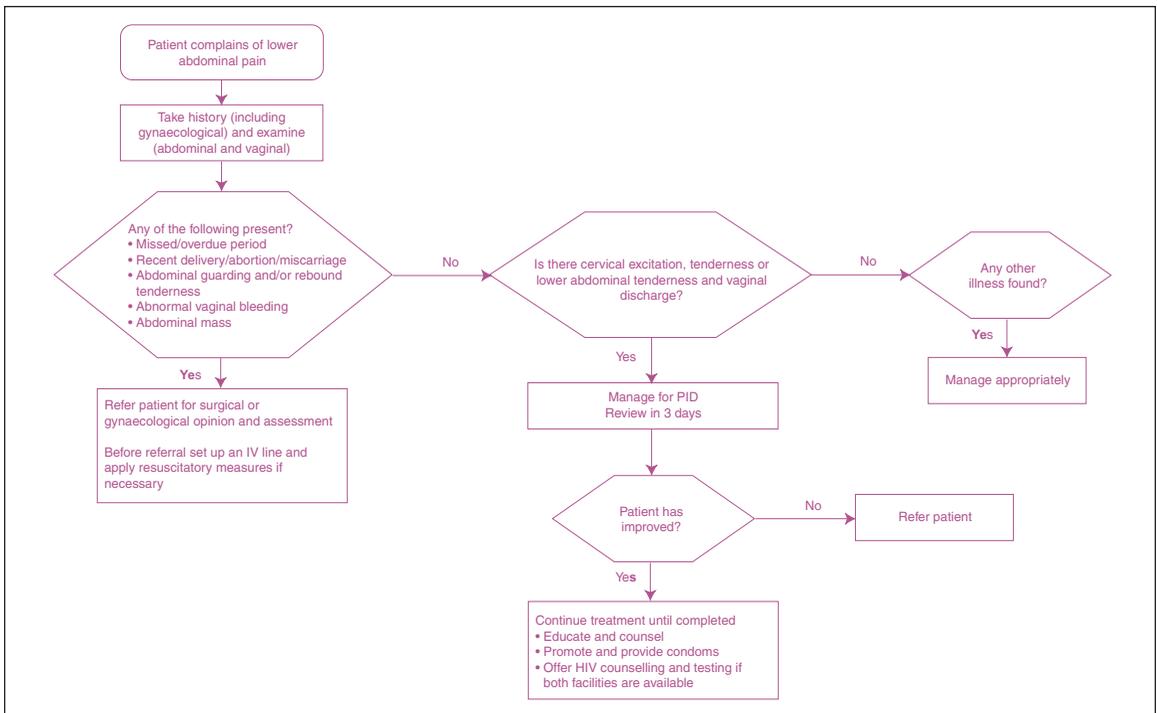


Figure 3. WHO syndromic management for lower abdominal pain.

Reference: *Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd edition Module 4 Diagnosis and Treatment, World Health Organization. 2007. Page 21.*

For patients with a complaint of lower abdominal pain, several screening questions are asked to determine if further referral is needed (missed period, guarding, etc.). If the patient is not deemed high-risk, then she is assessed for the possibility of pelvic inflammatory disease by eliciting cervical motion (wriggling) tenderness and lower abdominal tenderness. These findings are then sufficient to start the patient on an antibiotic regimen for pelvic inflammatory disease. Careful assessment is done three days after empiric therapy to note for any improvement or deterioration.

After the primary medical needs of the patient have been addressed, there should also be facilities or resources where evidence of the abuse can be gathered (ex.: rape kit). These specimens and pieces of evidence should be properly collected and forwarded to the responsible authorities. Health care workers and other community mobilizers should be trained in order to identify possible victims of abuse. Most of the time, these victims are afraid or ashamed to come forward. They should be provided counselling, safety, privacy and confidentiality so that they can be encouraged to report the abuse that they are suffering.³

For displaced children, the community should create a registry system to correctly track these victims and hopefully reunite them with their living relatives within the community. Without such a system, these children are very vulnerable to physical and sexual abuse.

During the recovery phase of the community, women should be part of the effort to rebuild and restore the community in order to protect them from abuse and violence. Community networks and programs that addressed violence before the disaster should be identified, revitalized and

strengthened through training and support. Violence (including sexual violence) should be included in any injury surveillance that is established. Community education and awareness campaigns are useful for residents to learn how to report acts of violence, what services are available and where they can go for care. Campaigns can also be used to influence social and cultural norms related to violence. HIV and STI education in the form of literacy and education programs should be emphasized.³

REFERENCES

1. Silveira, Angela. (2017). An Evidence Review of Sexually Transmitted Infections in Humanitarian Settings. doi: 10.13140/RG.2.2.29581.44003
2. World Health Organization Department of Injuries and Violence Prevention. (2005) Violence and Disaster [Brochure]. Geneva, Switzerland.
3. Carballo, Manuel, et al. (2005). Impact of the Tsunami on Reproductive Health. *Journal of the Royal Society of Medicine*, 98 (9), 400-403. doi: 10.1258/jrsm.98.9.400
4. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report. (2015). Sexually Transmitted Diseases Treatment Guidelines, 2015. (64)3. pp. 104-105.
5. WHO Training Manual Reference: Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd edition Module 2 Introducing STI Syndromic Case Management, 2007. Page 3.
6. WHO Training Manual Reference: Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd edition Module 4 Diagnosis and Treatment. 2007. Page 13,18,21.
7. Rezaeian, M. (2013). The Association Between Natural Disasters and Violence: A Systematic Review of the Literature and a Call for More Epidemiological Studies. *Journal of Research in Medical Sciences*, 18(2), 1103-1107.

PREVENTION AND MANAGEMENT OF DOMESTIC VIOLENCE DURING A DISASTER

Ana Maria Carmen L. Zaballero, MD

As climate change increases, it is more likely that natural hazards and disasters will also increase. Globally, there were three times more disasters during the period of 2000-2009 than in 1980-1989.¹

Literature shows that there is an increase in incidence of violence after a disaster, although the amount of research is limited. This is probably because concerns are focused more on emergency situations such as injuries, diseases, deaths and provisions for the basic needs of those affected by the disaster.

The World Health Organization (WHO) defines violence as “The intentional use of physical force or power, threatened or actual, against oneself, another person or against a group or community, which either results or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.”²

There are three broad categories of violence:

- a. Self-directed violence which includes suicidal behavior such a suicidal ideation, plans, attempted suicide, and suicide).
- b. Interpersonal violence which includes 1) family and intimate partner violence (e.g. child abuse, violence by an intimate partner and abuse of the elderly) and 2) community violence (e.g. youth violence, rape or sexual assault by strangers and violence in institutional settings).
- c. Collective violence which includes wars and armed conflicts within or between states, genocide and terrorism.³

Domestic and sexual violence comes under the second category, interpersonal violence. Domestic and family violence occurs when someone in an intimate or familial relationship attempts to gain and/or maintain power and control over another through a wide range of abusive behaviors.⁴ Domestic violence can be physical, sexual emotional, economic, or psychological actions or threats of actions that influence another person. This includes any behaviors that intimidate, manipulate, humiliate, isolate, frighten, terrorize, coerce, threaten, blame, hurt, injure, or wound someone.

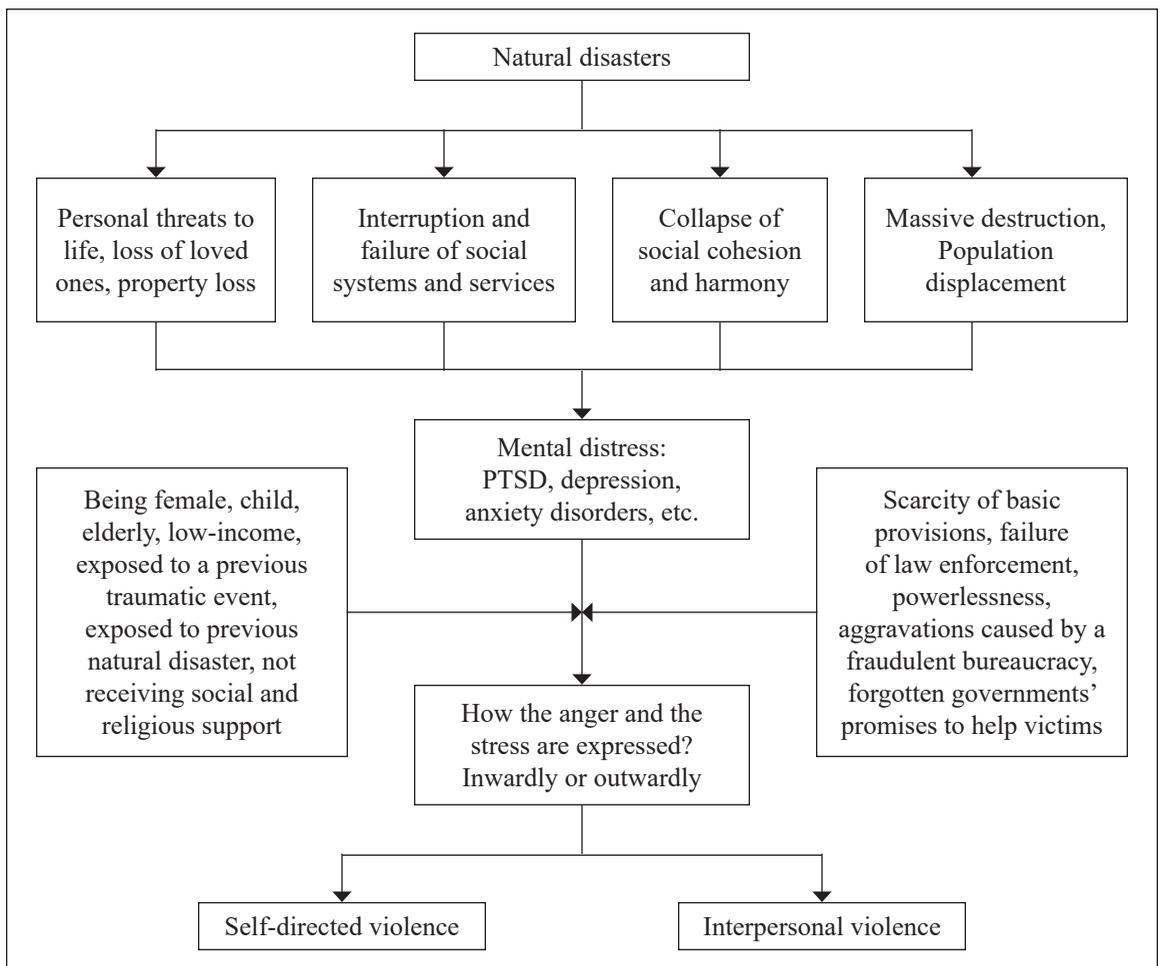
Domestic violence can happen to anyone regardless of race, age, sexual orientation, religion, or gender, socioeconomic backgrounds and education level. Domestic violence not only affects those who are abused but also has a substantial effect on family, friends, co-workers, witnesses, and the community (Office on Violence against Women). More vulnerable to post-disaster adjustment problems are the “at risk” group, women, children, elderly, low-income and those people who have been exposed to a previous traumatic event. Children in families where violence is present are much more likely to be abusive or abused, which continues the cycle of violence.⁵

FACTORS WHICH CAN INCREASE VIOLENCE AFTER DISASTERS

Disasters might increase the rate of violence both in the short and long term in a number of ways.⁵

Factors which can explain why there is an increase in these rates in disaster-affected communities include:

- Increased individual distress due to personal threat to life of the disaster itself, loss of loved ones, property loss, displacement, loss of income, and unemployment
- Mental health problems such as post-traumatic stress disorder, depression and anxiety
- Scarcity of basic provisions
- Failure of law enforcement
- Social networks are disrupted or destroyed
- Collapse of social cohesion and harmony
- Aggravation caused by a fraudulent bureaucracy
- Forgotten governments' promises to help victims



Source: *J Res Med Sci.* 2013 Dec; 18(12): 1103-1107

TYPES OF VIOLENCE COMMONLY FOUND AFTER A DISASTER

A review of literature highlights that there are only few studies which focus on the relation between disasters and interpersonal violence, which include domestic and sexual violence. Studies and agency reports showed that the most common type of violence are those against women and children.

Child abuse comes in different forms and the most common are physical violence which includes corporal punishment and all forms of torture, cruel, inhuman, or degrading treatment or punishment as well as physical bullying and hazing by adults or other children.⁶ One of the most severe form of child abuse is the inflicted traumatic brain injury. Also common in children are sexual violence, emotional violence and neglect.

Women are affected more significantly than men by disasters, due to gender inequalities and power imbalances in access to resources and relevant information. Like in child abuse, the most common form of abuse of women is physical violence followed by sexual assault and intimate partner violence. Exploitation, including sexual exploitation, of both women and children, are also common.

Different kinds of abuse:

- Physical abuse: Includes hitting, slapping, pushing or choking, throwing objects, trapping the partner in the home, and forcing to take drugs or alcohol against their will
- Emotional abuse: Includes name-calling, humiliation, blaming the victim for abuse and criticizing.
- Sexual abuse: A victim may be forced to have sex or perform sexual acts against their will. Other kinds of sexual abuse include denial of contraception, or being forcibly subjected to pornographic or violent sexual material.
- Reproductive coercion: Sabotaging the victim's contraception, refusing to use a condom, monitoring the victim's menstrual cycle, and withholding financial means to purchase birth control
- Economic abuse: Control of financial resources in a way that blocks the partner's use, such as denying access to money, denying food clothing and shelter
- Social abuse: Isolation of the victim, blocking access to social supports and resources, possessiveness, jealousy, suspicions of sexual infidelity, and/or extreme demands for the partner's time and attention resulting in the partner's increased isolation
- Stalking: A form of psychological abuse and/or threats of violence



Photo credits: Rappler

PREVENTION AND MANAGEMENT

Prevention and management of the most common forms of violence, which is a multifaceted problem, involving biological, psychological, social and environmental factors, has to be approached in different levels at the same time, including in disaster situations.

Child abuse and neglect:

- Family support approaches which includes training in parenting, to educate parents on child development which will help parents on understanding better their children's behavior; home visitation programmes, probably the most promising approach, which offer information, support and other services to improve the functioning of the family; intensive family preservation services, to keep the family intact and prevent substitute care.
- Health service approaches. Screening by health care professionals to identify health problems before signs and symptoms appear; training of health care professionals to detect and report cases of abuse early.
- Therapeutic approaches: Services for victims – therapeutic day care wherein they educate and provide therapy to abused children; Services for children who witness violence; Services for adults abused as children.
- Legal: Mandatory and voluntary reporting; child protection services; child fatality review teams; Arrest and prosecution policies; Mandatory treatment for offenders.
- Community-based efforts: School-based programs to prevent child sexual abuse; Prevention and educational campaigns; Coordinated interventions to change community attitudes and behavior.
- Societal approaches: National policies and programs such as VAWC (Violence Against Women and Children) Desks in our local setting; International treaties like UN's Convention on the rights of a child.

Intimate Partner Abuse:

- Support for victims like women's crisis centers and shelters.
- Legal remedies and judicial reforms
- Enforcement of laws and policies on arrest
- Alternative sanctions such as protection orders
- All women police stations
- Treatment programmes for perpetrators of partner violence
- Health service interventions
- Community-based efforts such as outreach program wherein outreach workers visit victims of violence in their homes and communities; Coordinated community interventions such as councils and forums; Prevention campaigns such as women's organizations' communication campaigns using media and events in an attempt to raise awareness
- Women must be ensured of access to resources and assistance and they should be involved in the response and distribution network.

Sexual Violence:

- Individual approaches: Psychological care and support by professionals early can hasten improvement and prevent psychological damage
- Programs for perpetrators such as rehab centers
- Programmes for sexual and reproductive health promotion like HIV prevention
- Encourage nurturing from pregnancy, birth until young adulthood
- Provide thorough and efficient medico-legal services
- Provide adequate training for health care professionals who will handle victims of violence
- Give prophylaxis for HIV infection because of the possibility of HIV transmission
- In areas where there is scarcity of physicians, centers may be created with highly skilled nurses or paramedical personnel to provide comprehensive care to victims of sexual assault
- Prevention campaigns
- Provisions for dedicated domestic violence units, sexual crime units, gender training for police and court officials, women-only police stations and court officials
- International treaties: they set standards for national legislation and provide a lever for local groups to campaign for legal reforms, e.g., the Convention on the Elimination of all Forms of Discrimination Against Women (1979)
- Create economic programmes in certain countries for women at risk of being trafficked
- Provide information and raise awareness so that women at potential risk are aware of the danger of trafficking

REFERENCES

1. UN Women Fiji. Climate Change, Disaster and Gender-based Violence in the Pacific. <https://www.asiapacific.unwomen.org>
2. Geneva, Switzerland: World Health Organization, 2002. World Health Organization. World Report on Violence and Health; Chapter 1, p.5
3. Geneva, Switzerland: World Health Organization, 2002. World Health Organization. World Report on Violence and Health; Chapter 1, p.6.
4. Kaufman M and Emery M. Disaster Response Workers: Assessing and Responding to Domestic Violence. 2000; Chapter 1, p4.
5. UN Women Fiji. Climate Change, Disaster and Gender-based Violence in the Pacific. p2. <https://www.asiapacific.unwomen.org>
6. WHO. Interpersonal Violence & Disasters. 2004 <https://www.who/violence-injury-prevention/>
7. First, Jennifer. Blog Post. Protecting Women and Girls from Violence in Disasters. <https://www.preventionweb.net/>. 24 Nov 2017
8. Rezaelan, Mohsen. The association between natural disasters and violence: A systematic review of the literature and a call for more epidemiological studies. Available from <https://www.ncbi.nlm.nih.gov>
9. WHO/World Report on violence and health – World Health Organization <https://www.who.int> 2002.

WOMEN'S HEALTH ISSUES IN COMPLEX EMERGENCIES

Potre Mairasna P. Boransing, MD

INTRODUCTION

Complex emergencies are situations of disrupted livelihoods and threats to life produced by warfare, civil disturbance and large-scale movements of people, in which any emergency response has to be conducted in a difficult political and security environment.¹

Complex emergencies are typically characterized by²:

- a. Extensive violence and loss of life;
- b. Displacement of populations;
- c. Widespread damage to societies and economies;
- d. The need for large-scale, multi-faceted humanitarian assistance;
- e. The hindrance or prevention of humanitarian assistance by political and military constraints; and
- f. Significant security risks for humanitarian relief workers in some areas.

The Philippines has been subjected to different kinds from natural calamities to man-made disasters such as civil unrest and warfare. The geographic location of the country along the Pacific region and in the Pacific ring of Fire makes it susceptible to natural disasters like typhoons and earthquakes. In such events, people in low income countries like the Philippines are four times more likely to die. Commonly, earthquakes and natural disasters significantly weaken the pre-existing medical and legal infrastructure of a region. The lack of pre-existing safety features of buildings and overcrowded conditions and immense poverty in some low income countries lead to a higher proportion of injured and dead in these countries.³ Furthermore, insurgency and terrorism has escalated in recent years challenging not only the political structure of the country but its security and preparedness to respond to emergencies beyond natural calamities.

Complex emergencies result in the disintegration of government institutions including healthcare systems and social services, destruction of public infrastructure, displacement of people and even collapse of social contracts. It is typified by inadequate access to the basic needs of human existence (food, shelter and clothing), medical services, mental and psychological trauma and violence directed at vulnerable individuals.⁴ In all these devastating events throughout the world, women have been shown to be among the most vulnerable group of people. In fact, the worst mortality and morbidity rates for women and children are said to occur in such situations. Statistics have shown that worldwide, women and children are up to 14 times more likely than men to die in a disaster.⁵ During complex emergencies access to health care services are more difficult. The pre-existing system becomes overwhelmed and therefore cannot meet the demands of the people. Acute trauma becomes a priority and this shifts the focus away from health concerns of women.

Women's health issues during emergencies can be divided into four parts: pregnancy and obstetric complications including breastfeeding, HIV and sexually transmitted infections, gender-based violence and mental health.

A. Pregnancy and Obstetric Complications

All aspects of pregnancy- prenatal, intrapartum and postpartum care are threatened by catastrophic events. At any given time, 4% of disaster affected populations are pregnant, about 15% of who will experience an obstetric complication.⁶ In countries like the Philippines where reproductive health complications are a leading cause of death and illness even during normal conditions, these complications are compounded in times of disasters. Without access to emergency obstetric services, many will die during pregnancy and childbirth.

The physiological and anatomic changes of pregnancy increase the risk to the mother and fetus with advancing gestational age. These anatomic changes alter the pattern of injury. The increased engorgement of pelvic vessels leads to an increased risk of retroperitoneal hemorrhage and hematoma. Blunt trauma can cause injuries to the bladder, spleen, and pelvic fractures. This can also lead to uterine rupture by rapid deceleration, especially where there has been a prior cesarean section. Upper abdominal stab wounds can lead to more complex bowel injury due to upper displacement of abdominal contents. Abruption is the most frequent cause of death from trauma. Identified long term birth outcomes after disasters include fetal loss, prematurity and fetal growth restriction.⁷

B. HIV and Sexually Transmitted Infections (STI)

Many women will suffer from long term consequences of preventable and treatable infectious diseases like sexually transmitted infections and HIV. The collapse of social contracts during disasters and the gender-based violence experienced during these situations exposes women and girls to sexual abuse which may result not only to unwanted pregnancies but to sexually transmitted infections and HIV. Sexually transmitted infections increase the risk for HIV. While HIV prevalence may differ in each of the following settings: prior to, during and following conflict, there is significant evidence that women and girls in complex emergencies often experience rape and other sexual violence.⁸ In a Guide on Sexual Health in Humanitarian Emergencies published by Swasti and Oxfam in 2009, they reported the following links between HIV/STI and Humanitarian Emergencies: loss of livelihood, migration, breakdown of social norms, challenges to health care, disruption of HIV control activities, general trauma and paradoxically, relief efforts.⁹ The structure and location of temporary shelters that are a part of relief efforts are major contributing factors. Proximity in temporary structures within settlements increased the vulnerability.

C. Gender-Based Violence (GBV)

Gender-based violence is violence that is directed at an individual based on his or her biological or gender identity. It includes physical, sexual, verbal, emotional and psychological abuse, threats, coercion, and economic or educational deprivation, whether occurring in public or private life.¹⁰

GBV is a worldwide problem that is further escalated by instability in times of chaos. Women and adolescent girls face greater risk of abuse, sexual exploitation, violence and forced marriage during conflicts and natural disasters. The following contributing circumstances have been identified by the United Nations Refugee Agency in developing guidelines for prevention and response to sexual violence against refugees¹¹:

1. male perpetrators' dominance over female victims
2. psychological strains in refugee camps
3. absence of support systems for protections
4. crowded facilities
5. lack of physical protection
6. general lawlessness
7. alcohol and drug abuse
8. politically motivated violence against refugees
9. single females separated from male family members

D. Mental Health

Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.¹²

Involvement in a disaster situation causes and exacerbates tremendous anxiety, depression and grief.¹³ Women are said to be more vulnerable in this aspect as well including post-disaster psychopathology. Some evidence indicates that mothers are more vulnerable than other women.¹⁴

Post-traumatic stress has been associated with premature deliveries, increased cesarean section rates and small for gestational age babies in several studies.¹⁵

Furthermore, post-traumatic stress disorder, and prolonged grief disorder, may be triggered by extreme stressors. These disorders may become chronic and undermine the functioning of individuals and communities, which is essential for their survival and socioeconomic recovery.¹⁶

Addressing mental health issues and concerns are not part of many protocols in rescue operations and emergency responses. This continues even after the aftermath of a disaster where rehabilitative efforts take center stage. There is a consensus that humanitarian assistance should address mental health and psychosocial issues through intersectoral action.¹⁷

RECENT DISASTERS IN THE PHILIPPINES

A. War: Marawi Siege

As of this writing, the most recent conflict in the form of armed confrontation between the Armed Forces of the Philippines and Pro-ISIS militants is that of the 2017 Marawi siege where 359,680 individuals (78,466 families) were forcibly displaced. During the height of the siege, multiple evacuation centers were set up in different areas in Lanao Del Sur and Iligan City. Internally displaced individuals (IDPs) were either in community-based evacuation centers (CB-ECs), in evacuation centers or home-based (where they stay with relatives and friends). This set up proved to be challenging to rescue operations in locating and providing assistance to affected individuals and families. Furthermore, the unique cultural and religious beliefs and practices of the people of Marawi, known as Maranaos, had to be respected and taken into consideration in various operations.



Figure 1A. Marawi Siege.
Photo credit: Reuters / R. Ranoco



Figure 1B. Marawi siege evacuation center.
Photo credit: Jeffrey Maitem

Reports from different agencies including the UNHCR¹⁸ showed that during the height of the war, primary concerns aside from food, shelter and clothing were security and protection as well as healthcare. Many of the health care facilities were in poor condition and some were located in areas directly hit by the crossfire. Mobile health clinics were set up and patients were sent to nearby government hospitals. There were conflicts in different camps including tensions between IDPs, host communities and among IDPs themselves. Disease outbreaks were common. Malnutrition among children and preterm deliveries were increased.

While some continued to breastfeed, efforts to help augment breastfeeding thru breast milk donations and wet nursing were particularly difficult as these practices were not acceptable to many of the women in the evacuation centers due to cultural and religious beliefs.

Victims of this war did not escape GBV as stories of rape and harassment continue to emerge. One documented incident is that of a 16 year old girl in one of the evacuation centers in Saguiaran, Lanao Del Sur.¹⁹ She was threatened and physically abused. The physical set up and close proximity of evacuees between each other where family cubicles were made only of cloth, tarpaulins and plywoods made these internally displaced women susceptible to perpetrators of these crimes.

Camp management and monitoring is of utmost importance to ensure that the protection and needs of the evacuees are properly addressed. Local government units should provide regular security patrols within the vicinity of the evacuation centers to prevent abuses and further casualties and to provide immediate action and referral to medical emergencies.

After the war, mental health issues became a major concern. The loss of livelihood and the means to survive as well as GBV have become stressors that affected many of the victims. To address this, the Department of Social Welfare and Development together with some non-government organizations and volunteer doctors and psychologists conducted formal and informal psychosocial counseling for survivors of the war. These were done in selected venues including barangay halls, hospitals and evacuation centers.

To this day, more than 2 years after the siege, the most affected area, (MAA) which used to be the center of business and trade still remains unoccupied as the government works on clearing the area. While some IDPs have returned to areas near their former houses, many still live in evacuation centers, transition sites or relatives' homes. Humanitarian efforts have shifted and dwindled as the needs and concerns of IDPs have changed.

B. Typhoons: Typhoon Sendong (Washi) and Typhoon Yolanda (Haiyan)

On the average, the Philippines encounters at least 20 typhoons a year. The world's deadliest storm in 2011, Tropical storm Sendong (Washi) made landfall in Mindanao on December 16 in Surigao del Sur. It traversed the provinces of Agusan del Sur, Bukidnon, Misamis Oriental, and the cities of Cagayan de Oro, El Salvador and Iligan, causing torrential rains that led to widespread and catastrophic flooding. It made its second landfall at the vicinity of Puerto Princesa City, Palawan before it exited out of the country on Dec 18, 2011.²⁰ Typhoon Sendong affected a total of 131,618 families or 698,882 persons in 866 barangays of 60 municipalities and 9 cities in 13 provinces. A total of 1,268 persons were reported dead, 6,071 persons were reported injured, 181 missing and 441 survivors.

Data from UNFPA shows that during Typhoon Sendong there were 8,500 pregnant women and 4,200 who are nursing babies six months and below. To address the needs of these women, hygiene kits and reproductive health kits were distributed. Clean delivery kits, medications and supplies were provided by UNFPA to augment existing regional and city hospitals that were overwhelmed with many patients. These kits contained supplies for use of a skilled birth attendant such as a midwife in cases of emergency births that took place outside a hospital or birthing facility. Some deliveries were indeed performed in areas outside the hospitals because of logistic difficulties in the transport of pregnant women.

In the midst of the disorder brought by the disaster, GBV became apparent due to the lack of privacy in evacuation camps, where the use of common toilets and open bathing facilities were a norm. Women and girls become more susceptible to abuse. The government conducted GBV audits together with the City health offices of affected areas which served as the basis for specific interventions to prevent GBV in evacuation centers and affected communities. To address mental



Figure 2A. Typhoon Sendong.
Photo credit: AFP Image Forum / Cheryl Vergeire



Figure 2B. Typhoon Sendong evacuation center.
Photo credit: Rappler.com

health issues, the Department of Social Welfare and Development conducted psychosocial counseling for survivors of the flood and set up an emergency referral system for survivors of GBV.

A report published in the Northern Mindanao Medical Journal by Itchon, et al in 2015, on the Epidemiologic pattern of immediate and intermediate health effects of flash floods showed that children were the most vulnerable group and that surgical emergencies were the most common cases reported immediately after the flood followed by water borne diseases such as acute gastroenteritis and leptospirosis. This report from a local DOH tertiary hospital in Region 10 showed that during the typhoon, there was no existing system designed to provide organized and systematic immediate and intermediate health needs of disaster survivors.²¹

A few years after typhoon Sendong, in November 8, 2013, Super typhoon Yolanda (Haiyan) made landfall in Eastern Samar. It is the deadliest tropical cyclone recorded in Philippine history. It caused massive destruction in many parts of Visayas and Palawan. Typhoon Yolanda affected more than 16 million people, causing the death of 6,300, 4.1 million displaced and 1.1 million houses damaged or destroyed in 591 towns and 57 cities in 44 provinces in the Philippines.²²

Many of the challenges of Typhoon Sendong became apparent during Typhoon Yolanda as well. Data from UNFPA estimated more than 250,000 pregnant and 169,000 breastfeeding women. There were 1,000 childbirths everyday with 150 expected to have potentially life-threatening complications.²³ Unfortunately, UNFA showed that 100 days after Yolanda, the support for health and protection of women and girls were still slow. Human trafficking and sexual exploitation was rampant during this time. To address victims of GBV during and after Typhoon Yolanda, 17 women-friendly spaces (WFS) were established across the four provinces. These WFS served as primary venues for raising awareness on GBV, anti-trafficking as well as for psychosocial support with referrals to services for GBV survivors.

The reason for the vulnerability of women is complex. It is said to be related to their social and economic roles in society. Seventy percent of the world's poor are women. Their vulnerability is accentuated by race, ethnicity and age.²⁴ Women are also often excluded from decision making and are denied access to resources. Even women's organizations are significantly underrepresented in humanitarian responses.²⁵



Figure 3A. Typhoon Yolanda.
Photo credit: Manila Bulletin



Figure 3B. Typhoon Yolanda evacuation center.
Photo credit: edition.cnn.com

There is a need to safeguard the well-being of women and to empower them during these vulnerable times. Women need specific services in times of complex emergencies. Interventions aimed to address this sector of society must be integrated into emergency responses at the outset.

In the Philippines, the 2009 Magna Carta of Women and the Responsible Parenthood and Reproductive Health Law of 2012 have been formulated to provide protection of women and girls and to ensure their access to sexual and reproductive health services during times of crises through the implementation of the Minimum Initial Service Package for Sexual Reproductive Health (MISP for SRH).

In December 2016, the Philippine government further showed its resolve to fully implement the MISP for SRH with the signing of the Joint Memorandum Circular on the Minimum Initial Service Package (MISP) for Sexual and Reproductive Health (SRH) in emergencies. This commitment provides an inter-agency policy for a more cohesive strategy among the key national agencies, the Department of Health (DOH), Department of Social Welfare and Development (DSWD), Department of Interior and Local Government (DILG), and the Office for Civil Defense (OCD). In May 2019, the Philippine Obstetrical and Gynecological Society (POGS), which is the technical lead and the recognized accrediting body for the practice of Obstetrics and Gynecology in the Philippines, signed a memorandum of agreement with the Department of Health. The memorandum of agreement was developed to facilitate collaboration between DOH, through the DOH-Emergency Management Bureau (DOH-HEMB) and POGS in developing and implementing a plan of action for disaster management. It applies to DOH and all its Regional Offices, POGS and all its Local chapters that have mandates and interest in ensuring the provision of reproductive health information and services during the preparedness, response and early recovery phases of an emergency disaster. Furthermore, the agreement ensures the membership of focal persons to the DOH Reproductive Health Coordinating Team and POGS Women's Health and Environment Committee (POGS-WHEC) and the POGS Regional Director at the national and sub-national levels for the MISP for SRH Implementation.

For a more comprehensive approach to mental health issues during humanitarian emergencies, the World Health Organization and the United Nations High Commissioner for Refugees have released the mhGAP Humanitarian Intervention Guide. This practical tool will help enable health-care providers in assessing and offering first-line management of mental, neurological and substance use conditions in humanitarian emergencies.²⁶

To help address the vulnerability of women during complex emergencies, the cycle of disempowerment should be broken. In a study done by Sato M., et al, in 2016 on pregnant women victims of typhoon Haiyan (Yolanda), three themes were identified regarding problems and concerns during and after the typhoon: 1) having no idea on what is going to happen during evacuation 2) lacking essentials to survive and 3) being unsure of how to deal with health concerns. Results show that women were unprepared and without proper knowledge on potential life-threatening events. Therefore, women should be given a more active role in the community.²⁷

They should be represented in disaster training programs and educated on what has to be done should disaster hit their communities at any time.

The occurrence of complex emergencies in the form of natural disasters or war is inevitable. Emergency responses should continuously improve and incorporate new insights from previous experiences. Foresight and planning are essential in formulating a practical and logical approach to address women health issues in such events. An interdisciplinary way of dealing with disaster management should be adapted and it must include experienced women healthcare providers.

REFERENCES

1. Wisner, Ben, Adams, John & World Health Organization. (2002). Environmental health in emergencies and disasters: a practical guide / edited by B. Wisner, J. Adams. World Health Organization.
2. ICRC. (n.d.). Retrieved from www.icrc.org
3. Goodman, A. (2016). In the Aftermath of Disasters: The Impact on Women's health. *Critical Care Obstetrics and Gynecology*, 2:6.
4. Habtezion, Senay. (2013). Gender and Climate Finance - Policy Brief (Asia and the Pacific). 10.13140/RG.2.1.1031.7528.
5. Habtezion, Senay. (2013). Gender and Climate Finance - Policy Brief (Asia and the Pacific). 10.13140/RG.2.1.1031.7528.
6. Sarah Zeid, e. a. (2015). Women's children's and adolescents' health in humanitarian and other crisis. *BMJ*, 56.
7. Goodman, A. (2016). In the Aftermath of Disasters: The Impact on Women's health. *Critical Care Obstetrics and Gynecology*, 2:6.
8. whatworksforwomen.org. (n.d.). Retrieved from whatworksforwomen.org: www.whatworksforwomen.org/chapters/7-Prevention-for-Key-Affected-Populations/sections/15-Women-and-Girls-in-Complex-Emergencies
9. Swasti and Oxfam International, 2009, Sexual Health in Humanitarian Emergencies
10. Ott, M. (2017). Series: What Does That Mean? Gender-based Violence. *Wom for Women International*.
11. Preparing for Disasters: Perspectives on Women. (2016). *The American College of Obstetricians and Gynecologists Committee Opinion 457*, 3.
12. WHO. (2014, August). *who.int*. Retrieved from [who.int](https://www.who.int/features/factfiles/mental_health/en/): https://www.who.int/features/factfiles/mental_health/en/
13. Preparing for Disasters: Perspectives on Women. (2016). *The American College of Obstetricians and Gynecologists Committee Opinion 457*, 3.
14. Harville E, Xiong X, Buekens P. Disasters and perinatal health: a systematic review. *Obstet Gynecol Surv*. 2010 Nov; 65(11):713-28.
15. Goodman, A. (2016). In the Aftermath of Disasters: The Impact on Women's health. *Critical Care Obstetrics and Gynecology*, 2:6.
16. Ventevogel, P., Ommeren, M. v., Schilperoord, M., & Saxena, S. (2015). *WHO*. Retrieved from www.who.int/bulletin/volumes/93/10/15-156919/en/
17. Inter-Agency Standing Committee (IASC) (2007). IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings. Geneva: IASC.
18. (2017, October 31). Retrieved from www.unhcr.org/ph.
19. Beltran, B. (2019, March 27). <https://news.abs-cbn.com>.
20. NDRRMC. (2012). *Final Report on the Effects and Emergency Management of Tropical Storm Sendong (Washi)*. NDRRMC.

21. Itchon, G. S., Lo, D. S., Panopio, A. T., Beltran, R. S., Tan, M. B., Peralta, M. V., (2015). The epidemiologic pattern of immediate and intermediate health effects of flash floods. *Northern Mindanao Medical Journal*, 1(1), 7-11
22. NDRRMC. (2014). *Yolanda (Haiyan)*. NDRRMC.
23. UNFPA. (2014, March 1). *UNFPA Philippines*. Retrieved from <https://philippines.unfa.org>.
24. Nour N. N. (2011). Maternal health considerations during disaster relief. *Reviews in obstetrics & gynecology*, 4(1), 22–27.
25. *actionaid.org*. (n.d.). Retrieved from <https://actionaid.org/opinions/2019/why-actionaid-promotes-womens-leadership-emergencies>
26. Ventevogel, P., Ommeren, M. v., Schilperoord, M., & Saxena, S. (2015). *WHO*. Retrieved from www.who.int/bulletin/volumes/93/10/15-156919/en/
27. Sato M, Nakamura Y, Atogami F, Horiguchi R, Tamaki R, Yoshizawa T, Oshitani H. Immediate Needs and Concerns among Pregnant Women During and after Typhoon Haiyan (Yolanda). *PLOS Currents Disasters*. 2016 Jan 25. Edition 1. doi: 10.1371/currents.dis.29e4c0c810db47d7fd8d0d1fb782892c.

**LOCAL GOVERNMENT UNITS AND
STATE UNIVERSITIES AND COLLEGES COLLABORATION
ON CLIMATE CHANGE ADAPTATION,
DISASTER RISK REDUCTION AND
STRENGTHENING LIVELIHOOD SYSTEMS AND
COMMUNITY DEVELOPMENT INITIATIVES**

Doracie Zoleta-Nantes, PhD

ABSTRACT

With funding from the Australian Government’s Public Sector Linkages Program (PSLP), the “*Capacity Strengthening of Five Provincial Governments and State Universities in Integrating Climate Change Adaptation and Disaster Reduction – Philippines*” was undertaken on February 2013 to April 2015. Intended to make vulnerable people in disaster-prone communities more active participants in undertaking community-managed projects and more hands-on on disaster prevention and risk management, the program was implemented in select LGUS in the provinces of Albay, Bohol, Lanao del Norte, Misamis Oriental, and Quezon and with the cooperation of six state universities and colleges (SUCs) as partners in advancing collaborative measures on CCA and DRR. They are the Bicol University, Bohol Island State University, Mindanao State University-Iligan Institute of Technology, Capitol University, Mindanao University of Science and Technology and the Southern Luzon State University.

The collaborative partnership of SUCs and LGUs proved to be vital for the management of more relevant projects for building a more disaster resilient Philippines. The preparation of research-based action plans in LGU development initiatives proved to be helpful in CCA and DRR integration in everyday implementation of government programs and projects. This project increased the technical competency, capacity and confidence among local government unit leaders in undertaking climate change adaptation (CCA) and disaster risk reduction (DRR) and most especially their integration in community development planning. It brought varying positive impacts on different administrative levels across the five provinces. The partnerships of provincial, municipal and barangay local government units with state universities and colleges provided opportunities for: 1) producing local and specific knowledge on disaster risk reduction and climate change adaptation; 2) generating social capital; and 3) organization of small-scale initiatives on environmental restoration and livelihood improvement to help build resilient communities. The continuation of this partnership is crucial for the Philippines as it seeks innovative approaches to address the issues of economic underdevelopment and vulnerability to disasters.

THE BICOL EXPERIENCE IN DISASTER MANAGEMENT

Rebecca B. Singson, MD and Erlidia F. Llamas-Clark, MD, MPH, PhD

INTRODUCTION

The Bicol Region comprises the southern part of Luzon, being the largest island in the archipelago, with a total land area comprising 5.9% of the total land area of the country.¹ The topography ranges from slightly undulating to rolling and from hilly to mountainous. Bicol region is highly volcanic in origin and part of the Pacific Ring of Fire. This is evidenced by the number of hot springs, crater, lakes and volcanoes such as Mounts Mayon, Malinao, Masaraga and Catburawan in Albay; Mount Labo in Camarines Norte; Mounts Isarog and Iriga in Camarines Sur; and Bulusan Volcano in Sorsogon.²

Volcanism is evident by the number of hot springs volcanoes and crater lakes in the region from Mount Labo in Camarines Norte to the Gate Mountains in Matnog, Sorsogon. Mayon Volcano, known worldwide for its perfect cone and Bulusan are the most active volcanoes in the 16 volcanoes Bicol-wide. Mayon Volcano is elegant in its magnificence during quiescence, but once it erupts, it has recurrently inflicted disasters on the region.

An average of 5 typhoons per year enters the Philippine Area of Responsibility (PAR) and directly hits Bicol. In its risk assessment because of these calamities, 11.4% of the Barangays are classified as High to Moderate risk for flooding, 5.14% are classified as High to Moderate risk for landslide. In addition, the Bicol River basin passes through and drains from the river tributaries of 3 provinces Albay, Camarines Sur and Norte.

DISASTER AND PREPAREDNESS

The “2009 UNISDR Terminology on Disaster Risk Reduction” was a report adopted by the United Nations General Assembly on February 2, 2017 which contained the following definition of terms³:

1. **Disaster Preparedness** refers to the “knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response to sustained recovery. Preparedness is based on knowing and implementing the following steps:

- a. Identify the hazards (Who is at risk? Which population? What properties?)
- b. Develop a plan (what protocols to use? What training is needed?)
- c. Practice the plan (testing a plan if it works)

Preparedness involves a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required.”

2. **Disaster Prevention and Mitigation** means the “avoidance of hazards and lessening or minimizing of the adverse impacts of a hazardous event”.
3. **Disaster Response** alludes to “actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Disaster response is predominantly focused on immediate and short-term needs and is sometimes called disaster relief. Effective, efficient and timely response relies on disaster risk-informed preparedness measures, including the development of the response capacities of individuals, communities, organizations, countries and the international community.

The institutional elements of response often include the provision of emergency services and public assistance by public and private sectors and community sectors, as well as community and volunteer participation. “Emergency services” are a critical set of specialized agencies that have specific responsibilities in serving and protecting people and property in emergency and disaster situations. They include civil protection authorities and police and fire services, among many others. The division between the response stage and the subsequent recovery stage is not clear-cut. Some response actions, such temporary housing and water supplies, may extend well into the recovery stage.”

4. **Disaster Rehabilitation and Recovery** is the “restoration and improvement of basic services and facilities for the functioning of a community or a society affected by a disaster.”

Disaster Preparedness in Bicol

In Bicol, disaster preparedness in the region was piloted by the Office of Civil Defense (OCD) of the Dept of National Defense. The program is called “4K: Kaalaman sa Kahandaan, Takumbas ay Kaligtasan” involving educating grade school students on disaster risk reduction. This includes information on what to do before, during, and after disaster strikes a community, such as basic safety and life-saving response. These are demonstrated to impart the basic protective measures during earthquakes and fire. Retired general Claudio Yucot, the OCD-Bicol regional director commented that disaster readiness should start at home and should be ingrained in every Filipino, particularly the youth. They should be educated, resilient, ready and equipped for natural disasters so they can pass this knowledge on to their family members and save lives, even before the disaster responders come to the scene of calamity.

He reiterated that resilience starts with recognition of the hazards and risks which threaten communities, but people should also learn how to protect themselves from such threats.⁴

A. IDENTIFY THE HAZARDS

Based on geographical, topographical and meteorological data a risk assessment must be done and mapping of every hazard to determine who is at risk and what properties or infrastructure can be damaged. Examples of agencies you can seek assistance Philvocs, PAG-ASA. Below are the examples of the hazard maps of Albay:

People in Albay are well informed to understand the nature and effects of hazards

1. Climate Risks
2. Weather and Hydrologic Hazards
3. Volcanic Hazards
4. Seismologic and Geologic Hazards

The current and future consequences of global change



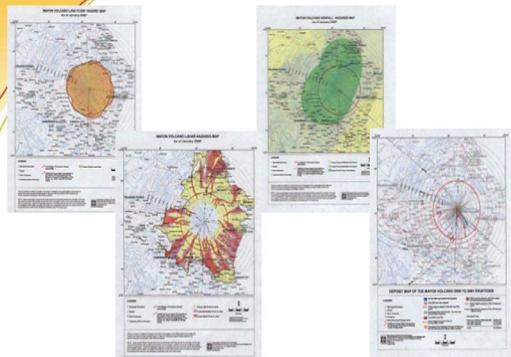
The greenhouse effect




65

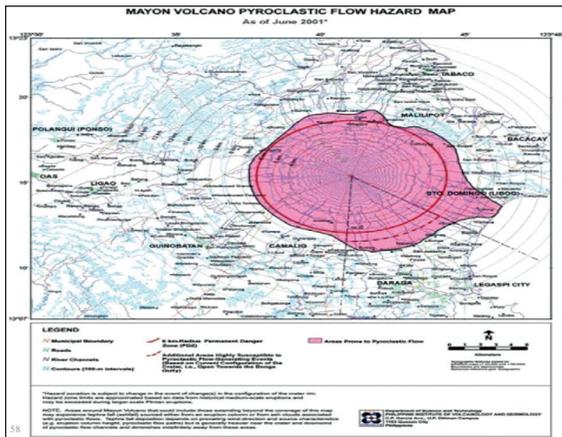
Source: <https://image.slidesharecdn.com/salcedarappler100814-141009023815-conversion-gate02/95/albay-governor-salceda-presentation-during-the-launching-of-project-agos-by-rappler-65-638.jpg?cb=1413961855> accessed 4 Nov 2019.

Volcanic Hazard Map



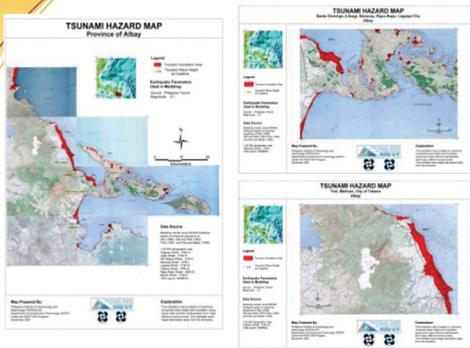
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Source: <https://image.slidesharecdn.com/salcedarappler100814-141009023815-conversion-gate02/95/albay-governor-salceda-presentation-during-the-launching-of-project-agos-by-rappler-75-638.jpg?cb=1413961855> accessed 4 Nov 2019.



Source: <https://image.slidesharecdn.com/forumonexcellenceinpublicgovernancenov142014dap-141122012411-conversion-gate02/95/albay-governor-salceda-presentation-during-the-forum-on-excellence-in-public-governance-58-638.jpg?cb=1416619980> accessed 4 Nov 2019.

PHIVOLCS Tsunami Hazard Maps of Albay Eastern Seaboard



73

Source: <https://image.slidesharecdn.com/salcedarappler100814-141009023815-conversion-gate02/95/albay-governor-salceda-presentation-during-the-launching-of-project-agos-by-rappler-73-638.jpg?cb=1413961855> accessed 4 Nov 2019.

B. DEVELOP PLANS

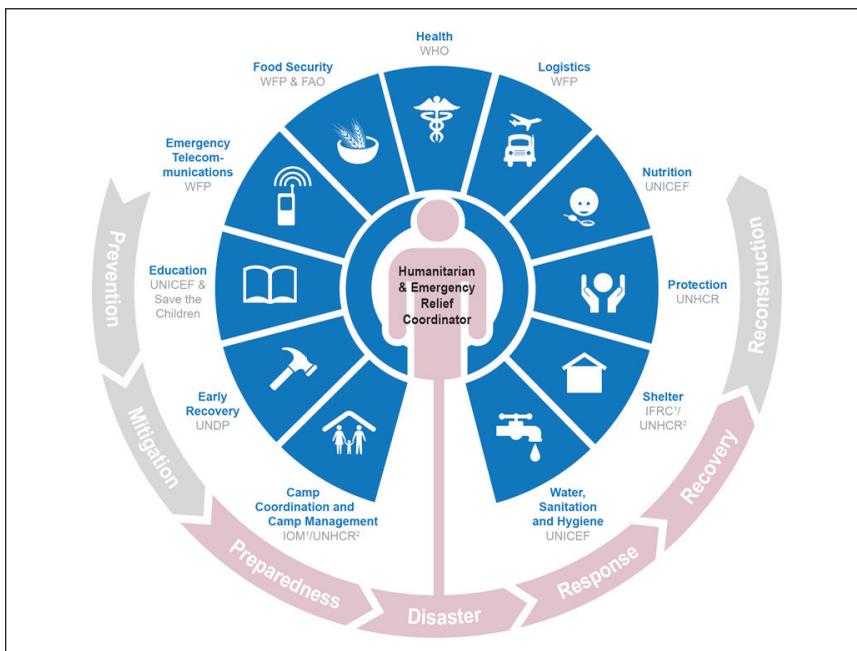
Institutionalization of Cluster Approach – Health Cluster ⁵

Clusters are groups of humanitarian organizations, both UN and non-UN, in each of the main sectors of humanitarian action, e.g. water, health and logistics. They are designated by the InterAgency Standing Committee (IASC) and have clear responsibilities for coordination.

The aim of the cluster approach is to strengthen system-wide preparedness and technical capacity to respond to humanitarian emergencies and provide clear leadership and accountability in the main areas of humanitarian response. At country level, it aims to strengthen partnerships, and the predictability and accountability of international humanitarian action, by improving prioritization and clearly defining the roles and responsibilities of humanitarian organizations.

1. Supporting service delivery by providing a platform for agreement on approaches and elimination of duplication
2. Informing strategic decision-making of the HC/HCT for the humanitarian response through coordination of needs assessment, gap analysis and prioritization
3. Planning and strategy development including sectoral plans, adherence to standards and funding needs
4. Advocacy to address identified concerns on behalf of cluster participants and the affected population
5. Monitoring and reporting on the cluster strategy and results; recommending corrective action where necessary
6. Contingency planning/preparedness/national capacity building where needed and where capacity exists within the cluster.

Each cluster is also responsible for integrating early recovery from the outset of the humanitarian response.



“Operation Listo” (Operation Alert)^{6,7}

Operation Listo is an advocacy program of the Department of Interior and Local Government (DILG) which aims to strengthen disaster preparedness of LGUs using the whole-of-government approach. Its first component called “Listong Pamahalaang Lokal” was launched in 2014 which institutionalized local protocols for disaster preparedness, response and monitoring.

Early preparedness actions listed in the “Operation Listo” Manuals for hydro-meteorological hazards namely: (1) Checklist of Critical Preparations for Mayors, (2) Checklist of Early Preparations for Mayors, and (3) Checklist for Municipal Local Government Operations Officers, Chiefs of Police, and Fire Marshalls.

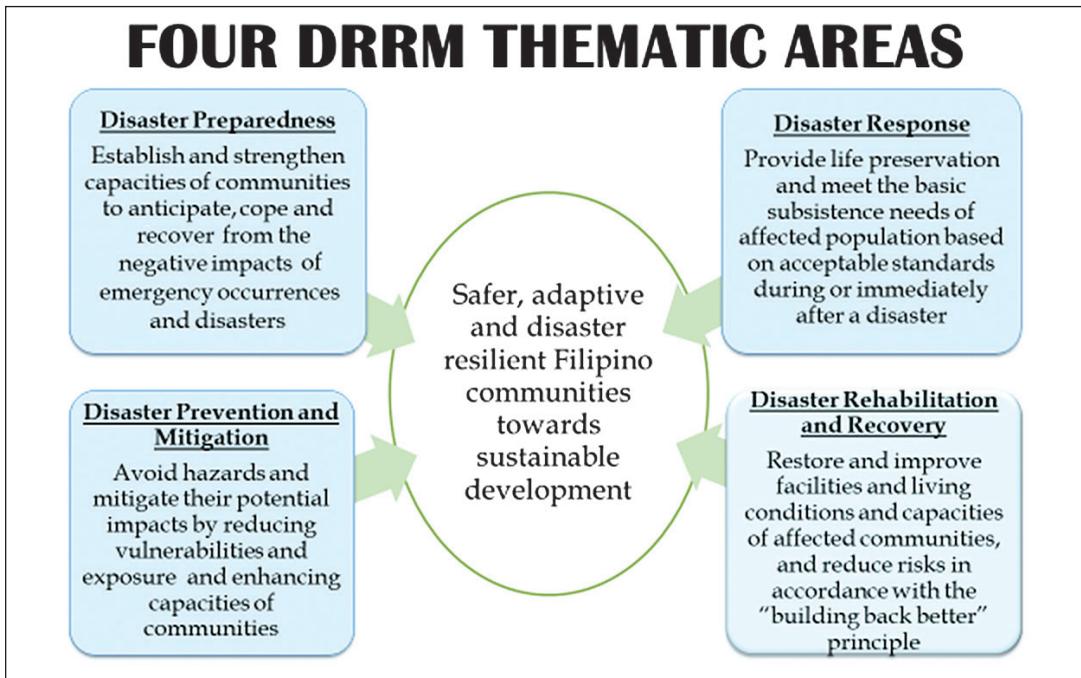
These manuals lay down disaster preparedness minimum standards before, during, and after a disaster. There are four General Actions to be undertaken proactively by local chief executives to be able to carry out the functions during the critical period when an advisory or alert is issued by PAGASA: (1) create the local Disaster Risk Reduction Management structures and systems to be mobilized; (2) institutionalize policies and plans; (3) build the competency of the created structures through various trainings; and (4) complement the competency by purchasing and preparing the needed hardware and supplies to equip the actions.

“As the Manuals say, these are done during ‘peace time’ or when no immediate threat of a disaster. Tamang paghahanda, tamang aksyon. This is what “Operation Listo” reminds everyone that we must be pre-emptive instead of reactive.”

National Disaster Risk Reduction and Management Plan (NDRRMP)⁸

The NDRRMP sets down the expected outcomes, outputs, key activities, indicators, lead agencies, implementing partners and timelines under each of the four distinct yet mutually reinforcing thematic areas. The goals of each thematic area lead to the attainment of the country’s overall DRRM vision, as graphically shown below.

The NDRRMP is a “road map on how DRRM shall contribute to gender-responsive and rightsbased sustainable development”. There is a great need for institutionalizing DRRM policies, structures, coordination mechanisms and programs with continuing budget appropriation on DRR from national down to local levels. Several activities can assist in strengthening the capacity of the staff of national government and the local government units (LGUs) and partner stakeholders, build the disaster resilience of communities and institutionalize arrangements and measures for reducing disaster risks, including climate risks.^{9,10}



Source: <https://reliefweb.int/report/philippines/national-disaster-risk-reduction-and-management-plan-ndrrmp-2011-2028> accessed 4 Nov 2019

C. PRACTICE THE PLAN

1. Conduct simulation exercises and communication exercises
2. Evacuation logistics
3. Continue to do drills periodically

Level of Disaster Preparedness

Preparedness can be achieved at different levels: at the household and community, organization (with colleagues in the office. At the household level the basic things to fulfill:

- a. Know the hazards in your own environment
- b. Develop a plan
- c. Identify nearest and safest evacuation center
- d. Identify evacuation routes
- e. Ready items for emergency – FIRST

In the workplace, it is important to know the hazards that one is exposed to – for example, fire, earthquake, eruption, tsunami Try to develop a plan and practice the plan so it becomes 2nd nature and automatic.

Note: This chapter is based on the presentations of the following:

1. Director Claudio Yucot, Bicol Regional Director, Office of the Civil Defense, last Aug 9, 2018 Venezia Hotel, Legazpi City
2. Cedric Daep, PhD, Albay Public Safety and Emergency Management Officer, Province of Albay, Philippines

REFERENCES

1. https://web.archive.org/web/20100416052024/http://bicol.da.gov.ph/Statistics/regional_profile.html retrieved 2 November, 2019.
2. McDermott, Delfin, Defant, et al. (2005). “The Petrogenesis of Volcanics from Mt and Mt. Mayon in the Bicol Arc, Philippines”. University College Dublin School of Geologic Sciences; retrieved 2 November, 2019.
3. <https://www.unisdr.org/we/inform/terminology> retrieved 2 November, 2019.
4. <https://www.rappler.com/move-ph/issues/disasters/189382-albay-bicol-grade-schoolstraining-disaster-resiliency> retrieved 2 November, 2019.
5. <https://www.humanitarianresponse.info/en/about-clusters/what-is-the-cluster-approach> retrieved 2 November, 2019.
6. <http://region12.dilg.gov.ph/programs-projects/operation-listo> retrieved 2 November, 2019.
7. <http://region12.dilg.gov.ph/programs-projects/operation-listo> retrieved 2 November, 2019.
8. http://www.ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf retrieved 2 November, 2019.
9. http://www.ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf retrieved 2 November, 2019.
10. http://www.ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf retrieved 2 November, 2019.

THE 2013 TYPHOON HAIYAN (YOLANDA) DISASTER: A VOLUNTEER DOCTOR'S STORY

Erlidia F. Llamas-Clark, MD, MPH, PhD

Preface

I first became aware of a storm named Haiyan that had formed in the Central Pacific near Guam on 5 Nov 2013, when I flew from Suva to Nadi, Fiji, with the television news reporting that it was moving westwards towards the Philippines. I didn't know then that just 17 days later I would be in the middle of a completely devastated Tacloban and administering medical assistance to disaster-hit Southern Samar.

I wrote this *aide de memoire* to make sure that the survivors of Typhoon Haiyan (Yolanda) will not be forgotten. There were many nameless faces who endured the tragedy. They were my great teachers and perhaps the great teachers of our time. My story is their story. I hope that with this written contribution, I can bring their needs and pleas to anyone who cares to listen. I hope that we continue to help them, even after the spotlight has moved away.

My return to Manila

I was leaving Nadi for Sydney, then Canberra, on 6 Nov. I was becoming worried as I was to travel back to Manila on 9 Nov after my PhD supervisory panel meeting in Canberra at the Australian National University. Over the next 3 days I monitored the movement of this weather event. At 7.30pm on 6 Nov, my husband texted and told me to keep an eye on the brewing storm which now had 240kph winds. By the evening of 7 Nov, the storm had been categorized as a super typhoon, with winds predicted to be 260 kph, and was tracking towards Tacloban, Leyte. I began looking closely at Philippine news and learned about the massive disaster preparedness operations on the internet and the preparations going on right up to the national level. The Department of Interior and Local Government Secretary, Mr. Mar Roxas, was tasked by the Philippine President Noynoy Aquino to coordinate the national response. I saw the war-like preparations made by the Disaster Risk Reduction Management Council together with several national agencies such as the Department of Social Welfare and Development and members of the Armed Forces of the Philippines. By the afternoon of 8 Nov, the typhoon named Typhoon Haiyan (a.k.a. Yolanda in the Philippines) was predicted to be the world's biggest typhoon to make landfall, carrying wind gusts of 315 kph and covering around 600 sq. km.

There was very little news early on 9 Nov when the first landfall happened. Before I boarded my flight to Manila at 12:50pm, CNN was reporting only 3 deaths and the ferocious winds and heavy rains. Once on the aircraft, there was no further news. But I distinctly remember thinking that this trip might be the litmus test of my research work over the last 4 years in understanding the impact of extreme weather disasters from typhoon and flooding events.

There was a hush on the aircraft about the typhoon. It was more of the "not knowing" that was making everyone uneasy. Everyone was hoping for the best as we heard that the weather in Manila was fine as we were descending. However, when I got home, my mother was very concerned since according to the last news report she heard more than a 1,000 people were dead and Tacloban was

decimated. We all watched the news and were all aghast by the destruction. By then, we were all nearly in tears as the reports showed the increasingly severe impact of this deadly storm.

Watching the Unfolding Disaster

From 9 Nov and every night from then on, I followed the disaster developments. I began to talk to people about where to enlist to go and help in a medical mission. I had the sense that medical people in our circle were caught by surprise and not yet organized. In the next three days, I learned there were security issues in Tacloban with over 200 inmates on the loose, rampant looting, and occurrence of different forms of alleged violence including sexual abuse reported in social media networks. Food scarcity and hunger became evident as local government unit infrastructure and services, especially transportation, were disrupted. In the next few days, as tele-communications were restored, the extent of the devastation became evident. The death toll climbed, hunger and sickness manifested due to lack of food supplies, disrupted health services, poor sanitation, hygiene and lack of clean water availability. Also, most people including the medical community was caught off-guard by the sudden and immediate arrival of foreign disaster and health workers in Tacloban. Many local professional health and multi-sectoral organizations sent medical assistance instead towards less high-profile disaster sites. While all the international help was welcomed, there was a sense that Philippine-based medical and allied health professionals were underutilized. People across the Philippines and those abroad were financially generous in their support. However, there appeared to be a lot of vigilance and caution on the process of relief assistance. Many Filipinos felt that they needed to get their donations directly to the survivors against the background of an on-going trial about widespread corruption allegations involving non-government organizations.

By the 2nd week, there was growing discontent, hunger and desperation among people in the affected communities. Many had only gotten one or two relief packs which was not enough for the period of time and extent of damage their communities experienced. Survival mode was in full swing.

On 13 Nov at the Philippine Obstetrical and Gynecological Society (POGS) Business Meeting, I raised the issue of POGS supporting delegates from the Visayas, the area most affected by the typhoon. I was very pleased to note that there was a decision by POGS to utilize a calamity fund and set aside an agreed amount of money, in accordance to the society's by-laws, for the affected POGS members. By this stage, I was getting myself networked with people who may have an interest in putting disaster relief operations, as well as climate change and disaster risk reduction, in their work or policy agenda with a group of experts and practitioners.

Finding an Organization to Volunteer With

In my mind, I kept brewing how I could be of help. I was not aware of any organization anticipating to prepare to deploy themselves to the affected areas. As I watched the media coverage of the disaster, I decided to find a group within the university. On 16 Nov, I went to the University of the Philippines (UP) – Philippine General Hospital (PGH) and caught up with some of my medical colleagues to find any medical mission to the disaster sites but found none. I enlisted in the Pahinungod and the Mu Sigma Phi Sorority and then engaged with the Samahang Operasyon Sagip (SOS), a multi-sectoral organization within and outside the UP system doing an awareness-raising exhibit near the UP College of Medicine. I was able to talk with a doctor from the Social Medicine Unit whom I had come across a few years back. Two days later, a text message from SOS informed me that a trip had been scheduled for mission participants to travel to the disaster area.

Journey to the Visayas

We had to be sure that we were a self-contained group travelling to Tacloban as medical or food supplies were not yet available in the area. On Nov 22, at 5am, we trekked to NAIA airport terminal 3 to check-in for the Cebu Pacific flight to Tacloban. Upon realizing that we were travelling to assist in the disaster areas of Tacloban and Samar, the ground staff at the counter gave us priority baggage handling. Fate was evidently on our side because commercial flights to Tacloban had only recently resumed after the airport had been used mostly by military and humanitarian agencies during the initial response to the disaster.

As I boarded the plane, I sat beside a lady who was with 2 other women. She was on her way to fetch their mother and other relatives in Tacloban who were lucky to have been evacuated with the mayor's wife and her family, atop the 2nd floor and roof of their home in Tacloban. They endured the storm's winds and rain and had to cling onto the posts and ceilings when the flood waters started to come in. As soon as I introduced myself as a doctor, her gratitude overflowed as she thanked me at the verge of tears, for the work we were about to do even before we had begun. In no time, as the airplane began its descent an eerie sense of silence pervaded the cabin and tears began to roll when the extent of the devastation came into view as we flew closer to Tacloban.

We arrived at the ravaged Tacloban airport with unrecognizable conveyer belts, torn roofs and fallen walls amidst men at work busily repairing electrical wiring and fallen ceilings. Together with us were a number of disaster relief workers, international and local organization staff and returning residents of Tacloban and Samar who traveled to be reunited with their loved ones.

At the arrivals area, the queue for flights out of Tacloban was nearly a kilometer long. A girl in the cue informed me of the long wait for 2 days or so. They wanted to get out, to Cebu or Manila, as the situation had become too much to bear. There was no communication and food was running out. It was an emotional experience to see a lot of people with blank and restless faces, amidst shattered surrounds.

Help from Without

It's amazing how tragedy brings out the humanity of people. Just when we were about to leave the airport, a man with carry-on luggage introduced himself to us as a retired doctor from Arizona. When he learned of this tragedy, without any linkages to any organization, his knee-jerk reaction was to immediately grab a ticket and fly to the scene of disaster as soon as possible. Having arrived with no network or plan, he asked for our help him get to the first hospital where he could donate his services. We decided to take him along with us and as we went through the roads of Tacloban, we had to take in the extent of the devastation. Thousands were homeless, trees and power lines were down, schools and buildings were damaged and rubble was scattered everywhere. We eventually helped him get to Bethany Hospital and endorsed him to the local doctors and nurses who, thankfully, were alive and well.

Extending Medical Help

Learning about the inequality of distribution of resources, we decided to proceed from Tacloban to Samar. By 3pm, we reached Barangay Panugmonon, Samar and stopped to stay at the barangay captain's house. After 15 minutes of introductions, we then proceeded to treat some village folk patients gathered at the basketball court. Women, as well as men, and children

waited patiently to be diagnosed with cough and colds, fever, hypertension, skin disease, wounds and other infections.

After a few patients, I borrowed an area in a nearby house, seeking the elders' permission to use their bed as a makeshift examination table to conduct my pre-natal check-ups. With the help of a Haitian nurse volunteer, Myrielle, who had experienced dealing with a disaster when an earthquake struck Haiti some years before, I performed the usual history, physical examinations and pelvic internal examinations, whenever necessary, for those pregnant women who were already term. I saw 7 pregnant women who came from 6 villages surrounding Barangay Panugmonon, each carefully counselled and given ample advice. In three of these consults, the husbands were involved to ensure they understood the grave consequences of delivering in a disaster situation where there were no available skilled attendants on basic and emergency obstetric care.

Need for Women's Health and Obstetric Care

A society is judged as caring based on the value it places on the care of the mother and child, one of the more vulnerable members of society. One of the most distressing scenarios particularly to a woman who is pregnant due to labor anytime is the thought that there are suddenly no facilities to accommodate their birthing needs. I found it to be my professional responsibility to find them a better alternative for delivery. Considering that even in pre-disaster period there were no established obstetric services in the area, one of the hot topics of the team meeting was my plea for the village chief to get the local government to assist mothers to deliver elsewhere. The most prudent plan was to point them to a referral hospital that could perform adequate obstetrical care including cesarean sections/hysterectomy if the need arose. My viewpoint was based on my obstetrics expertise, professional opinion, and pragmatic approach to avoiding potential health complications. Most of the mothers I had seen were high risk pregnancies – greater than five pregnancies/babies, first time mothers, and women who were disempowered by this disaster. These women were currently living



with no functioning local facility for basic or emergency obstetric care and without any formally-trained and skilled attendant at birth. Before the disaster, they would have sought help in Tacloban, their nearest health care facility. But under the current situation, at the very least, I felt the women needed to understand their situation and potential solutions should they find themselves in the middle of an obstetric emergency.

With the mass evacuations going on, the national government had prioritized pregnant women, the sick, elderly, and children. For the women and their families, big choices and decisions had to be made – a referral to any functioning Tacloban hospital, a flight to Cebu or Manila, an overland trip to Northern Samar to a hospital with obstetrical services, or stay and risk a delivery in the village. Whatever the decision, it was up to them and the family. What would have been irresponsible was to not give full information and disclosure for people to act on. I also felt the need to push maternal and child health as a public health priority. In the end, the village chief conceded that part of his role was to make the families understand this important decision-making process.

Living among the survivors

We saw with our own eyes, the destruction of the village. The thatched roof and nipa huts were no match for the high winds and rising flood waters. After two weeks from the storm lashing, you could still see traces of the devastation. While many thatched homes had been rebuilt, the soil had turned into marshlands, and coconut and banana trees had fallen to the ground. Farmers frantically sun-dried their flood-soaked *palay* along the concrete road to salvage their harvest. While the school building was only partly damaged from the outside, most of the tables and chairs, books and teaching materials were destroyed by the flood.

It had been awhile since I had experienced a power outage in my life, but I soon learned to work again with no electricity. The charged flashlight which I had the foresight to bring, was heaven sent as were other little joys to lighten the burden: a shelter graciously offered by the chief, the tiled bathroom with high pressure water for the shower and flush toilet, the food cooked by the female relatives of the chief, made extra special by the natural kinship I found with the fellow volunteers and survivors. The bonding extended to voluntary decking to get nearly 40 of us accommodated in the busy single toilet facility. The consolation was that my anticipation to use multitudinous rolls of toilet paper, in preparation to fully experience a pit-latrine moment, ended up being unnecessary.

Over the meals, we exchanged stories about the devastation. Mr L, the village chief's brother, who is a teacher, recounted how the flood waters rose very quickly. The rice stocks were quickly soaked and their belongings got all wet. Their home became a shelter and soon dozens of families were squeezed in 30 sq. m. They placed the children and their mothers in a room on the second floor. The men of the village cut banana trunks and put them together to make a makeshift raft intended to be used by the women and children should the floodwaters reached the second floor. When the waters reached 3 meters or so, the men decided to dismantle the steel window frame of the hollow-block and cemented house to provide a possible escape route towards the road away from the river. It was a harrowing experience, all the while bravely filmed by Mr L, who now, in retrospect, could laugh out loud to tell the tale of the deluge. We maintain our friendship on Facebook to seek future opportunities for long-term assistance.

The Long Road to Hernani and Batang

We drove to Hernani to provide service to the town and saw the unimaginable devastation along the way. It was heart-wrenching enough to see Tacloban its built environment wrecked, but the damage to the smaller towns and villages ripped me emotionally. Samar showcased the natural evidence and raw energy of the most powerful storm to ever make landfall. Entire towns and coconut plantations were wrecked. Heavy metals and building trusses were twisted like soft candles. The houses made of wood and light materials, corrugated iron and even light vehicles and trucks were like toys thrown by a child in a tantrum. I likened the coconut leaves/tops on the trees to having been subjected to a bad punk hair day or just being blown off by the clockwise and anti-clockwise motion of an industrial washing machine.

Nothing Prepared Us for Batang

Distance gives the illusion of detachment. There were only very few occasions that I shed tears while I was in medical school or in my residency training. You train yourself to build a façade of strength for the people you serve. Yet, in your solitude, this is the only place you can truly let yourself free. But nothing prepared me for Batang at close range. In the end, there was no use fighting tears – I was human too.

The sea looked so calm and inviting on our right side that we nearly missed the view on the left. Scores of what used to be houses were now pounded to the ground. Batang's two-story barangay hall was cut to the ground, with the Philippine flag still hanging amidst the rubble. I saw the Department of Health (DOH) team with the Municipal Health Officer (MHO), a young doctor who had to grow up very quickly because of the calamity, talking with the village captain. I was warned by one of the SOS team doctor that the village captain was not talking much. He lost a lot of his livelihood and the nearly the entire village. I decided to visit him with the 8 team members from Basey. I introduced myself from the UP-PGH and his eyes lit up and recognized a familiar institution! I found great consolation that he was receptive. He got his megaphone and said he would round up some of his village folks to be seen.

While waiting for the people, we waited around a makeshift clinic. Many people were busy putting up their makeshift tents that would be their temporary shelters for a few weeks. We decided to look at the school grounds and the pile of rubble. Two weeks and all the debris remained untouched. The pile was 4 meters high and there was a bad smell in the air. The local worker told me that 32 people died there and some 60 more were missing. It took only 3 waves and people did not heed the warnings. They said that they were used to the storms. Some did not have radio or television. They heard about the "storm surge" warning but did not really understand. They knew of a tsunami or a tidal wave, but not a storm surge. Until someone called "wave", it was too late but it was around that time people ran towards the school on a hill. The school became an evacuation center. Clothes were hung around the grounds and the rooms were used for sleeping.

We started to see some patients – adults, children, pregnant women. There were 3 doctors and 2 nurses from Haiti. The rest helped us dispense the medicines and give advice. To see the pregnant women, I borrowed a hut from a family which gave me some privacy. My second pregnant woman came to me and told me her story as she cried. She said she had lost everything. They used to own a farm and a nice home but now that was all gone. Even her in-laws lost their business. They all now had to start again from scratch. I listened to her fears and all about her pregnancy as I nearly broke down in tears.

Keeping the spirit alive

As people came in trickles, we used our time for a psycho social session with a dozen or so school children huddled around us. We tried to entice them to talk about the disaster, sing songs and recite poems. The lawyer in the team had some candies for a treat. The Haitian nurses, Linda and Myrielle started up a dance and we joined in to encourage the children. Most of them were shy but 3 boys braved the stage. The girls were too shy to perform. We ended up singing along all together. One of our team members gave them advice to keep talking with one another and depend on each other's company and friendship. They were silent witnesses to the tragedy in their town. I do not know when their voices will be heard. But I hope they find the courage to share it even amongst themselves.

I had yet not met Ms. A, the local midwife. She narrated the story of a pregnant woman she discouraged from delivering that night at the health center because she had heard the storm warnings. Instead, she did a home delivery which saved them all from perishing as the entire health center, its new emergency obstetric care delivery table and other medical supplies was totally wiped out. The disaster was crippling since she now felt she had nothing to offer, no place to offer and nothing to use. My quick response was to give her a big hug, told her to be brave and encouraged her to continue on. I gave her my blood pressure apparatus and the box of gloves, the only things I had. I told her to meet the Medical Health Officer and said, "talk to the DOH team and tell them what the village needs. You are alive and we are able do something. There is a lot of work to be done."



Heading Home

After one more night in Samar and a few more patients, it was time to go home. The rush of the morning was evident. We parted with our excess food supplies, rosaries, shirts and packed toiletries. We said our goodbyes and wished them all a speedy recovery.

After a couple of hours, we were back in Tacloban where we started. After one last look, I was back up in the air. In Manila, we bade our last farewell to strangers who became friends. Back to our own lives and realities. There was a sense of disbelief but the most important was the feeling for the moment – "mission accomplished!"

Epilogue

It was not until I left the Philippines on 18th Dec to return back to Fiji that I had time to sit and reflect on what I had seen and done during my 4-day stay in Samar. It was nearly Christmas and I had started to wonder how the people I had met and treated were doing and what their Christmas and New Year would be like? I hoped and prayed that things were improving and that they have some form of shelter to gather around family and friends for Christmas Eve. I probably did not

realize the extent of the devastation even if I was there until I saw the Discovery Channel program “Megastorm” on Dec 28. It brought back memories that in turn brought back tears when thinking of my time in Samar. On a more positive note, some months later, I received an unexpected message from Mr. L. which resulted in me assisting with a donation of books from Australia for their school which had been destroyed during the typhoon.

I am glad I had the opportunity to go to the Visayas. I felt I needed to do something and be a part of their community's recovery and rebuilding. I am humbled by the well spring of generosity of people from all backgrounds and professions including my medical colleagues and international disaster teams who selflessly gave their time, effort and monetary assistance. I admire the volunteerism of many nameless persons, and the courage and resilience of the survivors of this tragedy. I truly feel blessed to have a rewarding and extraordinary experience of giving. I would do it again and encourage others, especially those in the health profession, to assist without hesitation if another calamity, God forbid, like Haiyan, happens in the Philippines or anywhere in the world.

Five years after the devastation, on May 6, 2018, I returned to Tacloban. What was once a wasteland from the destruction of the storm was now rebuilt like the legendary Phoenix rising from the ashes. The city was restored impressively with only a small but palpable trace of the devastation that had annihilated the place in 2013. The strength, gratitude and welcoming spirit was as overwhelming as when I had come under different circumstances five years before, except that the devastation had now been replaced by a sense of resilience and prosperity. The images of unimaginable destruction, chaos and utter devastation was no longer. My traumatic experiences in the disaster areas of Tacloban, Basey and Hernani, Samar that left an indelible mark on my life were now replaced by relief, hope and optimism that no matter what catastrophe might arise, the resilience of the Filipino spirit will prevail.

**“IN THE EYE OF THE STORM,
THROUGH THE EYES OF FAITH”**

Helen Grace C. Roasa, MD

Reviewed by Rona F. Rañola, MD

An article previously published in a local paper as written by the author.

The Philippines has again caught the attention of the whole world as series of calamities struck our country this year 2013. The most significant of which was Super **Typhoon “Yolanda”** which hit our country particularly Region 8 last November 8, 2013.

I was **living** in Tacloban with my 77-year-old Mom and our 2 young lady helpers, when typhoon Yolanda happened since my Dad just passed away last March 7, 2013. We were living in my family’s ancestral 2 storey home 400m away from the shoreline. In the evening of November 7, 2013, the city was placed on Storm Signal #3 already, with slight rain but no wind yet during the night. In fact, the night was so calm and quiet.

On November 8, 2013 at 5:30am we were awoken by my mom’s sister from Calamba, inquiring about our situation. We told her that so far so good and that we had enough preparation for the coming typhoon. She even asked us if we will not evacuate. We planned not to move out anymore because we were in our ancestral home where we experience many typhoons before.

A few minutes after our conversation, it started to rain and strong winds started to blow. I went to my bedroom located on the second floor to get some of my important belongings. Then suddenly strong howling winds toppled the air-condition unit across the floor and ripped off the roof so I hurried down and to my surprise my Toyota car was alarming. Our helper checked out the garage only to see that the water was on the floor level of the car sounding the alarm. Immediately after, we saw the water rushing in beneath our main door so I called my Mom and the two helpers to rush up to the second floor. We barely reached the second floor when the flood water caused our wooden furniture from the first floor to float up the second floor. Also the roof of the living room was taken off already, all the galvanized iron sheets were blown away.

I was so afraid but I have to be brave, I texted my brother in Manila that “Water is on the 2nd floor, roofing gone, please pray for us I am scared.” I felt that the Lord prompting me to lead my family to our library, which was a little higher. There and to our surprise, we saw a big tower leaning towards our window and my house help cried out: “Dra, it’s a RESCUE SHIP, A DPWH SHIP (A dredger owned by the Department of Public Highways).

Our suspicions that it was a DPWH rescue were confirmed when we heard people shouting “Dra, hurry up for the boat will hit your house next (in Tagalog). Since we were trapped by the rushing floods, our helper kicked our partially ripped roof which became our way out. I assisted the two house helps out, then my Mom. Mom got so scared because the winds were howling and she could not move her legs once she reached the rooftop. Then a skinny man helped her by going down the roof and push her out until she was lifted to the boat by another two men. At that moment, I believe they were angels God sent for I haven’t seen them since then and I just want to thank them.



At that moment I was the only one left, again I cried out to the Lord, “Lord please help me think.... help me get out of this situation....help me survive. Lo and behold, the Holy Spirit guided me where to step so I could go out to the roof by stepping thru my bookshelves. Then, there were two men who assisted me climb out of the roof and up the boat. When I entered the boat i saw Mommy was there, wet and cold, As i gaze around, I found out there were NO CREW. All the people in the boat were all survivors. There were 25-30 of us and mostly were wounded. They swam up to the boat together amidst the storm surge. Despite being a victim myself, I helped them with their wounds using their shirts to stop the bleeding.

I had goose flesh and felt WE WERE SO SPECIAL...God sent us a big ship to rescue us. Our house was even shielded and spared further damage from the storm.. All of us in the ship called it our **Noah’s Ark**. We stayed in the ship for 4-5 hours and witness what havoc Typhoon Yolanda brought. The houses were flattened and destroyed, we saw the bodies of our neighbors who did not make it. The destruction was so horrible that everything damaged in that 5 hours. I saw my ancestral home with the garage and garden all filled with debris. I did not see even my two cars because they were covered with mud and debris.. My Mom was so cold and she was shivering so we decided to return to our house.. God is truly amazing there was a ladder among the debris which we used to cross over to enter our house thru the destroyed room above my garage. Our neighbors even helped us cross. We shared our blessings by giving them dry T-shirts and food The flood water subsided already but left a knee-high mud inside our house. All our belongings were in disarray and covered with mud and I started crying because I felt so helpless. As I survey my house, God is truly good, He spared one of my cabinets on top of the garage. It was dry and inside were my scrub suits which we all changed into.

Through the lens of faith, I knew God was in control. He was the Captain who controlled the boat for how can it be besides at house in the moment of despair and near death? By His mercy and grace He manifested His Power and Sovereignty.

Through this deliverance, little appeared of nature and man but such of God. God is truly our Saviour and our Lord.

With no where else to go, we stayed in our house filled with debris for 5 days. and at this point God taught us to call on Him moment by moment. There was peace in our hearts which helped us understanding our trials and be grateful for being alive despite of the magnitude of our losses. I prayed to God, “Lord Jesus even if you allowed this to happen, thank you for saving all of us from the destructions. You were the one who blessed me with material things and properties to enjoy with my family and the community but also has the power to take it away just like Job in the Bible praying, **“Lord giveth and the Lord taketh away, blessed be His name.”** It was painful to see an investment from 18 years of practice including the retirement home of my parents with all of its contents destroyed. The family album containing pictures of precious memories were gone. The 45-year-old piano was destroyed along with other things. As reflect on Typhoon Yolanda:

IF I TRY TO COUNT THE LOSSES IT WILL BE FUTILE, INSTEAD I WILL TREASURE THE LESSON OF LETTING GO AND LETTING GOD HAVE HIS WAY... I FOUND AMAZING PEACE IN GOD'S LOVE. BEFORE TYPHOON YOLANDA, I FELT SO DETACHED AND WITH WHAT HAPPENED AND HOW I SURVIVED I REALIZED THAT THE MOST VALUABLE THINGS IN LIFE IS YOUR RELATIONSHIP WITH GOD, YOUR FAMILY AND FRIENDS.

WOMEN AND HEALTH AND ENVIRONMENT SEMINAR OUTPUTS AND SYNTHESIS – 2017 TO 2019

Joanne Karen S. Aguinaldo, MD

Since its inception in 2017 under the leadership of Dr. Mayumi Bismark, the POGS Adhoc Committee on Women's health and the Environment have held annual seminars to increase awareness on climate change, disaster risk reduction and reproductive health.

The beginning

The **first seminar** in August 2017 was held in Manila and centered on *identifying the obstetrician-gynecologists' role in the era of climate change and disasters*. A panel consisting of a climate change expert, disaster management specialists, national government leaders and members of the academe spoke on the following topics:

- Climate change in the Philippines
- Impact of environmental hazards on reproductive health
- Strategic emergency and disaster management in the local and national government levels
- Supporting psychosocial needs of women in crisis
- Local government units and academic collaborations on climate change adaptation and disaster risk reduction and community initiatives
- Sustainable development and supporting women's reproductive health

The participants, who were representatives from the POGS regional chapters, were grouped into three: Luzon, Visayas-Mindanao, and Mindanao. These groups were engaged to reflect on the impact to health of a natural disaster or extreme weather event. The discussions yielded region-specific experiences:

- a. *Severe typhoons, floods and earthquakes* have significantly ravaged the country in the last decade and were identified across the groups as significant climate-related events/ natural disasters. Culled from experiences with Mt Pinatubo and Mt Mayon (Luzon) and Mt Kanlaon (Visayas), representatives from these groups identified *vulcanic eruptions* as a significant natural disaster. Additionally, *landslides* were identified by representatives from the south (Visayas and Mindanao) while *terrorism* was a man-made disaster event brought forward by the Mindanao group.
- b. A shortage of food, immediate and long-term – resulting from the destruction of rice fields and planting grounds, was singled out as a untoward health event leading to *malnutrition*. Women, children and the elderly were especially vulnerable. The undernourished state contributed to preterm labor, intrauterine growth restriction and miscarriage in the pregnant woman; and complicated cases of acute gastroenteritis in the elderly and the very young.
- c. Infections are rampant postdisaster and are a concern for the immunocomprised – pregnant women, children and the elderly. Scarcity of clean water, crowded living spaces and inadequate ventilation are the common conditions in the disaster shelters and evacuation areas such that diarrhea and respiratory infections are prevalent. Alarmingly, gender-based violence occurs with prolonged stay in shelters, leading to sexually transmitted diseases. To this, women and children are vulnerable.

- d. The extended displacement of calamity and disaster victims was identified as a untoward health event. The longer that families are unable to return to their homes the more likely they are to suffer from derangements of mental health. Coupled with loss of family and property, the vulnerable groups identified (women, children, elderly) are seen to suffer from psychological stress and depression.

The groups identified the following as possible interventions of the POGS:

- Advocate policy on reproductive health and breastfeeding during disasters
- Educate members through CMEs on disaster preparedness, disaster survival
- Train members in counselling and stress-debriefing
- Organize/ participate in tree-planting and clean-up drives with relevant government agencies
- Encourage POGS responders – include OB-GYNs in hospital emergency preparedness committees, local government groups, NGO initiatives
- Train midwives and BHWs as first responders
- Organize distribution of hygiene kits, family planning kits
- Organize mobile milk-banking, feeding programs for mothers/infants

Through their representatives, the regional chapters were enjoined to come up with activities to promote disaster preparedness.

- a. *Region III (Central Luzon)* coordinated with local government units and rural health units. They also identified the following institutions as evacuation centers/ emergency hubs: Dr Paulino J. Garcia Memorial Research and Medical Center (Nueva Ecija), Jose B. Lingad Memorial Regional Hospital (Pampanga), Tarlac Provincial Hospital (Tarlac), Ospital Ning Capas (Tarlac). On June 21, 2017, the chapter participated in a seminar on Regional Disaster Risk Reduction and Management update in Pampanga.
- b. *Region VI (Negros/Panay chapter)* held “Buntis day” lectures (10 March 2018) in two localities. A local resource person from Amity Rescue services spoke on *Preparing for a Typhoon* in Mandalagan, Bacolod while Dr Alma Mae Bedia gave the lecture in Jaro, Iloilo.
- c. *Region VIII (Eastern Visayas)* invited Dr. Erlidia Llamas-Clark to give a seminar on *the relationship of climate change and disaster to women’s and reproductive health concepts, perspective and the OBGYN role*. This was also for “Buntis Day” and was held in Tacloban.
- d. *Region XI (Southern Mindanao)* hosted a workshop: *Disaster Preparedness 101: How to respond to a terrorist attack workshop*, last July 22, 2017 with Dr Teofredo Esquerra as speaker. As a result of this workshop, the chapter organized disaster preparedness and management teams in Davao, Tagum, Gen Santos, Digos/ Kidapawan, Sultan Kudarat/ Koronadal, Cotabato. They also partnered with the Disaster Risk Reduction and Management Office (DRRMO) of Davao City for training and orientation of the Davao chapter on first aid, basic life support, and home preparedness. This resulted in the inclusion of the POGS SMC disaster management teams to the Health cluster of DRRMO-Davao.

The continuation

Bolstered by support from the subsequent leaderships of Dr Elisa Tiu and Dr Mario Bernardino, the POGS Adhoc committee held **subsequent seminars** that deepened the level of discussion by focusing on the experiences of the regions during disasters. With the theme of ***empowering women in disasters – learning from regional disaster preparedness and response experiences***, the seminars were held in in Legazpi City, Bicol and Tacloban City, Leyte respectively. As the

seat of the most active volcano in the country, and also being in the path of mighty storms, the province of Bicol has offered a rich history with natural calamities and deep well of survival strategies and resilient attitudes. The provinces of Eastern Visayas – Samar and Leyte, experienced the most catastrophic typhoon in recent times and are living examples of coping and rising above a disaster.

Experts in natural calamities and disasters, representatives from local government units and partners from the Philippine Red Cross and the Department of Health shared regional experiences and outlined their (unit's) role during disasters. The scientific program also included lectures delivered by POGS member speakers on:

- Essential health packages for women in a disaster setting
- Family planning in disaster areas (2018)
- Infection control and immunization
- DOH and POGS Memorandum of Agreement – Preparing for Disaster Engagement (2019)

Following this, the participants representing all the regionals chapters of POGS were engaged in facilitated small group discussions on (1) sexual abuse, (2) feminine hygiene and menstrual health management, (3) infant feeding and breastfeeding, and (4) the negative impact of disasters on marital relationships.

9 August 2018 – Legazpi City, Albay:

The panel of local speakers displayed scientific and systematic strategies that coordinated the efforts of the local government agencies with the regional office of the PHIVOLCS and PAGASA. This coordination has led to clear communication of information to their constituents, early mobilization and preparations before Mt Mayon erupts or a typhoon makes landfall.

The small group discussions yielded the following points:

- Infant feeding is a challenge because of scarcity of water and food. This makes breastfeeding more viable during these times as scarcity of filtered water makes formula feeding risky.
- Marital relationships are strained as a result of loss of livelihood and property. Traditional roles, father as provider and mother as nurturer, are tested.
- Feminine hygiene, especially during menstruation, are difficult in evacuation shelters. Water and soap are scarce, and the disposal of menstrual pads are difficult. Secure and private areas should be provided in evacuation centers and the use of cloth pads may be advocated.
- Sexual abuse is a concern in evacuation centers. Tensions rise as desperation and extreme stress sets in. Engaging the individual and the community in counselling is important as well as providing security in evacuation centers.

9 August 2019 – Tacloban, Leyte:

The WHE committee expanded the scientific program during the 3rd seminar by inviting community members who figured as mobilizers during Typhoon Yolanda and volunteers to share their story. The result was a palpable and personal perspective of helplessness and loss, and later of resilience and perseverance, in the face of uncertainty. Seeing Eastern Visayas through their vivid accounts devastated and experienced Tacloban at present time was lauded by the participants as inspirational.

The seminar also included complex emergencies with the Marawi siege entering its 2nd year and an expressed need from our Mindanao chapters that there are many women's health issues in this situation.

The small group discussions yielded the following points:

- Sexual abuse and rape were prevalent post disaster. Women, who were widowed and orphaned, are especially vulnerable to abuse. It is imperative to provide a safe and secure space for them in evacuation centers. The establishment of a women's desk to support victims of violence is important. Long-term, livelihood projects are needed for these women.
- Disasters bring about loss of life and livelihood, derails the marital and familial goals, and disrupts fulfillment of roles responsibilities within the family. This negatively impacts on marital relationships, often leading to violence, abuse and abandonment.
- Menstrual health management must be incorporated in disaster planning, specifically (1) making provisions for menstrual and feminine hygiene kits in relief preparations, (2) identifying a safe and private wash area for women and children in evacuation centers, (3) education of women regarding hygiene practices in extreme situations, and waste disposal.

Looking to the future

The overwhelming support of the POGS leadership in the last 3 years with the POGS Presidents, BOT and POGS members of the NCR, Luzon, Visayas and the Mindanao regional chapters has demonstrated that there may be an opportunity to include Mindanao, perhaps Cagayan de Oro in next year's seminar-workshop if the WHE makes it to be a POGS Standing Committee.

The Committee is now expanding to include nearly all subspecialties that are engaged in this advocacy of extending our clinical expertise to the marginalized and needy women in disaster settings.

MOVING FORWARD: SUMMARY AND CONCLUSION

Erlidia F. Llamas-Clark, MD, MPH, PhD

This book explored topics seldom given attention in mainstream medicine – ecological factors and the attainment of food and nutrition security that threatens public and reproductive health which is of socio-economic and development importance to the Philippines. Until now this involvement of health professional organizations has been missing within the climate change/disaster and health discourse.

The last 3 years was truly an exploratory journey for everyone in the team. From a small team, we certainly have grown to include like-minded POGS members who, as individuals, believe in the advocacy of keeping our planetary health in check to be able to take care of our own health and that of the women we serve. The work was made possible since we enjoyed the strong support of 3 POGS Presidents to continue on with this important project.

POGS members, especially those in the regions, certainly feel that the work of the Adhoc WHE Committee is important and needed in the armamentarium of knowledge and skills of a competent OB GYN.

We would like to continue and extend further the work that we do and hope that the recommendation to make the WHE Committee a POGS Standing Committee will come to fruition. The WHE Committee can be of assistance to POGS members at any time, and we stand ready to help in the future.

As we anticipate the country's population to continue growing in the future, the impact of catastrophes to lives and properties may escalate as well. Whether the calamity is caused by a tsunami, a typhoon, or flood, an earthquake, or a landslide or volcanic eruption, the severity of the emergency is often amplified with lack of resources, preparation and ineffective communication. On a positive note, the negative consequences can be attenuated with the right information and knowledge, awareness and anticipation with foresight and advanced planning. We therefore urge you to take a strong and effective response to natural disasters and complex emergencies that includes the sexual and reproductive health and rights.

We hope this book will serve as a handy reference to develop much-needed awareness and anticipation, and to trigger the POGS constituents to realize that during times of calamities, every OBGYN member can and should be an advocate and a crucial and knowledgeable rescuer, to protect especially the population of women and children, whom we care for professionally, in our daily lives.



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