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Short Communication

Quarantine and the U.S. military response to the Ebola crisis: soldier health and attitudes☆

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Much has been written about the devastating toll of the 2014 Ebola virus disease outbreak on communities in West Africa, and methods for reducing the spread of the disease, including the use of quarantine.[1] Although there is agreement about the need to isolate symptomatic individuals exposed to the virus to prevent the spread of the disease,[2] there is less agreement about how to manage those individuals who may have been exposed but are asymptomatic.[3]

During the 2014 outbreak, news reports documented health worker frustration, inconsistent state regulations, and difficult quarantine conditions.[4] There were high-profile news reports of Kaci Hicox,[5] a nurse who returned to the United States from West Africa and faced quarantine at her home despite being asymptomatic.[4,5] Her refusal to follow the quarantine caused a media uproar. Simultaneously, there were calls for quarantine to be abolished for asymptomatic health workers, in part, because quarantine was thought to discourage medical professionals from volunteering to deploy to affected areas.[3]

In the midst of the controversy and changing recommendations from the Centers for Disease Control,[1] the U.S. military deployed more than 3000 service members to provide logistical support in West Africa as part of Operation United Assistance.[6] Managing the home return of so many service members in the context of nationwide anxiety about Ebola was a complex policy issue complicated by uncertainty regarding the specific duties service members would be conducting, the potential for 'mission creep' once on the ground in West Africa, and the associated risk of potential exposure to people infected with Ebola. Decision-makers considered that quarantine would provide an opportunity to monitor symptoms of common non-Ebola diseases such as traveler's diarrhea or respiratory disease that may mirror early Ebola symptoms. It was thought that an established quarantine system would reduce community anxiety given that common and low-risk diseases would take on heightened importance and cause significant stress in the community because service members were returning from an Ebola 'hot zone.' In light of these considerations, the decision was made to have returning service members enter a 21-day quarantine period in controlled monitoring areas (CMAs). The military used the term CMA instead of quarantine; we use the terms interchangeably in this article.

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The CMAs were isolated areas with controlled access on U.S. military bases. Service members were restricted to these areas and provided basic necessities, even recreational and educational opportunities. Direct contact with others was limited. CMA staff remained behind designated lines to maintain appropriate separation, and personal protective equipment was used when closer contact was required. Service members had to monitor their temperature twice a day. The rest of the time, they either had military-related classes or were free to schedule their own activities. CMA conditions varied by location and as a function of the direction provided by the local senior leaders.

While studies describe the experience of providing medical support during an infectious disease outbreak, few studies describe the experience of quarantine.[7] Thus, the goal of the present study was to document the mental health and attitudes of soldiers in quarantine. Given that previous studies of health care workers responding to outbreaks have identified concerns regarding social isolation and family,[8] the present study also examined the role of family in adjusting to quarantine. In addition, previous studies have noted the importance of leadership for health care workers responding to outbreaks.[7,8] Thus, the present study assessed the relationship between health-promoting leadership behaviors and soldier adjustment to quarantine.

U.S. soldiers from four different quarantine cohorts provided their informed consent (75.9%, N = 501) and completed anonymous surveys during the last three days of quarantine. The study was approved by the Institutional Review Board at the Walter Reed Army Institute of Research. Soldiers reported few mental health problems: 2.4% scored above cut-off for post-traumatic stress disorder (PTSD), 0.6% scored above cut-off for depression, and 1.0% scored above cut-off for anxiety. Only 3.2% of participants scored above cut-off on any one of the three measures. In contrast, 29.8% of participants reported sleep problems. Attitudes regarding quarantine, preventive medicine practice, and health-promoting leadership behaviors are presented in Table 1.

Regression analyses indicated that, adjusting for rank, perception of family support was not associated with PTSD, depression, or anxiety symptoms but was associated with fewer insomnia symptoms ($b = -0.91$, $SE = 0.2$, $P < .001$), less functional impairment ($b = -0.23$, $SE = 0.11$, $P = .04$), and more positive attitudes toward the quarantine ($b = 4.68$, $SE = 0.26$, $P < .001$) and the preventive medicine practices enacted during the quarantine ($b = 0.66$, $SE = 0.09$, $P < .001$).

Table 1 – Attitudes toward quarantine and health-promoting leadership behaviors.

	No. (%)
Attitudes toward quarantine	
'The 21-day controlled monitoring period …'	
Will reduce anxiety in our communities	351/489 (71.8)
Is understandable	310/488 (63.5)
Will help keep our families safe	264/489 (54.0)
Will help keep our communities safe	256/488 (52.5)
Will help me transition home more easily	214/488 (43.9)
Is a good idea	209/489 (42.7)
Is a waste of time	146/486 (30.0)
Should be a part of every deployment	96/488 (19.7)
I used my time wisely during the 21-day controlled monitoring	281/489 (57.5)
I would not want to deploy on a mission like this again because of the 21-day controlled monitoring	115/489 (23.5)
Taking our temperature twice a day makes sense to me	344/489 (70.3)
Taking our temperature twice a day is a waste of time	75/489 (15.3)
Preventive medicine measures recommended for this deployment are not practical	61/489 (12.5)
Health-promoting leadership behaviors	
'Rate how often your leaders …'	
Emphasize taking care of yourself physically	360/486 (74.1)
Emphasize maintaining professional standards	362/490 (73.9)
Place command emphasis on importance of prev. med. measures	325/489 (66.5)
Emphasize taking care of yourself mentally	319/488 (65.4)
Lead by example by using prev. med. measures themselves	318/489 (65.0)
Encourage Soldiers to remind each other to use preventive medicine measures	301/490 (61.4)
Emphasize the importance of the humanitarian mission	286/488 (58.6)
Encourage you to get enough sleep	285/488 (58.4)
Remind you to take a break/recharge	285/488 (58.4)
Give you positive feedback about your accomplishments	266/488 (54.5)
Reduce tension in the team/unit when emotions run high	266/488 (54.5)
Give you specific guidance on how to improve	259/489 (53.0)
Emphasize maintaining compassion	253/490 (51.6)

Note. Frequencies for attitudes toward quarantine are reported for those who 'agree' or 'strongly agree.' Frequencies for Health-Promoting Leadership behaviors are reported for those responding 'often' or 'always.' Denominators vary because of missing values.