WAR AND HUMAN HEALTH:
A MASTERS LEVEL COURSE CURRICULUM

By Alexandria Green-Atchley

A paper presented to the faculty of The University of North Carolina at
Chapel Hill in partial fulfillment of the requirements
for the degree of Master of Public Health in the
Department of Maternal and Child Health.
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April 5th, 2013

Approved by:

Advisor

Reader
For thousands of years men and women have engaged in war. Motivations for war range from the conquering of lands and resources to avenging a wrong and defending those who cannot defend themselves. Whatever the causes may be, the effects often follow a similar pattern – death, disability, reconstruction, repetition.

War affects the health of all it touches. It can hinder the operation of healthcare systems, disrupt the trade of food and other necessary items, and divert resources from valuable social programs. Those directly injured in combat may face permanent disability, both physical and psychological, and lives lost reduce states’ productivity. The plight of the war refugee is often mired by unsanitary living conditions, inadequate food, and lack of medical care. Women and children are particularly vulnerable to violence and are often specifically targeted in order to instill terror and complacency among enemy populations. These direct and indirect effects of war are not new, but they are persistent and deserving of international attention.

Though much of the world is in some stage of initiating, experiencing, or rebuilding from a conflict, the study of the effect of war on human health is incomplete. Public health professionals work in conflict-affected regions every day yet their programs and intervention strategies are often detached from the geopolitical, historical, and social contexts where they work. It is my conviction that an improved understanding of the connection between war and health will lead to more efficient, appropriate, and effective public health interventions.

Weaving an informed understanding of a region’s political and social context into the implementation of public health programs can greatly increase their effect. Immunization programs that appreciate an ethnic group’s historical persecution by colonial powers may be more successful at convincing them of the value of Western-made vaccinations. Reproductive health programs will be better able to serve women in Bosnia if they are aware of the mass rape that occurred during the Bosnia-Herzegovina war and the persistent health effects of sexual assault. The world is a smattering of histories, untold and told, that document our struggles, tell of our triumphs, and inform our perspective. Understanding those histories will be integral to the successful implementation of many future public health programs.

That modern warfare is forever evolving does not indicate that it is improving. Civilians still suffer and die by the thousands, mass rape turns women’s bodies into individualized battlefields, countries are laced with explosives that require years and millions of dollars to remove, and soldiers are still denied life-saving mental health treatment upon their return from the battlefield. It is clear that war presents one of the greatest challenges to the realization of good public health, yet it also provides a great opportunity - an opportunity to marry the struggles for peace and health and work collaboratively to realize a safer, healthier world.
MCH789: War and Human Health

Class Meeting Time: Tuesdays 2:00-4:50, Fall 2013

Course Overview

This course examines the many ways in which modern warfare affects the health of men, women, and children worldwide. War has an enormous effect on health, both directly and indirectly. War and conflict disrupt the function of necessary health systems, cause major loss of life and injury, increase the spread of infectious diseases, hinder access to necessary resources, and may cause severe mental health problems among civilians and combatants alike. The study of war and how to prevent it, however, are rarely seen as integral pieces of a public health education. In order to gain a better understanding of how to improve public health in conflict and post-conflict settings this class will focus on the human experience of warfare and the relationship between collective violence and the health of a population.

Course Objectives

The objectives of this course are: (1) to understand the relationship between war and human health; (2) to become familiar with the core theories of international relations; (3) to determine the main processes by which conflict affects individual health and public health systems (4) to identify the most effective health-focused intervention strategies in the context of conflict or post-conflict areas.

Core Competencies Addressed:

Communication

- Demonstrate effective written and oral health communication skills appropriately adapted to professional and lay audiences with varying knowledge and skills in interpreting health information.
- Engage in collective information sharing, discussion, and problem solving.

Diversity and Cultural Competency

- Demonstrate awareness of and sensitivity to the varied perspectives, norms and values of others based on individual and ethnic/cultural differences (e.g., age, disability, gender, race, religion, sexual orientation, region, and social class).

Leadership

- Create a climate of trust, transparency, mutual cooperation, continuous learning, and openness for suggestion and input with co-workers, partners, other stakeholders, and/or clients.
- Exercise productive organizational, time-management, and administrative skills.
- Develop knowledge of one’s individual strengths and challenges, as well as mechanisms for continued personal and professional development.

Professionalism & Ethics

- Consider the effect of public health decisions on social justice and equity.
Program Planning

- Discuss social, behavioral, environmental, and biological factors that contribute to specific individual and community health outcomes.
- Identify needed resources for public health programs or research.

Systems Thinking

- Respond to identified public health needs within their appropriate contextual setting.

Requirements

Class Participation (20% of final grade): All students will be expected to come to class prepared to participate in an informed and enthusiastic discussion of the reading material and topic of the week. In addition, every student will be responsible for posting in the class forum discussion folder on Sakai every week after the introductory session. Posts should be no more than 500 hundred words and can be on a relevant current event, recent scientific finding, or personal response to the readings that week.

Response Papers (25% of final grade): To promote critical thinking students will write four short papers throughout the semester in response to integrative questions. Papers should be 3-4 pages double spaced and include a brief (1 page maximum) summary of the readings they are discussing. The remainder of the paper should be the student’s individual analysis of the topic.

Mid-Term Book Report (25% of final grade): Each student will select a book from the reading list below, mostly memoirs or first-hand journalistic accounts of war, and write a 3-5 page ‘book report’. The paper should summarize the conflict being discussed, highlight any health related issues, and briefly critique the book itself. (Further instructions will be given closer to due date.)

Final Paper (30% of final grade): Students will be expected to write a 15 page paper due on December 10th. Each student will choose a conflict, international or civil, that occurred between 1939 and 2010 and analyze three health-related effects of that conflict that persist to this day. Health-related effects can include, but aren’t limited to, mental health problems, physical disability, environmental degradation, or hazards to human health such as landmines. The student will then outline a basic health intervention to address one of the health-related effects they have selected.

Required Books


All journal readings are accessible through E-Journal resource available at: http://hsl.lib.unc.edu/. One copy of each required book will be put on reserve and multiple copies are available through the UNC Library System.

**Book Report Reading List**

The Things They Carried by Tim O’Brien

Soft Spots: A Marine’s Memoir of Combat and Post-Traumatic Stress Disorder by Clint Van Winkle

We Wish to Inform You That Tomorrow We Will Be Killed With Our Families by Philip Gourevitch

A Human Being Died that Night by Pumla Gobodo-Madikizela

Four Hours in Mai Lai by Michael Bilton and Kevin Sim

The Punishment of Virtue: Inside Afghanistan after the Taliban by Sarah Chayes

Keep Your Head Down by Doug Anderson

Imperial Life in the Emerald City: Inside Iraq’s Green Zone by Rajiv Chandrasekaran

Tears of the Desert: A Memoir of Survival in Darfur by Halima Bashir and Damien Lewis

*(All books are available through the UNC library system and Amazon.com. Suggestions for books not on this list will be accepted if submitted prior to three weeks before the deadline.)*

**Topics and Schedule**

**August 27th:** Introductions

- Objectives: Review course objectives and assignments; personal introductions; provide information on where to obtain reading materials; review tenants of public health; open discussion about the intersection between war and human rights

**September 3rd:** Introduction to Theories of International Relations


- Objectives: Review fundamental theories of international relations including (neo)realism, (neo)liberalism, constructivism, and rationalism; discuss how theories of international relations help us understand the onset of conflict; discuss the role of international organizations in maintaining/causing peace and improving health
September 10th: Conflict and Health: The Basics


- Objectives: Review major treaties on the conduct of war; review changing patterns of conflict; discuss the role of public health professionals in maintaining, seeking, and realizing peace in the modern world; discuss barriers to public health interventions that are specific to conflict settings

September 17th: Infrastructure and Healthcare System Maintenance in the Midst of Conflict

Case Study: Rwanda


- Objectives: Review challenges to public health interventions specific to post-conflict settings; review basic strategies for rebuilding health systems; review basic history of Rwandan genocide; discuss current efforts to rebuild Rwanda’s healthcare system; discuss tension between justice and reconstruction

September 24th: “Collateral Damage” – Civilians and Modern War

Case Study: Sudan


- Objectives: Review evolution of civilian targeting in modern conflict; review basic history of the war in Southern Sudan; discuss health problems likely to be seen in a civilian population immediately following conflict; discuss appropriate intervention strategies for different levels of social ecological model for civilians in Sudan

**October 1st: The Effect of War on Children**

**Case Study: Palestine**


- Objectives: Review various health problems most likely to affect children in a (post)conflict setting given their increased vulnerability; discuss best practices for serving children through public health interventions; discuss the application of strategies presented by Boyden to the mental health problems displayed in Palestinian children

**October 8th: Mental Health**

**Case Study: Iraq**


Objectives: Review most common mental health problems seen in combatants and civilians who have experienced conflict; review psychosocial intervention strategies; review basic history of Iraq War; discuss barriers to mental health treatment for relevant populations; discuss intervention strategies targeting veterans with a focus on improving US policy and removing barriers to care.

October 15th: Traumatic and Disabling Injuries

Case Study: Democratic Republic of the Congo


Objectives: Review common weaponry and related injuries; discuss the economic and social effects of a large population of persons with disabilities; review basic history of war in the Democratic Republic of the Congo; discuss intervention strategies spanning all levels of prevention (primary, secondary, and tertiary) that target people with disabilities.

October 22nd: Rape and Sexual Assault

Case Study: Bosnia and Herzegovina


- Objectives: Review UN resolution on women’s security; discuss factors that make women vulnerable during war; Review brief history of Bosnia-Herzegovina War; discuss health implications of the use of rape as a weapon of war; discuss relevant health interventions; discuss tension between justice and reconstruction

**October 29th: Spread of Infectious Disease**

**Case Study: HIV/AIDS in Sub-Saharan Africa**


- Objectives: Review relevant infectious diseases and their basic epidemiology; discuss factors of (post)conflict settings that facilitate the spread of infectious disease; review Levy and Side’s Public Health Approach to Prevention; discuss main public health strategies for preventing and/or containing the spread of infectious disease in conflict or conflict-affected settings

**November 5th: Use of Chemicals and Biological Agents in War**

**Case Study: Vietnam**


- Objectives: Review various chemical and biological agents used in recent warfare; review main tenants of the Geneva Protocol; review brief history of the Vietnam War; discuss health effects of the use of herbicides on the Vietnamese Population and American veterans of the Vietnam War; discuss intervention strategies targeting the Vietnamese population; discuss application of lessons learned in addressing the use of herbicides to present-day health problems in Iraq

**November 12th: Environmental Degradation**

**Case Study: The Gulf War**


- Objectives: Review unintentional and intentional effects of warfare on the environment; discuss health-related effects linked to environmental degradation following warfare; review basic history of the American war in the Persian Gulf; discuss specific environmental impact of the Gulf War and solutions; discuss policy recommendations to help avoid environmental problems in future conflicts

**November 19th: Weapons of Mass Destruction**

**Case Study: World War II (Specifically US v Japan)**


- Objectives: Review the health problems linked to nuclear weapons including nuclear warheads and depleted uranium; discuss the effect of nuclear weapons on peace; review basic history of WWII specific to US and Japanese opposition; discuss health intervention strategies targeting Japanese populations still exhibiting signs of health problems related to nuclear weapon detonation; discuss international policy regarding nuclear weapons production and abolition

**November 26**\(^{th}\): The Ethics of War

**Case Study: Afghanistan**


- Objectives: Review controversy surrounding the ethics of war; review brief history of the American war in Afghanistan; review the basics of democratic peace theory; discuss the justifications for the war in Afghanistan; discuss the question of whether war can be just or ethical

**December 3**\(^{rd}\): Conclusions: When the war is over…


- Objectives: Review various truth and reconciliation commissions and justice-seeking initiatives following war; discuss tension between justice and reconstruction; discuss ways in which public health professionals/organizations can help maintain peace; discuss how humanitarian interventions, specifically health interventions, affect a country’s international reputation
Remnants of the Past: The Effect of the Use of Herbicides on Reproductive Health in Vietnam

by Alexandria Green-Atchley
UNC Gillings School of Global Public Health
Department of Maternal and Child Health
Presentation Outline

• Introduction to project
• Brief history of the Vietnam War
• Use of herbicides in Vietnam War
• Dioxin: a chemical profile
• Health effects of dioxin exposure
• Current intervention efforts
• A glance at the present
MHCH789: War and Human Health
Course Rationale

- War has enormous direct and indirect effects on health
- War and conflict,
  - cause major loss of life and injury
  - disrupt the function of necessary health systems
  - increase the spread of infectious diseases
  - hinder access to necessary resources
  - cause severe mental health problems among civilians and combatants alike
The 25 Countries with the Highest Maternal Mortality Ratio (2011 est.)

- Chad
- Somalia
- Sierra Leone
- Central African Republic
- Burundi
- Guinea-Bissau
- Liberia
- Sudan
- Cameroon
- Nigeria
- Lesotho
- Guinea
- Niger
- Zimbabwe
- Congo
- Mali
- DRC
- Mauritania
- Mozambique
- Laos
- Afghanistan
- Malawi
- Tanzania
- Angola
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- Tanzania
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- Zambia
The 25 Countries with the Highest Under 5 Mortality Rate (2011 est.)

- Sierra Leone
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- Mali
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- DRC
- Central African Republic
- Guinea-Bissau
- Angola
- Burkina Faso
- Burundi
- Cameroon
- Guinea
- Niger
- Nigeria
- South Sudan
- Equatorial Guinea
- Cote d’Ivoire
- Mauritania
- Togo
- Benin
- Swaziland
- Mozambique
- Afghanistan
- Gambia
- Congo
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- Mauritania
- Togo
- Benin
- Swaziland
- Mozambique
- Afghanistan
- Gambia
- Congo
Global Peace Index
Lasting Effects of War

- Very often the negative effects of warfare persist for years after peace is achieved.
  - Loss of life
  - Disabling injuries
  - Psychological trauma
  - Destruction of cultures and communities
  - Displaced people
  - Destruction of infrastructure
  - Violation of human rights
  - Environmental degradation
Use of Chemicals and Biological Agents in Warfare

Case Study: Vietnam
The Vietnam War: 1964-1975
The American War
The War of Liberation
The Anti-US War for National Liberation
The Major Players

- The Republic of Vietnam (South Vietnam)
  - ARVN
- The United States of America
- The Democratic Republic of Vietnam (North Vietnam)
  - NLF
- The Soviet Union
- China
“How Did the Agony Begin?”

- French colonization
- Rise of Vietnamese nationalism (Vietminh)
- End of WWII
- French Indochina War
- Geneva Accords of 1954
- The “Global Struggle” - communism vs. capitalism
- Assassination of President Diem
- NLF activity south of 17\textsuperscript{th} parallel
- Gulf of Tonkin Incident / Gulf of Tonkin Resolution
America’s War

- Rapid US troop deployment
- Intense bombing – Operation Rolling Thunder
- Lack of clear front lines
- Controversy over South Vietnamese leadership
- Targeting of “communist sympathizers

Number of Active Military Personnel in Vietnam

- Number of Active Military Personnel in Vietnam

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<td>1972</td>
<td>100,000</td>
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<td>1973</td>
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NLF: “High Courage, Strong Will, Great Patience”

- NLF characterized by strong dedication to communist/unification movement
- Strategic use of guerilla war tactics and the Ho Chi Minh Trail
  - Ambush tactics, booby traps, land mines, extensive tunnel network
- Targeting of civilians in non-communist territories
US Domestic Context

- Growing anti-war sentiment
- Economic strain of war
- Anti-war demonstrations and protests country-wide
  - Kent State incident
  - CIA targeting of US citizens involved in anti-war movement
Beginning of the End

- Growing discontent among American soldiers stationed in Vietnam
- Intensified war effort on both sides
  - Tet Offensive
  - Operation Duck Hook
- Release of Pentagon Papers
- Publication of events at My Lai
- “Vietnamization”
“Peace with Honor”

• Official peace treaty signed on January 27\textsuperscript{th}, 1973
• Last Americans evacuated as Saigon falls to NLF forces
  ▫ SVN president delivers unconditional surrender on April 30\textsuperscript{th}, 1975
• Death tolls for armed forces:
  ▫ American: 58,249
  ▫ Vietnamese: estimated btw 1-3 million\textsuperscript{13}
Herbicides in Warfare
Use of Herbicides

• Defoliation efforts ran from 1961-1971 under Operation Trail Dust
• Intention was to,
  ▫ Defoliate areas around US military bases and transport routes
  ▫ Expose enemy locations by eliminating tree cover
  ▫ Destroy enemy crops
The Numbers

- Total use: 20 million gallons
- Number of people exposed:
  - 2.8 million US Veterans
  - 2.1 and 4.5 million Vietnamese civilians
  - Vietnam veterans: 1 million?
- Total area sprayed: 4.2 million acres\(^{20}\)
Map of Aerial Herbicide Missions in South Vietnam from 1965-1971
The Herbicide Lineup

• Agent Orange
• Agent Orange II
• Agent Blue
• Agent Purple
• Agent Pink
• Agent Green
• Trinoxol

• Agent White
• Bromacil
• Dalopon
• Dinoxol

• Diuron
• Monuron
• Tandex
Defoliants Sprayed by Year 1961-1971

The use of specific herbicides varied by year but Agent Orange was by far the most effective and widely used herbicide. It was also the most toxic.
US chemical companies that supplied herbicides during the Vietnam War:

- Dow Chemical
- Diamond Shamrock
- Monsanto
- Hercules Inc.
- T-H Agricultural and Nutrition Company
- Uniroyal Inc.
- Thompson Chemicals Corp.
Why all the toxicity?

- 2,4,5-T was a main ingredient in Agents Orange, Orange II, Pink, Purple, and Green
- Tetrachlorodibenzo-p-dioxin (TCDD) forms as a byproduct in the manufacturing of 2,4,5-T
- TCDD concentrations in herbicides ranges from 0.5ppm to 50ppm\textsuperscript{24}
TCDD’s Profile

- TCDD (otherwise called dioxin),
  - Is the most toxic of dioxin-related compounds
  - Is a known human carcinogen
  - Has a half-life in the body of 7-11 years
  - Is known to cause fetal development problems in laboratory rodents
  - Concentrates in fat cells
Persistence in the Environment

- TCDD is not absorbed by plants nor is it water soluble
- Persists in mud at the bottom of lakes and rivers and is consumed by mollusks, fish, and waterfowl
- Humans are exposed to the highest concentrations due to biomagnification
The Health Effects of Dioxin

• The US Department of Veteran Affairs recognizes the following diseases as associated with exposure to herbicides:

  ▪ AL Amyloidosis
  ▪ Chronic B-cell Leukemias
  ▪ Chloracne
  ▪ Diabetes Mellitus Type 2
  ▪ Hodgkin’s Disease
  ▪ Ischemic Heart Disease
  ▪ Multiple Myeloma
  ▪ Non-Hodgkin’s Lymphoma
  ▪ Parkinson’s Disease
  ▪ Peripheral Neuropathy
  ▪ Porphyria Cutanea Tardo
  ▪ Prostate Cancer
  ▪ Respiratory Cancers
  ▪ Soft Tissue Sarcomas
  ▪ Spina bifida
The Reproductive Health Effects of Dioxin

• The Vietnamese Government, VRC, and WHO recognize the following conditions as associated with parental exposure to dioxin:

  ▪ Spina bifida
  ▪ Achondroplasia
  ▪ Cleft lip and cleft palate
  ▪ Congenital heart disease
  ▪ Club foot
  ▪ Esophageal/intestinal atresia
  ▪ Hallerman-Streiff syndrome
  ▪ Hip dysplasia
  ▪ Hirschprung’s disease
  ▪ Hydrocephalus
  ▪ Hypospadias
  ▪ Imperforate anus
  ▪ Neural tube defects
  ▪ Poland syndrome
  ▪ Pyloric stenosis
  ▪ Fused digits
  ▪ Tracheoesophageal fistula
  ▪ Undescended testicle
  ▪ Williams syndrome
The Relative Risk

A meta-analysis of 22 studies showed the following summary RR (relative risks) of birth defects associated with exposure to Agent Orange\textsuperscript{18}

<table>
<thead>
<tr>
<th>Population</th>
<th>RR</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Ranch Hand US Veterans</td>
<td>1.04</td>
<td>0.93-1.16</td>
</tr>
<tr>
<td>Ranch Hand US Veterans</td>
<td>1.20</td>
<td>1.08-1.34</td>
</tr>
<tr>
<td>North Vietnam Veterans</td>
<td>2.61</td>
<td>1.72-3.95</td>
</tr>
<tr>
<td>Vietnamese Civilians</td>
<td>3.27</td>
<td>2.54-4.10</td>
</tr>
</tbody>
</table>
Moving to Intervene...
Research

- Extensive research on US Veterans
  - Potential biases of government-funded research
- Still lacking a large-scale epidemiological study of the health effects among Vietnamese veterans and the Vietnamese population
- Efforts at joint US-Vietnamese research
- Many obstacles to obtaining reliable epidemiological and biological exposure data
U.S. Government Response

- 2,4,5-T banned in the US in 1970
- Recent congressional initiatives to provide aid to Vietnam
- Inconsistent government recognition of negative health outcomes related to the use of herbicides in Vietnam
  - Congress appropriations said to be a “humanitarian act”
- US embargo of Vietnam lifted in 1996*
Clean-Up Efforts in Vietnam

- Very high cost
- Focused on Vietnamese “hot spots”
- Requires advanced technology – thermal radiation using in-pile thermal desorption
- Funded in part by US govt, Vietnamese govt, and select NGOs
Funds Committed by Foreign Donors: 2000-2012

Dioxin Clean-up
$62.4 million

- U.S. Government: $48,700,000 (78%)
- Foundations: $5,400,000
- U.N. & 3rd Countries: $8,500,000
- Civic Groups: $2,200,000

Services to People with Disabilities
$28.8 million

- U.S. Government: $11,400,000 (40%)
- The Public Private Partnership in Da Nang: $392,000
- U.N. & 3rd Countries: $3,700,000
- Foundations: $10,400,000

Clean-up & Services Total to Date: $91.2 Million

March 1, 2012
Direct-Services

• “Clean up then Care” pattern
• Financial compensation
• Vietnamese health insurance initiative
• Care/rehabilitation centers
• Non-governmental efforts focus on
  ▫ Rehabilitation
  ▫ Education
  ▫ Support
  ▫ Research
Challenges to Herbicide-Related Interventions

- Where to focus funds
- Insufficient access to education and healthcare
- Inadequate policy in US and Vietnam
- Lack of funding/inconsistent funding streams
- Other gov’t priorities
The U.S.-Vietnam Dialogue Group’s Three Stage Plan

• Extensive environmental remediation efforts
• National survey of disabilities in Vietnam
• Training of health care providers
• Identification/intervention program for children with disabilities
• Biomonitoring of hot spots
• Monitoring and evaluation of various service programs
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To Conclude: A Glance at the Present

- A “crisis of congenital malformations” in Iraq
- Linked to lead contamination and use of depleted uranium and white phosphorous in Persian Gulf and Iraq Wars
- Researchers found that 23 out of 1,000 babies were born with defects in Al Basrah Maternity Hospital in 2003, a number that is 17 times higher than in 1993²
Acknowledgements

A great thanks to Professor Margolis and Professor Bennett for their wisdom and guidance throughout the past year and to Professor Aronson of Amherst College for his sage advice on how to teach so others may learn.
References


