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## **Interdisciplinary Education in Emergency Preparedness: Assuring the Safety of Aging Populations**

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### **Abstract**

Aging is a global phenomenon. It impacts unequally, with this inequality attributable to such factors as gender, culture, education, socioeconomic status and access to primary and preventive care. Access to care and the quality of that care are significantly impacted by governmental support and regulations. Most elderly live in developed countries; however, for a significant number life is not free of stress and struggle to meet basic needs. Elders in developing countries face even more challenges. Natural and man-made disasters increase the vulnerability of these populations through potential disruption of critical services. Currently there is a paucity of health and social services professionals educationally prepared to meet the various health and illness needs of aging populations. There is also a lack of new and practicing professionals trained for practice in emergency situations. Disasters can, have and will overwhelm existing resources thus requiring effective and efficient responses to emergencies.

This paper will address the need for interdisciplinary education in emergency preparedness to assure the safety of aging populations. Arguments will be made for educational initiatives that are competency based, threaded from preparatory to graduate education, intra- and interdisciplinary in design and developed from a standardized curriculum resulting in ongoing dialogue among health and social service disciplines.

### **Introduction**

Aging and disasters are global phenomena. They do not exist in isolation. Disasters impact all ages, genders, and socioeconomic strata of society; however, disparities exist as to the impact of disasters on different populations especially on the young, the aged, pregnant women, people of color and populations with limited financial and social resources. Risk is understood to be the increased probability of developing an illness, disease, disability or condition following exposure to an event, agent, or stressor. The outcome of exposure to risk is affected by two factors, vulnerability and resiliency; they are variable and depend on factors such geographical location, health status, psychological wholeness, human constitution, genetics, and the preparedness of populations and resources. While educational and practice initiatives have increasingly addressed both aging and disaster preparedness, few have explored interdisciplinary educational preparation of students and professionals along the educational continuum from entry level to doctoral education. The convergence of the phenomena of aging and disasters and the proposal for interdisciplinary education to mediate the factors of resiliency and vulnerability to promote the health and safety of aging populations will be the focus of this paper.

### **Disasters**

The annals of history document human-kind's struggle to overcome the disasters of nature and man-made deeds. Disasters occur when a destructive event disrupts the normal functioning of a community resulting in excessive loss of life, resources, and assets, causes

extensive injuries, and deprives communities of the availability of adequate recovery resources (Veenema,<sup>1</sup>; Petak & Atkisson<sup>2</sup>). They can be caused by natural phenomena or be man-made they range from floods and earthquakes to the accidental or premeditated release of toxic gases from storage facilities to the use of man-made bombs. In the first six months of 2007, 34 Federal Disasters, 6 Emergency Declarations and 20 Fire Management Assistance Declarations were declared (Federal Emergency Management Administration (FEMA)<sup>3</sup>), and in a 14 hour time span; June 28-June 29, 2007, five magnitude 5.0 or greater earthquakes occurred world-wide (United States Geological Survey (USGS)<sup>4</sup>.

According to the USGS most declared Federal disasters are related to flooding while earthquakes have the greatest potential for catastrophic losses with 39 states and their populations at risk (USGS<sup>5</sup>). Hurricanes have cost the U.S. over 300 billion dollars in loss in the past several years. The risk increases for even greater devastation as more than half the U.S. population lives close to coastal waters that are vulnerable to the damaging winds, coastal surge and flooding associated with hurricanes (USGS<sup>6</sup>).

Internationally, the 2004 Indian Ocean Tsunami caused over 200,000 deaths. (USGS<sup>7</sup>). Heat waves in July 1995 and August 2003 resulted in more than 13,521 deaths, with a disproportionate number of more elderly and African American elderly dead (Klinenberg<sup>8</sup>; Klinenberg<sup>9</sup>; Langer<sup>10</sup>. The fear of influenza becoming a world-wide pandemic is a lurking specter. The Centers for Disease Control and Prevention (CDC<sup>11</sup>) stated that with the emergence of a new virus, one that is able to be transmitted person to person by respiratory means and has lethality this virus will become pandemic. Once this happens the virus will be unstoppable and a conservative estimate is that it will affect 2-7.4 million people world-wide.

While these figures are overwhelming not conveyed in their frank simplicity are the actual issues of destroyed environmental eco-systems contaminated by the release of toxins, chemicals and raw sewage, destroyed homes, businesses and communities, disrupted economic and social systems, disrupted health care systems and overwhelmed local, state and federal governments. Embedded within these numbers is one of the vulnerable populations that are at greatest risk for morbidity and mortality, the aged.

Turning attention to human causes of disaster, wars and other conflicts top the list. Alexander<sup>12</sup> noted that in the 20<sup>th</sup> century more than 150 armed conflicts have or are occurring, as the world experienced two world conflicts (World Wars I and II), several police actions

managed by the United Nations, and numerous regional conflicts. He added that wealth disparity has more than doubled. The impact seen in a widening economic gap among wealthy and developing nations that results in the wealthier nation's ability to withstand devastation caused by natural or man-made disasters. Wealthier nations can mobilize existing resources and create new resources. Developing nations however can ill afford the additional cost of yet another natural or man-made disaster or the cost for repayment of loans from wealthier nations (Alexander<sup>13</sup>).

Terrorism can be defined as the unlawful use or threatened use of force or violence by a person or an organized group against people or property with the intention of intimidating or coercing societies or governments, often for ideological or political reasons and has emerged as one of the most challenging human-induced issues of modern history. While sometimes thought of as a new phenomenon, it can be chronicled from ancient times to modern day. The actions of terrorists can take many forms including the threat or actual use of biological, chemical, nuclear, radiological agents and explosive devices

Internationally, the events of terrorism in Great Britain June 29 – June 30, 2007 (Fox News<sup>14</sup>; BBC<sup>15</sup>; Department of Homeland Security<sup>16</sup>) are the most recent evidence of such activities. This newest round of terrorism builds on the legacy of previous incidents, train bombings in Spain March 2004 and London July 2005, Egyptian resort bombings in Sharm-al-Sheikh April 25, 2005 and Dahab April 2006 and the American Embassy bombing in Kenya and Tanzania August 1998 (Fox News<sup>17</sup>; BBC<sup>18</sup>; Department of Homeland Security<sup>19</sup>; Al Jazeera<sup>20</sup>) Within the last 15 years; precipitated by the February 1993 bombing of the World Trade Towers, and the September 11<sup>th</sup>, 2001 World Trade Towers and Pentagon attacks (Fox News<sup>21</sup>; BBC<sup>22</sup>; Department of Homeland Security<sup>23</sup>), the United States which had been reluctant in admitting to its own vulnerability to such attacks, has become victim to global terrorism.

Wike & Samaranyake<sup>24</sup> stated that the classic causes for terrorist actions include a desire for a home-land, ownership and control of the home-land, competition among political groups seeking public support, struggle between authoritarian and democratic governmental rule, and opposition to foreign policy. Applied to modern day, the increasing incidents of extremism can be traced to negative perceptions towards and opposition to the U.S. and its allies' foreign policies, unwavering support for the nation of Israel, U.S. unilateralism and the perception that the religion and culture of Islam is under attack by the West (Kohut<sup>25</sup>; Wike & Samaranyake<sup>26</sup>).

Wike & Samaranyake<sup>27</sup> report that support for terrorism in Islamic nations and populations living in other countries is conditional and waning. These changes are attributable to experience with attacks in their homeland, perception of U.S. support for democratic reforms, and perception towards U.S. policies and actions (Kohut<sup>28</sup>). Both terrorists and those who are terrorized suffer greatly by these events. The devastation caused by man-made events is unlike that of nature as the devastation caused by human action is linked to perception and belief about motive. It is far more difficult to change perception and belief than to build a dam or replant a forest. Yet, there is a similarity in that human-kind can pool knowledge, skills and talents to respond, rebuild, restore, and prepare for future events.

The world and its populations in both developed and developing countries are not immune from the wrath inflicted by the forces of nature, disease and conflict. The mediating factor of world-wide awareness and perception of severity is related to the convergence of risk and exposure with vulnerability and resiliency (Stone<sup>29</sup>; Alexander<sup>30</sup>). Among these groups older populations, women and the poor are some of the most vulnerable.

### **Aging Populations**

The World Fact Book<sup>31</sup> projects that as of July 2007 the world's population numbered 6,602, 223,175 and that 7.5% [of this population] was at least 65 years old [or older]. In the next fifty years the percentage of older persons living worldwide is projected to almost triple from 7.5% to 21.8% (United Nations<sup>32</sup>). The developed countries of the world will be home to most of these aging populations (World Health Organization<sup>33</sup>) however, other regions of the world will be impacted as well. Older populations of Asia, Latin America and the Caribbean will more than double in size, and the countries of sub-Saharan Africa, will experience a 2.3% increase in older populations (Kaneda<sup>34</sup>).

Intra-nationally and internationally aging impacts the populations [of nations] unequally and is attributable to such factors as gender, culture, education, and socioeconomic status. In the United States older populations are increasing in number and diversity. As of 2003, 36 million people or 12% of the population were age 65 years or older (U.S. Census<sup>35</sup>). It is projected that between 2011 and 2030 older Americans will comprise at least 20% of the population (U.S. Census<sup>36</sup>). Per the most recent data available, a greater percentage of Black (54%) and White (59%) older persons are over the age of 65 than are Hispanic populations (49%) (Smith<sup>37</sup>). However, this dominance of white older Americans will dwindle in the next 30-50 years, as

more Hispanic and Black aged adults supplant a predominately white aged population (Hillier and Barrow<sup>38</sup>).

As of 2004 over one-quarter of adults over the age of 65 lived alone (Mjoseth<sup>39</sup>) women and older Black and Hispanic adults more likely to be living on means that fall at or near the poverty line (Smith<sup>40</sup>; US Census<sup>41</sup>). While living alone is of concern, there is greater risk associated with social isolation. This occurs with elderly individuals who never had children or have no surviving children and have “limited social contact [and] greater separation between generations... (Langer<sup>42</sup>)”

Attributable to advances in medicine, prevention and treatment of communicable diseases, improved standard of living and other factors the current health status of older adults are very different than those populations living 50 or more years ago. While the vast majority of older populations perceive themselves as healthy and capable of living with chronic ailments, disability increasingly affects their ability to be independently mobile, detect sensory stimuli, and enjoy life events (Hillier & Barrow<sup>43</sup>). Increased morbidity is not directly linked to older age, but as individuals and populations age the stress and strain of life takes its toll and chronic diseases such as arthritis, hypertension, cancer and diabetes emerge not only as sole illnesses but often experienced as co-morbidities (Hillier & Barrow<sup>44</sup>).

Education is a key indicator for identifying access to better paying employment, higher socio-economic status, a higher standard of living and better overall health. Racial disparities also exist. As of 2003, only 36% of Hispanics nationwide had completed high school as compared to 52% of Blacks and 76% of whites, and only 4% of Hispanics had earned a four year college degree (Chartbook 2004<sup>45</sup> ; Mjoseth<sup>46</sup>). Older Black and Hispanic Americans currently face later life with a plethora of social and health constraints influenced by limited access to health and primary care, education and other resources.

Internationally, aging populations face comparable issues. Chamie<sup>47</sup> noted that in developing nations many young and middle-aged adults are migrating from their native countries, seeking the greater wealth and possibilities associated with work and residency in the wealthier nations. As these individuals leave their native lands older aged relatives often migrate as well, thereby impacting the numbers and needs of elderly in Europe and the United States.

Elderly populations remaining in developing countries are beginning to experience issues similar to those faced by their peers in western nations. The reliance on family members

especially daughters to care for older relatives is being affected by decreasing fertility rates, increasing numbers of young adult women joining the workforce, increasing numbers of older adults who were divorced or never married, and the immigration of youth to large cities. In traditional societies the loss of daughters filial or by marriage, causes a decrease in the potential care givers available for older relatives (Kaneda<sup>46</sup>). It is predicted that the convergence of the aging of youth dominated nations, decreased productivity from retirement of older workers, increasing proportions of disabled individuals and fewer existing resources factors will impact social and health systems. With this formula significant problems for societies world-wide will emerge (Kaneda<sup>48</sup>; Chamie<sup>48</sup>).

As evidenced by this review, many older U.S. citizens as well as elders in other countries, face later life stages challenged by potentially meager incomes, limited access to family support, failing health, and disease co-morbidities. For many of the world's older populations the stage of older life yields numerous joys, achieved through work, family, and community endeavors. But the balance between health and fragility is tenuous and the addition of new stressors, especially in the occurrence of a disaster, can tip the balance.

### **Disasters and the Vulnerability of Older Populations**

Extensive literature is available reporting the results of research into the physiological, cognitive and social vulnerability of older populations and the ability of these populations to withstand and recover from the onslaught of natural and man-made disasters. This literature is global in nature and produces a recurring theme of vulnerability in older populations. Age in and of itself is not a predictor of vulnerability or resilience, as Hillier & Barrow<sup>50</sup> noted that genetic programming and behavioral choices are major determinants in the ability to withstand and resist common causes of illness and death. Chung, Werrett, Easthope & Farmer<sup>51</sup> suggested that elderly populations may not be that different from younger populations in the coping strategies used in disaster situations, but rather than age the type of disaster and the proximity to the disaster might have greater impact on different age groups. The literature on the vulnerability of elderly to disastrous events follows two complementary and parallel viewpoints: special needs/functional abilities and social ecology.

### **Special Needs/ Functional Ability.**

Kailes & Enders<sup>52</sup> noted that elders are often classified as “special needs populations”, a CDC (Center for Disease Control and Prevention) classification that includes people with

disabilities, people with serious mental illness, minority groups, non-English speakers, and children. Using this classification almost, 50% of the American population qualifies as “special needs”. Kailes & Enders<sup>53</sup> indicated that this category is far too broad and advocated for a function-based approach which classifies populations based on need for assistance with communication, medical conditions, functional independence, need for supervision and for transportation.

The inability to communicate can result in older populations experiencing increased agitation, confusion, and increased psychological distress (Aldrich & Benson<sup>54</sup>). Mobility declines cause impaired balance, decreased motor strength, limitations with activities of daily living and need for assistance with transportation (Fernandez et al. <sup>55</sup>). Sensory limitations can result in decreased night and peripheral vision, decreased reception and response to verbal commands and inability to detect spoiled foods (Fernandez et al.<sup>56</sup>). Medical conditions often require periodic primary care supervision and use of numerous medications. There is a reciprocal relationship between functional abilities and medical conditions. Changes and alteration in one often affects the other.

Compliance with a disaster warning is dependent on the concomitant existence of physical, psychological, financial and social conditions that affect the likelihood of the warning being received, understood and recommendations for safety, prevention and recovery followed. (Perry & Lindell<sup>57</sup>) Factors such as fear of personal or family safety, existence of specific health problems of cardiovascular disease, foot/leg problems and diabetes, race, willingness to follow advice and trust of information acquired from television reporters and governmental officials are factors that influence the decision of older populations to evacuate their homes (Rosenkoetter et al.<sup>58</sup>).

This review provides insight as to the increased vulnerability of older populations and their ability to prepare, cope and recover from disaster events. The proximity to disasters and the degree of personal loss and community destruction can exacerbate existing conditions or produce new physical and psychological declines and morbidity. (Phifer, Kaniasty & Norris<sup>59</sup>; Dewarja & Kawamura<sup>60</sup>; Phifer & Norris<sup>61</sup>; Ticehurst, Webster, Carr & Lewin<sup>62</sup> ) The lack of available, accessible, and affordable sources of primary and emergent care, pharmacies, and public health surveillance can alter, hide and delay diagnosis and recovery from both man-made and natural disasters (Salerno & Nagy<sup>63</sup>).



It is clear that anticipated changes in physical and psychological function, as well as morbidity place older populations at heightened risk for illness and death when exposed to natural and man-made disasters. However, they alone do not explain the whole picture of vulnerability. Factors situated in social contexts are also contributors to vulnerability in these populations.

### **Social Ecology**

It is widely accepted that the higher the socio-economic status of older individuals and communities the greater is their capability of withstanding and recovering from life's challenges (Bolin & Klenow<sup>64</sup>). Attributing vulnerability solely to poverty is insufficient as there are a myriad of social factors that increase the risk of older populations.

Vulnerability is increased in the absence of supportive social relationships. Klinenberg<sup>65</sup> reported that elderly who live alone are not as vulnerable as those elderly who live alone and are isolated, estranged or otherwise distanced from family, lack social support and have limited access to community resources. The need to remain and maintain independence and not infringe on family is a choice that distances these populations from the very resources that could help sustain them during periods of increased risk (Thomas & Soliman<sup>66</sup>).

Vulnerability is increased by environmental and housing factors. Living in high density-substandard housing or mobile homes located in high crime, high un-employment areas or geographical locations prone to flooding and other forms of natural hazards increase the likelihood of morbidity and mortality of older populations (Klinenberg<sup>67</sup>; Morrow<sup>68</sup>).

Vulnerability is increased by fixed and limited income. The lack of new and additional financial resources weighs heavily on the ability of elderly households to garner the resources necessary for adequate emergency preparation, response and recovery (Morrow<sup>69</sup>). Fernandez et al.<sup>70</sup> noted that elderly populations suffer greater financial loss following a disaster as they are often misinformed, fearful of receiving aide and are uncertain as to the impact of this assistance on welfare, social security, disability or other assistance. Unethical and fraudulent contractors and other criminals often victimize older populations (Aldrich & Benson<sup>70</sup>) and older populations often lack awareness of existing resources, are unaccustomed to accessing resources and refuse to use available resources (Langer<sup>71</sup>).

Vulnerability is increased by previous life experience. The elderly of today are the children of the Great Depression. The values and beliefs associated with this era are deeply

woven into the existence of this sub-population. The stigma of receiving state or federal assistance accentuates the vulnerability of older populations (Bolin & Klenow<sup>72</sup>; Weiler<sup>73</sup>, Fernandez et al.<sup>74</sup>). Hooper & Fearn-Banks<sup>75</sup> added that the current methods used by many organizations alerting elderly to victim aide and recovery assistance is based on a message of “call us and we will respond” is a message that is largely incompatible with the motivating forces of most elderly populations.

There is carryover to elderly living in developing countries. Kohn et al.<sup>76</sup> reported that elderly in these countries have a comparable risk for developing PTSD as their counterparts in developed countries, and that the loss of life and threat to physical integrity is a greater motivator for following pre-occurrence warnings than the type of impending disaster or its affects. They added that elderly in developing countries tended to question less, complained less often and received fewer resources than younger populations.

It is evident that in this discussion, the social ecology of vulnerable older populations complements and augments those of caused by declines in functional abilities. The picture of vulnerable older populations preparing for, surviving and recovering from disasters is complex. Considering the factors that contribute to this vulnerability yields a web of factors versus a linear relationship. Lest we think that the elderly are a helpless lot, many members of older populations are capable of weathering the trials of disaster events.

### **Disasters and the Resiliency of Older Populations**

The elderly achieve advanced age because they are survivors who have withstood the trials of life, and have survived illness where others less capable of thwarting these challenges have succumbed (Hillier & Barrow<sup>77</sup>). The factors that contributed to the vulnerability of older populations can contribute to the resiliency of older populations world-wide ( Ibanez, Buck, Khatchikian & Norris<sup>78</sup>).

Neighborhoods that support and promote social interaction by having public areas for congregation as in parks, churches, air-conditioned buildings are better able to assist the elderly in coping with the trauma of disasters. While a community may be impoverished, an active economy that sustains commerce and causes people to interact contributes to the health of the elderly as it nurtures social interaction, friendships, and sanctuary within comfortable contexts (Klinenberg<sup>79</sup>; Langer<sup>80</sup>). Replenished community infrastructure with available, accessible and culturally appropriate health care providers help older populations recover (Chung<sup>81</sup>) as

providers can assist the elders in finding meaning in current events, allow for the emergence of empathy, and nurture hope and positive outlook of the future (Lamet & Dyer<sup>82</sup>).

### **Convergence of Aging Populations and Disasters**

The significance of this literature for promoting the health of older populations lies not only in the understanding of the potential factors, behaviors and values that place older populations at risk for morbidity and mortality, but also for survival and recovery in disaster events. It is clear that there is continuity in those factors that contribute to older population's survivability, coping and restoration of their lives, those of their families and of their communities. It is also clear that the complexity of these relationships informs the research, practice and preparation of practitioners.

Emerging from this web of vulnerability and resilience is contribution of numerous disciplines that need to be involved with older populations living in and surviving disastrous events. It is critical that the professional health disciplines create meaningful dialogue that recognizes the need for defining wide scopes of professional practice that complement one another to meet the needs of older persons. In the next section, this paper presents support for competency based interdisciplinary emergency preparedness education and preparation for health and social welfare professions.

Impact studies on the effect of a hurricane on the health, and the resulting increased vulnerability for the mental health and loss of social support of elders temporarily displaced and living in new public housing points to the need for multiple disciplines to be educated and drilled in emergency preparedness. In this study increased vulnerability was attributed to inadequate training of public housing staff who were not equipped to meet the cultural, social, psychological and physiological needs of these populations (Sanders, Bowie & Bowie<sup>83</sup>). The literature on evacuation and sheltering of functionally challenged populations following a disaster warns that future construction of shelters must be more amenable to the needs of visually, hearing, and otherwise physically and emotionally challenged populations during disaster events. Christensen, Blair & Holt<sup>84</sup> stressed that disaster planners must build shelters that are compliant with the Americans with Disability Act and that this requires consultation with architects, community planners, and engineers. Related literature addresses the needs of elderly populations who,

following the loss of medications and medical equipment, are hindered in obtaining replacement medications, income, food, and medical equipment.

When should health and helping professions practitioners first begin their education, skill development and dialogue with each other? While the most common approach has been to retool working professionals, an additional approach is to begin the education and skill training in preparatory programs. This approach indicates that education be competency based and threaded throughout all educational levels, bachelors to doctoral education. The following section provides the evidence and argument for this educational approach.

### **Interdisciplinary Education and Assuring the Health of Older Populations**

The American Public Health Association (APHA) has recommended a multi-pronged approach to address the needs of emergency preparedness for older Americans and for older disabled Americans (Krisberg<sup>86</sup>; Krisberg<sup>87</sup>). Participation in preparedness planning and response is best represented with input from diverse organizations including public housing, religious organizations, and neighborhood councils (Krisberg<sup>88</sup>) and this participation is best well before a disaster occurs (Aldrich & Benson<sup>89</sup>).

Torgusen & Kosberg<sup>90</sup> noted social workers collaborating with other health care workers can assist the public in preparing for emergency situations and that to engage in this practice social work educators must educate their students on the basics of disaster planning and interventions for elderly and all populations. Among the recommendations for disabled populations made by Rooney & White<sup>91</sup> is the need for networking in emergency preparedness, establishment of national consumer standards for evacuation technology, and for creating education and training curriculums to help with research and preparation of health and helping professional practitioners.

Fox & Rowland<sup>92</sup> noted that many first responders and other professionals are inadequately prepared for caring for disabled populations during an emergency and called for new approaches for educational preparation. Malilay<sup>93</sup> recommended that the mobilization of resources to assess the needs of populations in the impact and post-impact stages of a disaster requires a multidisciplinary approach calling upon a range of disciplines including public utilities, housing, and public health. Fernandez et al.<sup>94</sup> noted the need for quantitative and qualitative studies to investigate the effectiveness of disaster management strategies for all populations and

specifically for people aged 65 or older, who have physical, emotional, psychological or economic factors that can inhibit or prohibit them from caring for themselves “frail elderly”. Rowland et al.<sup>95</sup> called for specific and standardized emergency preparedness training programs.

It is clear that there are numerous health care and other disciplines that are currently involved in disaster services for the elderly, it is also clear that there are other disciplines that need to be included in these deliberations. Two key points are significant to this discussion, with the first is that geriatric care due to its complexity of inter-related physical, psychological and social factors is best designed from an interdisciplinary format (Johnson et al.<sup>98</sup>). The second key point is that in-order to develop and implement a comprehensive disaster plan and services for the elderly requires that an appropriately educated and trained interdisciplinary workforce is a necessity (Johnson et al.<sup>96</sup>; Aldrich & Benson<sup>97</sup>).

Interdisciplinary education and practice is meant to be augmentative, complementary and collaborative (Clark<sup>98</sup>; Gillespie, Fitz & Gordan<sup>99</sup>). It prepares practitioners to value the work of teams along a continuum from intra-disciplinary (single discipline) teams to multi-disciplinary (several disciplines working on same issue but with little interaction) teams to interdisciplinary (multiple disciplines focused on negotiated issues and working with each other) teams and trans-disciplinary (multiple disciplines that can perform skills of other disciplines) teams. Interdisciplinary education and practice are based on the values and skills of collaboration, reflective practice, clear communication, shared goals, respect, and trust Gillespie et al.<sup>100</sup>; Clark<sup>101</sup>). Lindeke & Sieckert<sup>102</sup> commented that interdisciplinary collaboration results in creative and practical solutions to care that might otherwise not been perceived if only one discipline were to try and devise a solution on their own.

These are the very attitudes, values and skills needed to work in emergency planning and post-disaster situations. However, these skills must be learned, nurtured, tested and developed. Cloonan, Davis & Burnett<sup>103</sup>, quoted the *Advisory Panel on Health Education and Managed Care for the Pew Health Professions Commissions*, stressed the need for educational preparation to provide opportunity for development of teamwork knowledge and skills and for interdisciplinary education. Harsburgh, Lamdin, & Williamson<sup>104</sup>, and Sternas et al.<sup>105</sup> noted that these initiatives provide the knowledge, skills and values that are needed for contemporary practice.

### **Interdisciplinary Education Programs to Address Elder Needs in Disasters**

The combination of care for the aging during times of disaster provides fertile ground for creation of standardized interdisciplinary programs given the recognition that multiple disciplines must effectively collaborate to achieve the desired outcomes. The need to standardize educational programs for targeted professional groups is recognized as essential for real world performance, specifically, disciplines that must work together require knowledge of the various scopes of practice and specific roles in a disaster.

Prior to designing interdisciplinary educational plans, there should be consensus within the disciplines as to what emergency preparedness competencies constitute desired practice. Understanding each involved discipline's role and competencies allows assessment of overlaps, gaps and conflicts that may be included in educational planning. These types of issues that are likely to occur in real world scenarios may then guide interdisciplinary development of knowledge, skills and abilities. Consideration must be given to both classroom and community based opportunities for emergency preparedness learning.

### **Sources of Professional Competencies in Health Professions Education**

Traditional education models were built around learning objectives while more contemporary approaches use competencies to organize and communicate performance expectations in health professions education. Additionally, Weiner<sup>106</sup> referenced the accountability movement in higher education that calls for evidence showing a standard set of criteria has been met. A competency may be simply defined as “what individuals can do with what they know.” The implicit assumption in this competency definition is that it isn't enough to have cognitive knowledge alone; but rather that knowledge along with the related skills and attitudes must be transferred into observable behavior to achieve the learning goals.

There are three major sources of competencies and/or specification of content recommended for inclusion in health professions education programs. First, professional organizations and groups regularly evaluate discipline practice and issue recommendations for competencies and associated content for educational programs to address the recommendations. Several significant groups have promulgated standards for emergency preparedness competencies for nurses and other health professionals. Two examples are Bioterrorism & emergency readiness: Competencies for all public health workers (Columbia University School

of Nursing, Centers for Disease Control and Prevention, & Association of Teachers of Preventive Medicine<sup>107</sup>) and Educational competencies for registered nurses responding to mass casualty incidents (International Nursing Coalition for Mass Casualty Education (INCMCE.)<sup>108</sup>).

Second, the majority of health professions education requires accreditation of the educational programs by designated accreditation organizations. As an example for nursing in the United States there are two such organizations, the National League for Nursing Accrediting Commission (NLNAC) and the Commission on Collegiate Nursing Education (CCNE). While there is some overlap, NLNAC accredits most associate degree nursing programs and some baccalaureate level programs while the CCNE accredits baccalaureate and masters – and in the near future, doctor of nursing practice programs. Many other health disciplines, such as Physical Therapy, have one accrediting body (Council on Accreditation of Physical Therapy Education or CAPTE). A revision of the essential standards for baccalaureate nursing education is underway and soon emergency preparedness content will be incorporated into the program accreditation standards. Third, regulatory bodies at the state and sometimes national level may issue requirements for competencies and/or content that must be included in designated education programs. The United States national nursing licensure examination (NCLEX) administered through the National Council of State Boards of Nursing has announced plans to include emergency preparedness content in the examination in the near future.

One of the significant questions at hand is how health professional competencies in the emergency preparedness domain will be addressed. As one example, in Connecticut the decision to date has been to allow the professional association of nursing school administrators to work collaboratively with the Department of Public Health to develop consensus around and implement emergency preparedness competencies for several levels of nursing, with emphasis on entry level nurses. The other option was for the Department of Public Health to issue regulations regarding these competencies and required content. A major benefit of the professional consensus approach is likely to be higher levels of commitment to the goals while the major potential disadvantage is inconsistent compliance. A major evaluation effort is currently underway to document the success and experience of this project for nursing. The current project is also exploring emergency preparedness competencies for physical therapists and it is expected that the work will continue on with other health professions educators.

### **Competency-based Learning Plans**

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Once a set of competencies has been developed and approved they serve as the organizing focus of educational planning including determination of appropriate evaluation methods for each competency. This focus assures that content is relevant to the competencies is a strategy to mitigate against inclusion of superfluous information in what are always “overstuffed” curricula. A competency learning progression chart (CLPC) may be developed to include: the competencies (reflecting knowledge, skills, and attitudes), an outline of essential content, key learning activities, and the evaluation method(s). This approach provides a comprehensive yet condensed method of communicating the learning expectations and desired levels of performance.

The development and approval of a set of competencies forces meaningful dialogue and eventual consensus around what exactly the learning should produce. While not without its challenges related to individual interests and priorities, the development of competencies crystallizes and clearly defines educational outcomes. For a topic like emergency preparedness, this is a critical achievement to clarifying roles and expectations that will form the foundation of an effective emergency response.

As noted earlier, the interdisciplinary nature of effective emergency responses is highly congruent with development of interdisciplinary education in this area. Several steps are important to consider when approaching this task:

1. Identification of the disciplines to be involved
2. Review of the discipline specific competencies related to emergency preparedness
3. Delineation of content common to the involved disciplines along with important discipline specific content
4. Planning for appropriate and feasible interdisciplinary forum to deliver the common content along with plans for discipline-specific information to be handled
5. Design of learning and evaluation methods that will reflect the desired competencies – for example, a well designed table top exercise of a disaster scenario can reveal competency, communication and collaboration issues.

### **Evaluation of Interdisciplinary Education**

Before educational outcomes defined as achievement of the competencies may be considered, there must be a determination of whether and to what extent the new or revised



educational content has actually been implemented. This is referred to as process or implementation evaluation by Rossi, Freeman & Lipsey<sup>109</sup>. An implementation evaluation is also useful to identify elements of the educational plan or content that is more or less easy to introduce. Similarly, the feasibility and utility of the proposed evaluation methods may also be assessed.

After it has been determined that the new or revised competencies and content have been delivered, it is possible to move onto assessing whether and to what degree the competencies have been achieved by students. In academic settings, class participation in lecture and discussion, written assignments, and written examinations remain the most common evaluation methods. However, in the area of emergency preparedness an emphasis on interactive practice and evaluation activities has evolved to better reflect competency rather than knowledge assessment only. Table top exercises that are role plays of disaster scenarios provide the change to use knowledge and skills within an interdisciplinary setting and often include peer evaluations and feedback for performance improvement. This is an area for further development and perhaps standardization as health disciplines clearly articulate their unique and overlapping responsibilities in a disaster.

In summary, the development of discipline-specific emergency preparedness competencies is the first step in developing standardized, interdisciplinary educational programs to prepare health professions students for their roles in disasters with particular consideration of the needs of aging populations who are more at risk. Building on content related to the needs of older persons and emergency response, interdisciplinary teams of learners can refine role expectations and practice communication and collaboration to enhance readiness for disaster management.

### **Conclusion**

The need to have a health care and social services work force trained in emergency preparedness and to care for a growing and diverse global aging populations is an opportunity for educators, practitioners and policy makers world-wide to become partners in designing a health care system that is capable of delivering competent compassionate health care and social services in times of disaster. Starting at the preparatory (undergraduate) level with competency based curricula assures that at the beginning of a professional's career s/he enters the work force with essential knowledge, skills and values. This foundational knowledge enables new professionals

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the ability to implement care and community resources grounded in a common language and with a repertoire of skills shared by their colleagues in other disciplines. At the graduate levels of masters and doctoral education, the use of competency based preparation provides the opportunity for exploring innovative program design, evaluation research and evidenced based practice across disciplines. Defining and building team relationships during the education process is likely to promote better team performance in real world situations. For healthcare and social policy makers such a curricular approach provides evidence that health care and social services are congruent and coherent in design and scope thus mitigating the vulnerability of older population while promoting their resiliency.

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