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Abstract: During the Cold War that followed World War II, the nursing profession was challenged to prepare for mass disasters. Army Nurse Corps officer Harriet H. Werley made significant contributions to the field of nursing in mass disaster preparation, education, and research during the 1950s. In the Army Medical Services Department of Atomic Casualties Studies, Werley participated in disaster response classes, nuclear attack simulations and biomedical research. These efforts fueled Werley's vision for nursing research and interdisciplinary collaboration, resulting in the Army's first Department of Nursing Research. Her actions influenced the nursing community to accept its professional responsibility as a key provider in disaster management and partner in interdisciplinary research. Today, 50 years later, the nursing profession once again faces the need to prepare for mass disasters.

July 13, 2007

Molly C. Dougherty, PhD, RN, FAAN
Editor, *Nursing Research*
University of North Carolina
School of Nursing
Chapel Hill, North Carolina

Dear Dr. Dougherty,

I am enclosing a submission to *Nursing Research* entitled "Planning for Mass Disaster in the 1950s: Harriet H. Werley and Nursing Research." The manuscript is 18 pages long and includes one figure. I desire that the manuscript be given a masked review.

My coauthor and I do not have any conflicts of interest, and APA ethical standards were followed in the conduct of the study.

I will be serving as the corresponding author for this manuscript. My coauthor has agreed to the byline order and to submission of the manuscript in this form. I will keep my coauthor informed of progress during the editorial review process, the results of the reviews, and any revisions made.

Sincerely,

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Running Head: Mass Disaster

Planning for Mass Disaster in the 1950s: Harriet H. Werley and Nursing Research.

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This paper is based on Leifer's doctoral dissertation, "*Prefers assignments which are creative in Nature*": *Harriet H. Werley, Army Nurse Corps leader, 1941-1964*, conducted at the University of Wisconsin-Milwaukee.

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Keywords: Historical Research, Mass Disaster, Army Nurse Corps

1 Abstract

2 During the Cold War that followed World War II, the nursing profession was challenged to
3 prepare for mass disasters. Army Nurse Corps officer Harriet H. Werley made significant
4 contributions to the field of nursing in mass disaster preparation, education, and research during
5 the 1950s. In the Army Medical Services Department of Atomic Casualties Studies, Werley
6 participated in disaster response classes, nuclear attack simulations and biomedical research.
7 These efforts fueled Werley’s vision for nursing research and interdisciplinary collaboration,
8 resulting in the Army’s first Department of Nursing Research. Her actions influenced the nursing
9 community to accept its professional responsibility as a key provider in disaster management and
10 partner in interdisciplinary research. Today, 50 years later, the nursing profession once again
11 faces the need to prepare for mass disasters.

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24 Planning for Mass Disaster in the 1950s: Harriet H. Werley and Nursing Research.

1 Americans were continually aware of the potential for nuclear disaster during the Cold
2 War era. During the 1950s and 1960s, the United States government was actively involved in a
3 nuclear arms race with the Soviet Union. The American public was bombarded with media about
4 the threat of communist infiltration and nuclear attack. Since the fear of nuclear war was ever
5 present, military and civil defense programs were developed to help Americans become
6 prepared. The public was encouraged to build bomb shelters and participate in civil defense
7 drills. Military and civilian health care personnel were mobilized to prepare to manage mass
8 casualties caused by nuclear attack.

9 In the 21st century, many world events have reminded nurses of the need to be prepared
10 to respond to disaster. Since the events on September 11, 2001, the Southeast Asian tsunami in
11 2004 and the Gulf Coast hurricanes in 2005, there has been an increased emphasis on the need
12 for preparedness and response planning for human-made or natural disasters. The current global
13 war on terror and nuclear weapon buildup in North Korea highlights the need for health care
14 agencies to be prepared to respond quickly to mass casualty incidents due to nuclear, biological
15 or chemical assault. Groups dedicated to community service, including firemen, police, and
16 health care personnel have collaborated to create, implement and practice disaster management
17 plans in communities.

18 During the turbulent Cold War era, Harriet H. Werley, an Army Nurse Corps (ANC)
19 major, was a pioneer in mass disaster education and nursing research. She served as the first
20 nursing consultant in the newly formed Department of Atomic Casualties Studies (DACs) from
21 1955-1958. She continued to be a leader in national activities related to disaster management
22 until 1964 when she retired from the Army.

23 Werley was born in Virginville, Pennsylvania, on October 12, 1914. She obtained a
24 nursing diploma from Jefferson Medical College Hospital School of Nursing, Philadelphia,

1 Pennsylvania in May 1941, and joined the United States Army Nurse Corps in December. She
2 initially served as a staff nurse at the Walter Reed Medical Center and then served overseas 37
3 months during World War II in the Mediterranean Theater. She left the Army from 1946-1948 to
4 pursue her Bachelor of Science degree in nursing education at the University of California,
5 Berkeley and then re-enlisted in 1948. Werley received a Master of Arts degree in nursing
6 administration from Teachers College, Columbia University in 1951.

7 As a nursing leader, Werley developed and participated in numerous interdisciplinary
8 disaster education programs and research projects while she was in the DACS. While interacting
9 with Army Medical Service leaders and staff, she exchanged ideas and educated them about the
10 abilities and potential of professional nurses. When working with military officials in
11 Washington D.C., including the ANC, the Office of the Surgeon General, the Army Institute of
12 Research and the Walter Reed Army Hospital, Werley shared her vision of an evolving role for
13 nurses that included increased opportunities for leadership, research, and expanded practice.
14 During this time, she laid the groundwork for advancing nursing science by planning the creation
15 of a department of nursing at the Army Institute of Research.

16 Primary and secondary sources regarding Werley's work in the DACS and the field of
17 disaster nursing were examined to obtain data for this historical study. Primary sources included
18 memos, speeches, letters, reports, photos and publications in the Harriet H. Werley Papers at the
19 Golda Meir Library, University of Wisconsin-Milwaukee. Secondary sources included
20 professional and popular literature regarding Werley, the Army Nurse Corps and Medical
21 Service, nursing research, and disaster planning in the Cold War era. Werley's publications from
22 1941-1964 also were studied. Other materials were obtained at the Walter Reed Army Medical
23 Center Library in Washington D.C.

24 A New Role in a New Department

1 At the end of World War II, knowledge about the new field of nuclear science and the
2 effects of nuclear weapons was growing rapidly. The 1945 atomic bomb attacks on Hiroshima
3 and Nagasaki, Japan instantly resulted in casualties of a size and nature that the world had never
4 seen before. The Army Medical Service realized that it needed to prepare for the possibility of
5 dealing with similar disaster situations following the war. The first “Medical Aspects of Atomic
6 Explosions” program was developed and presented to Army medical personnel in 1947. During
7 the Korean War (1950-1953), the program was not held. However, following the 1953 ceasefire,
8 the Army identified the need to resume its nuclear disaster preparation program (DACS, 1956).

9 A series of educational courses about the “Management of Mass Casualties” was initiated
10 in 1954 as a continuation of the 1947 program. Medical specialists were selected as faculty and
11 nursing was represented by an ANC guest speaker. The program was reinitiated at the Walter
12 Reed Army Medical Center, the site of the Army’s institute of research and the medical service
13 graduate school, known together as the Walter Reed Army Institute of Research (WRAIR). The
14 military’s top physicians, scientists and researchers worked there, as did ANC nurses, to promote
15 and restore the health of American soldiers and their families.

16 In early 1954 the Commandant at WRAIR decided to evaluate the overall Army Medical
17 Service staff education program in comparison to national scientific and professional education.
18 Formation of a number of committees resulted; one of them was the “Committee on
19 Relationship of Army Medical Service Graduate School with Education in Nursing and
20 Women’s Medical Specialist Corps”. The committee was composed of six medical corps
21 officers, two Army Nurse Corps officers that worked on research teams on a metabolic unit and
22 a radioisotope unit at the hospital, and the ANC Consultant in the Department of Educational
23 Services.

1 The medical chief and the committee “demonstrated forward thinking” when they
2 identified a need in the graduate school for better relations with the members of the Army Nurse
3 Corps and Women’s Medical Specialist Corps (Werley, 1963a, p.71). The committee concluded
4 that there should be increased nursing participation in education, research and publication
5 activities at WRAIR. These ideas were ahead of their time since nursing research was in its
6 infancy and nursing publications were limited in the 1950s. More graduate programs in nursing
7 were opening; few nurses had advanced degrees. At this time the Army was led primarily by
8 men. Other than nurses in hospitals, women filled few leadership positions. The women’s
9 movement was ten years away. Women in the Army were fighting to be visible and to become
10 participants in significant national activities.

11 In 1954, the new Commandant of WRAIR and his deputy “recognizing the foreseeable
12 medical problems resulting from warfare in which nuclear weapons are employed”, formally
13 proposed to the Army Surgeon General that an agency be developed within the institute to meet
14 Army Medical Service special education needs related to atomic casualties (Werley, 1963a, p.
15 51). The Department of Atomic Casualties Studies was formed in 1955. It consisted of two
16 medical officers, an nurse corps officer, an administrative clerk, and a secretary (DACS Annual
17 Report, 1956).

18 The head of the Army graduate school asked the Surgeon General to assign Major Harriet
19 H. Werley, ANC career guidance counselor, to represent nursing. The chief medical service
20 officers and the ANC chief held an interview with Werley to discuss the position. As Werley
21 wrote in her 1988 memoirs, she was torn between accepting the position and asking that it be
22 filled by a doctorally prepared nurse. She wrote:

23 I believed that this was an opportunity for nursing research development and nurse
24 participation in various ways. I knew that this opportunity could mean a great deal for the
25 Army Nurse Corps and for all of nursing....I respected the physicians and scientists at the
26 WRAIR, some of whom knew me, and I knew that I would learn a great deal.

1 Hoping I could contribute appropriately, I accepted the challenge (Werley, 1988, p.
2 368).

3
4 Major Werley was appointed as the first nursing consultant at WRAIR in 1955. Her title
5 was Nurse Consultant and Administrative Officer in the Department of Atomic Casualties
6 Studies. Many identified this position as a significant step forward for nursing and the Army
7 Nurse Corps. Until this time, women had not held significant Army leadership positions outside
8 of the Nurse Corps, and nurses had not been represented on interdisciplinary committees at the
9 Army Institute of Research.

10 The appointment generated acclaim and press coverage. The 15 July 1955 *Service Stripe*
11 contained the headline: “Maj Werley first woman staff officer in A-Casualties course” (p.1). It
12 was accompanied by a lengthy article and picture of Werley. Nursing leaders and friends sent
13 numerous cards of congratulations. ANC Chief Ruby Bryant wrote to her: “The School [Army
14 Graduate School] was pretty smart to ask for you by name and I know of no one who will better
15 represent the interest of the ANC” (1955, p.1). One friend wrote: “I’m bursting with pride...Curl
16 those lovely brown locks and always always put that best foot forward...Let’s let that old
17 ‘Werley show’em’ knock them over” (Hill, 1955, p.1).

18 Many acquaintances hoped that Werley’s leadership qualities in her new position would
19 be representative of other nurses and women. After reading the announcement about Werley,
20 Frances McKenna, Dean of Baylor University, wrote: “...sounds like a wonderful assignment
21 and a great honor. I hope...that you will be able to demonstrate some of the things we nurses
22 consider important” (1955, p. 1). One nurse expressed her beliefs in Werley: “Am not worried
23 about you for I have great confidence in your ability to tackle anything and make a success of it”
24 (Ede, 1955, p. 1). Werley commented that WRAIR leaders were very progressive when they
25 included nursing in planning the Department of Atomic Casualties Studies. She wrote: “It
26 reflects ...the belief in the interdisciplinary approach on the part of the men of this famous

1 research institution” (Werley, 1963a, p. 52). In 1955, women were not clearly visible in
2 leadership positions. It is evident from comments made by women in civilian positions that they
3 were watching closely to see if Werley could establish a precedent as a female nurse scientist.

4 Preparing to Care for Mass Casualties

5 According to a 1956 Department of Atomic Casualties Studies history, the new
6 department was immediately very busy and very productive. Werley worked with officers from
7 the fields of trauma, nuclear medicine, veterinary medicine, dentistry, physics and other sciences
8 to create disaster preparedness curricula, plan simulation activities, and participate in research
9 projects.

10 The Army had recently created a directive that all Medical Service officers had to have at
11 least 12 hours of emergency medical care education. The Surgeon General proposed that all non-
12 medical personnel also receive some basic training in emergency medical care. Werley and the
13 other DACS members planned and conducted the multidisciplinary courses “Medical Care of
14 Atomic Casualties” and “Medical Management of Mass Casualties”. By mid 1956, the team had
15 developed six courses and planned four new courses to be completed in 1957. They also
16 conducted programs for reserve officer units, the Federal Civil Defense Association, the United
17 States Public Health Service, and other civilian groups. In addition, they planned the production
18 of disaster educational films addressing topics such as burn management, radiation injury and
19 decontamination, management of trauma and psychiatric cases, and the principles and effects of
20 nuclear weapons.

21 Most nurses did not have access to mass casualty education in 1956. While planning and
22 teaching the mass disaster courses, Werley arranged training opportunities for a number of
23 nurses. She recruited course spaces for ANC officers, civilian faculty from schools of nursing
24 and nurses involved with Civil Defense and the Red Cross. The Nurse Corps chief mandated that

1 all ANC continuing education courses incorporate disaster care. Werley quickly created a series
2 of short courses titled “Nursing in the Medical Management of Mass Casualties”, and served as
3 course director for the first two sessions. Military and civilian nurses from all 48 states and the
4 three American territories attended.

5 Realizing that the entire nursing profession needed to hear the disaster care message,
6 Werley organized special education sessions at a number of nursing conferences in order to
7 widely disseminate mass disaster information. At the time, these were the only classes offered to
8 prepare nurses to deal with disaster situations. She expanded the profession’s knowledge by
9 writing three articles about the nurse’s role in mass disaster based on her conference
10 presentations. (Goldstein & Werley, 1956; Goldstein & Werley, 1959; Werley, 1956). Werley’s
11 efforts spread as she assisted both the NLN and the ANA in their efforts to educate nurses.

12 Disaster Nursing Conferences

13 The focus of the first conference, held in early 1956, was the nurse’s role following a
14 nuclear disaster. Lt. Col. Joseph Goldstein gave a speech about medical care following a nuclear
15 attack, and Werley spoke about “The role of the nurse in the care of nuclear weapons casualties”.

16 She called on all nurses in nursing education and practice to learn about, practice, and teach
17 content regarding disaster nursing following nuclear attack. Werley noted that there was a
18 nursing shortage and a need to expand nurses’ roles during this time of rapid social change.
19 These needs were even more significant when facing potential nuclear disaster than they were in
20 “peacetime”. She reported on the efforts of the Army Nurse Corps and Medical Service to
21 further develop personnel by expanding their leadership skills and abilities to deliver emergency
22 medical care. The ANA published the proceedings of this conference, *Report of work*
23 *conference on disaster nursing, February 20-24, 1956, Washington D.C.*

1 Recognizing the need to reach wider audiences of nonmilitary nurses, Goldstein and
2 Werley presented “Care of Casualties Caused by Nuclear Weapons” at the 1956 ANA
3 convention three months later. They addressed the same topics from the February conference.
4 Approximately 100 nurses attended from 47 states and two territories. At the convention, Werley
5 discussed the nursing responsibilities of providing clinical care and supervising ancillary staff
6 after a nuclear catastrophe. She emphasized that the two major goals of disaster management
7 were to conserve the greatest amount of manpower for national defense, and provide the best
8 possible care for the largest number of injured. She said nurses needed to expand their functions
9 to include more administration of antibiotics, narcotics and sedatives; surgical and wound care;
10 and independent treatment of minor casualties. Similar to the current emphasis on public health
11 preparedness for terrorist attack or an influenza pandemic, Werley urged nurses to accept their
12 responsibilities as professionals and citizens to be prepared for nuclear attack, including
13 participation in disaster drills (*Industrial Nurses*, 1963; Rayner, 1957; Werley, 1963).

14 In 1958, Werley spoke at the National Student Nurses Association annual convention.
15 She encouraged students to “impress on the faculties of their various professional schools the
16 need for education in the field of nursing preparedness for disaster”. Werley identified barriers
17 to adequate disaster instruction with the students, stating:

18 Realistically, I know that the amount of activity along the line of teaching disaster
19 nursing is limited and affected by many things, such as ‘disbelief on the part of the
20 leaders that it could happen to us’, ‘rejection of anything that smacks of the military and
21 hence rejection of national defense’, and ‘failure to realize that national survival is just as
22 much a civilian problem as a military problem (ANA, 1958, p.1).
23

24 She also talked about a lack of understanding of the need for disaster training. She concluded
25 with an often-repeated phrase: “...emphasis must be placed on the greatest good for the greatest
26 number” (p.2), a concept that continues to be important in mass disaster management in 2007.
27 The International Nursing Coalition for Mass Casualty Education (INCMCE) and the Office of

1 Homeland Security were formed shortly after the terrorist attacks on September 11, 2001. Their
2 leaders face similar barriers and challenges when emphasizing the importance of disaster
3 preparedness (Ireland, Emerson, Kontzamanis, & Michel, 2006; Stanhope & Lancaster, 2004).

4 Disaster Management Publications

5 There were many requests for information about the care of mass casualties after the
6 ANA convention and Army Nurse Corps disaster workshop. Werley and Lt. Col. Goldstein co-
7 authored two publications in response to the profession's demand for disaster preparation
8 information (Goldstein & Werley, 1956; Goldstein & Werley, 1959). They defined various types
9 of disasters, discussed problems that occur following a disaster and stated three goals for nurses'
10 preparation: 1) be proficient in "the tasks delegated by the MD" (1959, p.184); 2) be prepared to
11 expand usual professional and administrative duties, and 3) learn principles of personnel
12 management and training of assistive personnel. Additionally, they described the immediate and
13 delayed phases of disaster, as well as physical and mental health needs of victims and care
14 providers. Other than an emphasis on "tasks delegated by the MD", the problems and goals for
15 disaster preparedness remain the same today, more than 50 years later.

16 In 1963, Werley wrote the forward for a Disaster Preparedness Reprint of the May-June
17 issue of *The American Association of Industrial Nurses Journal*. She noted that: "Realism and
18 timeliness are added through commentary on actual experiences encountered in a series of
19 natural disasters and the evacuation of the relatives of the Bay of Pigs prisoners" (p. i). The Bay
20 of Pigs was the location where U.S. forces had attempted to invade Cuba and were quickly
21 defeated and imprisoned by Castro's Army. As always, Werley was focused on increasing
22 professional nurses' knowledge and responsibility. She wrote:

23 It is hoped that this brochure may serve to prepare further personnel already interested in
24 learning how to cope with disaster situations. But even more ... may it serve as a stimulus
25 to the uninitiated, spurring them on to learn more about their role in disaster.
26

1 During the 1950s, the Army recognized the need for nurses, trauma and nuclear medicine
2 specialists, veterinarians, dentists, and other soldiers to participate in mock disaster drills. Werley
3 and other Army nurses conducted triage of soldiers who pretended to be disaster victims during
4 the simulation (see Figure1). One Army Reserve nurse wrote: “It’s quite one thing to talk about
5 Mass Casualties and another to face them en masse.” She reported to Werley that a disaster
6 simulation experience was “exactly what our unit and I feel we need” (Eicherley, 1956, p.1).
7 Today, disaster simulations are a routine part of annual or semi-annual drills for military and
8 civilian health care institutions (Gebbie & Qureshi, 2002; Ireland et. al., 2006).

9 Principles of mass disaster do not only apply to nuclear warfare- they also apply to other
10 disasters. From 1958-1962, the ANC was involved in providing relief efforts in a number of
11 disaster incidents. They served in Lebanon in 1958, in Chile in 1960 after an earthquake and
12 tidal wave, in Denver in 1961 after a domestic plane crash, and in Iran in 1962 following an
13 earthquake (Piemonte & Gurney, 1987; Sarnecky, 1999). In the 21st century, it is equally
14 important that nurses continue to gain knowledge and skills about disaster care, regardless
15 whether the cause is nuclear, biological, chemical or natural.

16 Collaboration with National Organizations

17 As the realization became clear of the need for emergency preparedness, many groups
18 established task forces and committees. Werley served on a number of national defense
19 committees during the late 1950s. She served on the Advisory Committee of the Office of Civil
20 Defense Mobilization and the NLN Advisory Committee on Nursing Service and Education in
21 National Defense from 1956-1960. While working with the NLN, Werley helped develop an
22 NLN Achievement Test in Disaster Nursing. She also was a member of the 1957 task force
23 appointed by the Federal Civil Defense Association (FCDA) to create an equipment list for a
24 prototype 200-bed field hospital designed to treat disaster victims. Following field testing at

1 disaster simulations held at Forts Meade and Sam Houston, the group finalized the equipment list
2 for the portable emergency hospital.

3 In 1950, the ANA formed a Committee on Nursing Resources to meet Civilian and
4 Military Needs. Due to the changing global situation following the end of the Korean War in
5 1953, the committee changed its name to the ANA Special Committee on Nursing in National
6 Defense. Werley served on this committee from 1956-1960. Their primary purpose was to
7 prepare the nursing profession for potential national disasters (Flanagan, 1974, p. 164). In 1959,
8 the committee worked on a revision of the ANA statement, “The role of the nurse in national
9 defense”. Similarly, in 2003, the International Nursing Coalition for Mass Casualty Education
10 created a list of essential educational competencies which registered nurses should possess in
11 order to respond effectively to mass casualty incidents. These competencies now serve as a guide
12 for nursing education programs and health care agencies (Ireland et. al., 2006; *Report*, 2003).
13 Both documents identified key elements related to a timely, appropriate response to disaster
14 victim care. The documents differ primarily in the type of technological skills and the systems
15 nurses would employ if resources were available.

16 In 1958 and 1959, Werley served as a consultant for an 18-month study of
17 disaster nursing education conducted by the Office of Civil Defense Mobilization and the NLN.
18 The purpose of the study was to “give guidance to all nursing education programs on ways to
19 improve the teaching of skills and knowledge necessary for mass disaster care” (Special
20 Committee on Nursing in National Defense Minutes, 1959, p.5). As part of the study, the
21 Disaster Nursing Inventory was developed and administered to nursing students and faculty to
22 determine their background preparation, disaster experience, and opinions of what the role of
23 nurses in disaster situations should be (Werley, 1960). It was followed by education, disaster
24 simulations, exhibits, a film series, and the creation of disaster plans. A report of the results

1 noted disagreement in many areas related to nurse's extended responsibilities in disaster
2 situations. Recommendations for further studies and the education of nursing instructors,
3 students, and nurses were made (Price, Fox, Argiry & McManus, 1959). The results were used
4 by project directors and faculty to develop ongoing disaster education in the schools' curricula.
5 The NLN also surveyed all American nursing programs to determine if and how they taught
6 disaster nursing in their programs (The National League for Nursing and National Defense,
7 1959). Sixty-eight per cent of the nursing programs completed the surveys. Of those schools
8 responding, 54% reported that they offered education that was "over and above a first aid
9 course" (Special Committee, 1959, p. 5).

10 The National League for Nursing-Office of Civil Defense Management Disaster Nursing
11 Study produced the major documents for nurses and schools. In addition to the progress and
12 final reports (Neal, 1963), there was a bibliography, four pamphlets designed to give guidance to
13 nurses, schools and hospitals and the NLN Comprehensive Achievement Test in Disaster
14 Nursing (1961). After this initial effort, little was done until the ANA-NLN film service
15 received a grant to produce a teaching film on the psychological effects of disaster nursing in
16 1966. The subject headings related to disaster planning disappear from *Nursing Outlook* (the
17 official NLN journal) in 1968.

18 While only occasional articles appeared in the nursing journals after the NLN-OCDM
19 project ended, at least three books were published. However, between 1970 and 1975 when
20 "disaster nursing" appeared as a subject-heading in the *American Journal of Nursing* indexes, it
21 referred to nurse participation at a specific event, usually a natural disaster. The subject heading
22 disappeared after 1975. The military continued to prepare its staff for management of mass
23 casualties, but the civilian nursing sector and nursing education programs no longer emphasized
24 disaster care after the Cold War threats subsided. Between the early 1970s and 2001, disaster

1 nursing planning seemed to be the responsibility of the American Red Cross, not the general
2 nursing profession.

3 Beginning in 2001 after the World Trade Center attacks, disaster nursing reappeared in
4 the nursing literature. A CINAHL search revealed 135 articles on the nurse's role in disasters
5 published between 2001 and 2006. Today, due to the renewed emphasis on disaster
6 preparedness, many nursing education programs are revising their curricula to include disaster
7 nursing content and continuing education course and national conferences offer related content.

8

9 Growth of Nursing Research in the 1950s

10 Werley's work in the Department of Atomic Casualties Studies at the Army Institute of
11 Research, coincides with increasing interest in nursing research by nurses. The American
12 Nurses Foundation was established by the ANA in 1955 to obtain funding for nursing research.
13 In 1956, the Public Health Service, a division of the Department of Health, Education, and
14 Welfare, also supported the development of nursing research. They provided funds for nursing
15 studies as well as scholarships and fellowships to support the educational preparation of nurse
16 researchers. In April 1957, a Nursing Research Study Section was created in the National
17 Institute of Health (NIH). Werley was appointed as a member of the first group of reviewers,
18 serving for five years. They evaluated study progress reports, site visit reports and research grant
19 applications for NIH funding.

20 In the mid 1950s, the U. S. military also was growing. It was focusing its budget and
21 manpower on research efforts to develop nuclear weapons. This required increased knowledge
22 about the effects of nuclear bombing, and how to prepare effectively for a nuclear attack. The
23 Army Medical Service conducted a number of preparatory activities and tests to examine the

1 military's readiness to respond to nuclear disaster. As the Department of Atomic Casualties
2 Studies nursing consultant, Werley participated in a number of these research activities.

3 Nuclear Weapons Testing Research

4 From 1953-1961, the Eisenhower administration was committed to building a nuclear
5 arsenal to deter the Soviet Union from attack. The U.S. government authorized nuclear weapon
6 experiments to be conducted in several western states. The Army Institute of Research was
7 involved in studying the effects of atomic and hydrogen bombs.

8 While serving as Coordinator of Nursing Activities at the Institute in 1957, Werley
9 participated in an Army medical research study at a nuclear bomb testing site in Mercury,
10 Nevada. This now-famous test site area is located 95 miles northwest of Las Vegas. It was a
11 massive outdoor laboratory and national experimental center larger than the state of Rhode
12 Island, making it one of the largest restricted access areas in the United States. It was surrounded
13 by thousands of additional acres of land that were removed from public use so that it could be
14 used as a military testing range. The last nuclear testing at the site occurred in 1992 (Nevada Test
15 site, 2004).

16 Werley saw the atomic blast testing as a "golden opportunity" for nurses to be involved
17 in research. (R.T. McCarthy, personal communication, September 20, 2003). After consultation
18 with Werley, ANC Chief, Col. Inez Haynes authorized a group of Army nurses to participate in
19 the project. Captain Ethylene Hughes, Chief Nurse of the project, coordinated the plans for all of
20 the nursing activities in relation to the classified project, Operation Plumbob (Project 4.1). The
21 purpose of the project was to conduct a biomedical study of the effects of an atomic blast on
22 swine. The swine would be placed in a variety of environments that were hypothesized to protect
23 them to varying degrees from the effects of the blast (Piemonte & Gurney, 1988; Sarnecky,
24 1999; Summary of Nursing Activities, n. d.).

1 Prior to the event, the nursing staff, cleared for “top secret” activities, received special
2 training related to nuclear weapons testing, the effects of nuclear explosions, radiation
3 protection, and decontamination methods. Approximately 700 swine were placed in 15 different
4 locations and two nuclear shots were made. The investigators studied the results of the blasts by
5 counting and recording the number of dead, injured and uninjured test animals. A field hospital
6 containing surgical and recovery areas was set up to analyze and document the injuries. All of
7 the scientists and participants must have been very committed to the importance of this research
8 in order to participate in such a grim activity.

9 Werley was assigned to the Wound Analysis section of the project. Her role was to help
10 analyze the trauma and burns on the swine that resulted from the blasts. She designed
11 instruments and a coding system to measure and record the data. The first atomic bomb (the
12 Wilson shot) “did not produce the expected results”, so no surgical procedures were performed
13 (Summary of Army Nursing Activities, n. d., p.1). Following the unsuccessful shot, the swine
14 had dosimeters inserted in their abdomens to measure radiation exposure. A second detonation
15 (the Priscilla shot) took place some time later. Werley reported that: “properly garbed in
16 protective clothes, [I]was in the first vehicle that entered the site after the explosion” (Werley,
17 1988, p. 368).

18 After a review with the nurses Major Werley wrote an evaluation of their role in
19 Operation Plumbob. The group expressed their desire to be involved in future research studies
20 and made recommendations about how the ANC could be more effective in participating in
21 future studies. Summary reports emphasized the importance of nurses participating in
22 interdisciplinary research and recommended that future biomedical research include parallel
23 studies of a nursing problem. In 1957, nursing research was in its infancy. Werley was pushing

1 for nurses to conduct their own research, an idea not shared by many at that time (ANC Group
2 Evaluation, 1957).

3 In October 1957 the chief of the Research Division at WRAIR called for proposals for
4 additional biomedical testing related to nuclear detonation. Werley quickly submitted a proposal
5 to the Director that emphasized the study of nursing functions following nuclear detonation.
6 Having had the experience of being involved in research, the nurses were now anxious to begin
7 to conduct their own research (Werley, 1957).

8 A Nursing Department at WRAIR

9 As she conducted her work in the Department of Atomic Casualties Studies, Werley
10 initiated activities at the Walter Reed Army Institute of Research (WRAIR) to place nursing
11 within the realm of Army medical research. She wondered why nursing was different from the
12 other medical professions. Why had it taken 62 years since the inception of the Army Medical
13 Service Graduate School to add a nurse to its staff? Nursing education was not new on the
14 Walter Reed campus. The Army School of Nursing opened in 1918 under the leadership of
15 Annie Goodrich. When it closed in August 1931, more than 937 women had graduated as nurses
16 (Feller & Cox, 2000, p.9). Werley mentioned that the school had strong ties to the Army
17 Medical School and the Army Dental School. One has to speculate on the reasons for lack of a
18 nursing presence at the Army Graduate School. Perhaps it was related to the stage of
19 development of the nursing profession and the Army Nurse Corps. At the time, (1931), there
20 were only two graduate programs in nursing in the United States, and they focused on preparing
21 nurse educators and administrators. A second school of nursing, the Walter Reed Army Institute
22 of Nursing, opened in May 1964. The purpose was to educate students in cooperation with the
23 University of Maryland. The graduates received a BS in nursing from Maryland and served in

1 While working in the Department of Atomic Casualties Studies, Werley developed strong
2 connections between the Army Nurse Corps, the Army Medical Service and other scientists at
3 WRAIR. The disciplines' common goal of improved health care through research laid the
4 groundwork that resulted in the establishment of the Army's first Department of Nursing
5 Research in 1957. Today, with renewed emphasis on natural and manmade disasters, it is
6 imperative that we acknowledge the nurses early involvement in civil defense, mass disaster
7 preparedness, and interdisciplinary research.

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Figure Legend

Figure 1. Major Harriet H. Werley (second from right) and Army Nurse Corps personnel, 1956.

Figure
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