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13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the curriculum. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.					
14. ABSTRACT The Rise of Great Power Competition and its anticipated showdown between the People's Republic of China and the United States of America has earned significant deliberation and thought by US operators and planners alike. Of this hypothetical conflict's medical considerations, securing the safe passage of battlefield casualties from the point of injury to complex surgical intervention and finally on to convalescence and therapy requires implementing a redesigned Joint Trauma System (JTS). Today, a high level of uncertainty exists in achieving and maintaining air superiority over the INDOPACOM area of responsibility (AoR) to execute the safe medevac of combatant casualties to CONUS hospitals. By examining INDOPACOM's key operational factors of space, time, and medical force distribution, the challenge of providing effective, high-end medical care to casualties suffered deep within the AoR is addressed by the development of an in-theater, Role IV, military-specific combined joint medical center strategically located in the northern territory of mainland Australia.					
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***Combined Joint Military Healthcare:
Building INDOPACOM's Next Medical Hub Down Under***

The return of Great Power Competition in the 2020s and the pivot of global DIME gravity to INDOPACOM portends an impending conflict between the increasingly aggressive People's Republic of China (PRC) and the United States of America. As the PRC aspires to reshape the world to fit its vision of an autocratic, consolidated, party-dominated model, its rapid advancement and development of military capabilities directly challenge and may exceed those available to an American-led coalition. Anticipating this conflict between two global heavyweights, especially over the future of Taiwan, requires significant recollection of past lessons learned and the implementation of flexible solutions to address the planning of the operational medical annex. Of all medical considerations, securing the safe passage of battlefield casualties from the point of injury to complex surgical intervention and finally on to convalescence and therapy requires implementing a redesigned Joint Trauma System (JTS) within this hypothetical conflict zone. Today, a high level of uncertainty exists in achieving and maintaining air superiority over the INDOPACOM area of responsibility (AoR). This uncertainty raises the prospect of vastly prolonged critical care at or near the point of injury and prohibits the safe transfer of battlefield casualties. During the 2022 U.S. Senate Armed Services Committee (SASC) hearing to receive testimony on the posture of United States INDO-PACIFIC Command and United States Forces Korea, Senator Tammy Duckworth (D-IL) acknowledged these problems, stating: "In the event of a conflict in INDOPACOM, we will need to think outside the box established over the last twenty years in order to effectively care for our wounded."¹ Admiral John C. Aquilino, Commander of INDOPACOM, echoed the Senator's sentiment by stating, "[in] this theater and this operation, we will not be able to meet the golden hour."² By

¹ The Union Herald, "Senate Armed Services Committee Hearing on Indo-Pacific Command and U.S. Forces Korea," [www.youtube.com](https://www.youtube.com/watch?v=VaiQtdRmt20), March 22, 2022, <https://www.youtube.com/watch?v=VaiQtdRmt20>.

² The Union Herald, "Senate Armed Services Committee Hearing on Indo-Pacific Command and U.S. Forces Korea," [www.youtube.com](https://www.youtube.com/watch?v=VaiQtdRmt20), March 22, 2022, <https://www.youtube.com/watch?v=VaiQtdRmt20>.

examining INDOPACOM's key operational factors of space, time, and medical force distribution, the challenge of providing effective, high-end medical care to casualties suffered deep within the AoR is addressed by the development of an in-theater, Role IV, military-specific combined joint medical center strategically located in the northern territory of mainland Australia.

Military JTS doctrine supports establishing an integrated health services support system to triage, treat, evacuate, and return the casualty to duty in the most time-efficient manner.³ The system begins with the casualty on the battlefield and ends in hospitals located within the continental United States (CONUS) and other safe havens outside the continental United States (OCONUS). In a stepwise fashion, medical care begins with a first responder (self-aid/buddy aid and combat lifesaver). Then care rapidly progresses through tactical combat casualty care (TCCC) in the prehospital setting on the way to advanced trauma management and stabilization surgery via critical care transport to a higher echelon where this more sophisticated treatment is available. The organization of the health services support system relies on a progressive chain of higher acuity levels, each increasing in capability, specialization, and supply. As a rule of standardization, the more critical and subspecialized medicine is located furthest away from the conflict zone to secure its continued availability.⁴

What is a Role IV hospital?

According to the NATO Logistics handbook, Role/Echelon IV medical support provides definitive care for patients for whom the treatment required is more prolonged than the theatre

³ Lorne H. Blackbourne et al., "Military Medical Revolution: Military Trauma System," *Journal of Trauma and Acute Care Surgery* 73, no. 6 (December 1, 2012): S388, <https://doi.org/10.1097/TA.0b013e31827548df>.

⁴ *Emergency War Surgery, Fifth United States Revision*. Borden Institute US Army Medical Department Center and School Health Readiness Center of Excellence; 2018.

evacuation policy or for whom the capabilities usually found at Role/Echelon III are inadequate. Role IVs comprises specialist surgical and medical procedures, reconstruction, rehabilitation, and convalescence. This level of care is typically highly specialized, time-consuming, and requires significant support infrastructure. In unique circumstances, however, this level of care may be established in a theater of operations.⁵

Walter Reed National Military Medical Center (Bethesda, MD), Naval Medical Center Portsmouth (Portsmouth, VA), Naval Medical Center San Diego (CA), and Brooke Army Medical Center on Joint Base San Antonio (TX) are designated examples of high-level Role IV hospitals within the continental United States. On the other hand, Landstuhl Regional Medical Center (LRMC) is the only foreign-based OCONUS Role IV Theater Hospital whose mission provides an integrated health services support system for four combatant commands: EUCOM, CENTCOM, AFRICOM, and SOCOM. Furthermore, of the abovementioned MTFs, Brooke Army Medical Center is the only certified DoD burn center. Examination of the British experience in the Falklands and the 1987 USS *Stark* (FFG-31) incident indicates greater than thirty-three percent of all casualties in modern war at sea occur because of burns.⁶ With INDOPACOM being a predominately maritime theater, advanced in-theater burn treatment capability requires plenty of consideration. Therefore, this paper's argument sharpens focus on building an equivalent integrated health service support system located within INDOPACOM at an OCONUS Role IV Medical Center containing a certified DoD burn center.

⁵ NATO Logistics Handbook October 1997 Chapter 16: Medical Support Medical Operational Principles [online] Available at: [NATO Logistics Handbook: Chapter 16: Medical Support](#) [Accessed November 2022]

⁶ Kenneth Andrus, "Transform Navy Medical Operational Support," U.S. Naval Institute, October 1, 2021, <https://www.usni.org/magazines/proceedings/2021/october/transform-navy-medical-operational-support>.

INDOPACOM's Space

The INDOPACOM AoR is roughly fifty-two percent of the Earth's surface or one hundred million square miles of mostly open ocean. The continental United States is more than three million square miles. In comparison, Europe covers approximately twenty-one million square miles.⁷ The only comprehensive U.S. military treatment facilities (MTFs) in the far eastern reaches of the INDOPACOM AoR are three Naval Hospitals located at Guam, Okinawa, and Yokosuka, with a fourth joint U.S. Army/Air Force facility in Seoul, South Korea. Each location is limited in size, scope, and capability, falling to the Role III level with limited specialist diagnostic resources, specialist surgical and medical capabilities, preventive medicine, food inspection, dentistry, and operational stress management teams.⁸ Moreover, their present peacetime configurations contain no more than 100 inpatient beds.

Point to Point	Straight Line Distance in Miles (Km)
Weihai, China to Seoul	271 miles (436 Km)
Shanghai, China to Yokosuka	1,081 miles (1739.7 Km)
Wenzhou, China to Okinawa	468 miles (753 Km)
Mainland China to Guam	1,884 miles (3032 Km)

Figure 1: Distance of Chinese launch points to U.S. MTFs

These facilities' locations near to the Chinese mainland endanger them as easy soft targets for PRC's robust short, medium, and intermediate ballistic missile arsenal should a conflict over Taiwan or the South China Sea erupt.

⁷ Demystifying the Indo-Pacific Theater > Air University (AU) > Journal of Indo-Pacific Affairs Article Display, n.d

⁸ NATO Logistics Handbook October 1997 Chapter 16: Medical Support Medical Operational Principles [online] Available at: [NATO Logistics Handbook: Chapter 16: Medical Support](#) [Accessed November 2022]

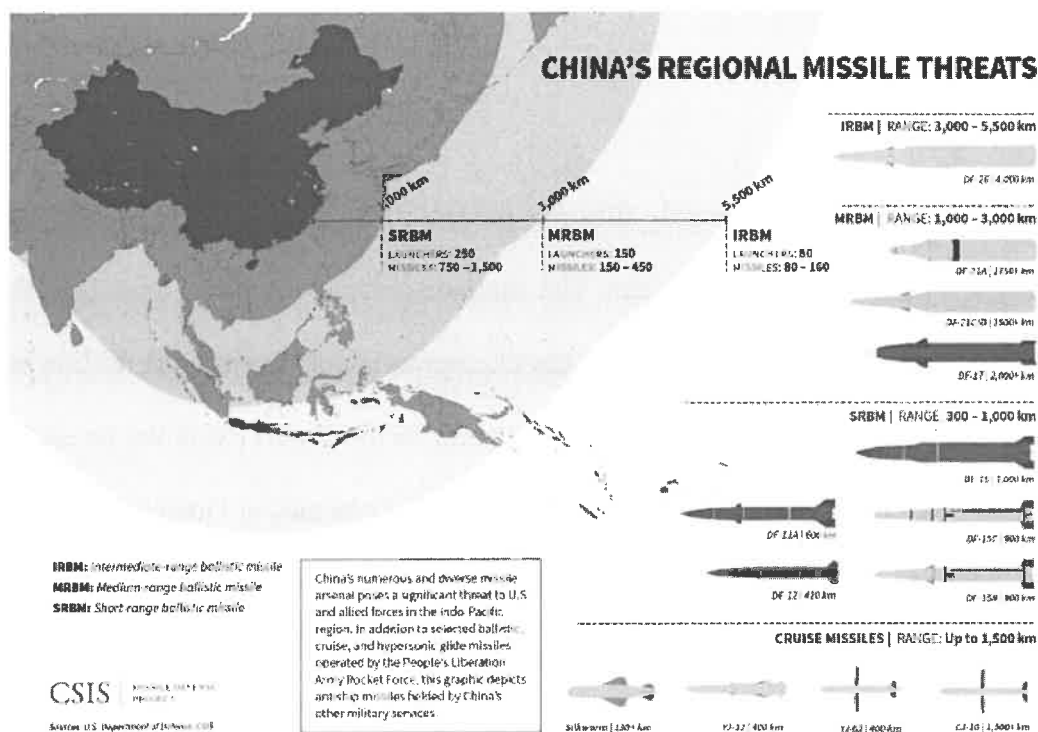


Figure 2: Chinese Regional Missile Threats: All MTFs in Chinese Medium to Intermediate Range. Source: [Missiles of China | Missile Threat \(csis.org\)](https://missilethreat.csis.org/)⁹

The largest hospital in the INDOPACOM AoR is Tripler Army Medical Center on the island of Oahu, Hawaii. It is the only federal tertiary care hospital in the Pacific Basin. Though designated a Role IV hospital with a surge capability of one thousand inpatient beds,¹⁰ it is not a DoD burn center.

The distance calculation is the primary challenge with staging Tripler as the receiving point to medical evacuation lines of communications ("MELOCs") from the INDOPACOM AoR. Oahu lies just over five thousand miles from Taiwan and over three thousand miles from Micronesia. Such distance presents challenging endurance flight, even with perfect weather and friendly skies. Fuel stops or in-flight refueling are required for the execution of these ultra-long-

⁹ "Missiles of China | Missile Threat." 2018. Missile Threat. 2018. <https://missilethreat.csis.org/country/china/>.

¹⁰ Tripler Army Medical Center > About Us (tricare.mil)

haul medevac flights. U.S. Air Force Critical Care Air Transport (CCAT) teams, using C-17 Globemaster IIIs, only have a range of 2,780 miles with a 157,000-pound payload. Considering this loadout can only carry thirty-six litters and fifty-four ambulatory patients and attendants,¹¹ it is an extremely costly flight from the far east to Hawaii.

Any conflict with the PRC will seriously imperil air superiority and thus the security of medical transport along the extensive INDOPACOM "MELOCs." Moreover, required fuel stops or in-flight refueling create even more critical soft and psychologically damaging targets for our adversary. Therefore, the discussion of building a new medical center on the precipice of the theater is a must.

Investment in Northern Australia as Key Strategic Ground

In 2011 U.S. President Barack Obama militarily reinforced his "Pivot to Asia" with the announcement of basing a Marine Rotational Force within the Australian Northern Territory Capital of Darwin.¹² Since then, the United States and Australia have begun an ambitious multibillion-dollar improvement of air bases in northern Australia to accommodate military aircraft and long-range maritime patrol drones. On the maritime side, wharves and refueling docks for visiting warships are developing in Darwin—all part of a \$150 billion upgrade of Australia's military.¹³ This investment into a location straddling both gateways to the South China Sea (SCS) and into the South Pacific is warranted by its highly strategic location.

¹¹ "C-17 Globemaster III". United States Air Force. 14 May 2018. Archived from the original on 8 August 2018. Retrieved 8 August 2018.

¹² Kenneth G Lieberthal, "The American Pivot to Asia," Brookings (Brookings, December 21, 2011), <https://www.brookings.edu/articles/the-american-pivot-to-asia/>.

¹³ Rob Taylor, "Darwin Evolves: U.S. Military Turns Australian Outpost into Asia Launchpad," WSJ, 2018, <https://www.wsj.com/articles/darwin-evolves-u-s-military-turns-australian-outpost-into-asia-launchpad-1527154203>.

Northern Australia lies well outside the firing range of the bulk of the PRC's regional ballistic missile threat. Therefore, a massive investment in combined military infrastructure has the potential for our forces to reach comfortably into both the potential SCS and South Pacific theaters. Additionally, Northern Australia is the ideal stepstone into the Western and Central Pacific Theaters, as well as the Eastern Indian Ocean. A 3000-mile perimeter from Northern Australia encompasses the easternmost edge of the South Pacific Islands, covers as far north as Taiwan, and traverses West past the straits of Malacca into the Bay of Bengal.

Point to Point	Distances in Miles (Km)
Taiwan to Darwin	2665 Miles (4289 Km)
Micronesia to Darwin	1980 Miles (3186 Km)
Solomon Islands to Darwin	1984 miles (3193 Km)
Taiwan to Oahu, HI	5268 miles (8478 Km)
Micronesia to Oahu, HI	3716 miles (5980 Km)
Solomon Islands to Oahu, HI	3659 miles (5888 Km)

Figure 3: Point to point distances considering Darwin vs. Oahu as a CCAT termini

This decreased distance to Darwin instead of the long haul to Hawaii eliminates the requirement of fuel stopovers and slowdowns for C-17s while opening the use of the smaller yet more versatile C-130s. As a result, this reorientation of the JTS will hasten the movement of critical patients to the required higher level of medical attention without flying halfway around the world.

Reorienting the reception of medical casualties into a hypothetical Role IV Medical Center on mainland Australia will integrate the facility as a receiving hospital aligned with the tactical and operational employment of the medical-specific Flight II Expeditionary Fast Transport ships such as the newly christened USNS Cody.¹⁴ Considering that these ships can

¹⁴ Heather Mongilio, "Navy Medicine Is Preparing for the Future of Expeditionary Combat," USNI News, February 23, 2023, <https://news.usni.org/2023/02/22/navy-medicine-is-preparing-for-the-future-of-expeditionary-combat>.

take 10-13 days to reach Hawaii and 17-21 days to reach San Diego,¹⁵ logic dictates their patrolling within the western portion of the theater to collect casualties and deposit them to more reasonably distanced medevac terminus enroute to higher levels of care.

Australian Military Medicine Now

According to the *Military Medical Corps Worldwide Almanac*, Australia designed its military medical forces around providing tactical and operational level treatment embedded with combat elements or in expeditionary roles. Role IV tertiary-level care is provided by the existing structure of the civilian Australian health system and its agreement to support its native Armed Forces.¹⁶ The Royal Darwin Hospital is the only tertiary referral center in the Northern Territory of Australia. It additionally serves as a National Critical Care and Trauma Response Centre for Northern and Western Australia and the Asia-Pacific Region, most recently responding to the 2002 terrorist bombings in Bali. It hosts a regional burn center and medical school with emergency medicine and trauma surgery training programs. Building a new standalone Australian Military Medical Center with support from the Royal Darwin Hospital or investing in a complement of military-convertible additions to this existing hospital will address many future military medicine requirements for the home nation and its coalition partners should Chinese belligerence boil over or to respond to cataclysmic climate-change driven natural disasters. The development of such a medical center further solidifies Darwin as a foundational strategic logistics, weapons, and basing depot.

¹⁵ BUMED, "NAVY MEDICINE FAST FACTS," February 1, 2023, <https://www.med.navy.mil/Portals/62/Documents/BUMED/FastFacts/Navy%20Medicine%20Fact%20Facts%20--%20February%202023.pdf?ver=hz04stLOskytUt3rPUK4uA%3D%3D>.

¹⁶ Sarah Sharkey, "Almanac: Australia, Commonwealth of • Military Medicine Worldwide," *military-medicine.com*, n.d., <https://military-medicine.com/almanac/16-australia-commonwealth-of.html>.

It remains to be seen if Australian Health System can handle the influx of wartime casualties in its present configuration. The U.S.'s National Disaster Medical System (NDMS) is presently in Phase I of its Pilot Program to assess the results and consequences of a massive influx of wartime casualties by exercising U.S. civilian trauma capacity in receiving 100,000 combatant casualties over a period of months.¹⁷ Literature on such Australian capability and capacity with an overwhelming trauma experience is marginal at best. Exporting the model for the Military-Civilian NDMS Interoperability Study may prove beneficial in assessing the fortitude of the Australian Health System in wartime and further highlight the need for a dedicated Role IV medical center in country.

Funding and Asymmetric Advantage of a Medical Coalition

Establishing a Role IV medical center in Australia presents a complex problem requiring significant planning and appropriations of funding, staffing, and time. For example, on January 21, 2022, the German Construction Administration, in partnership with the U.S. Army Corps of Engineers-Europe District, and the U.S. Defense Health Agency, contracted to build the LRMC replacement hospital at the Rhine Ordnance Barracks. The contract provisions \$969 million in funds for a modern, 985,000-square-foot hospital featuring nine operating rooms, 120 exam rooms, and 68 beds with a surge capacity of 25 additional beds.¹⁸ A similar project in Australia, albeit one with greater inpatient, trauma, and surge capability, could easily cost over \$1 billion,

¹⁷ Thomas D. Kirsch et al., "Opportunities to Strengthen the National Disaster Medical System: The Military-Civilian NDMS Interoperability Study," *Health Security* 20, no. 4 (2022): 339–47, <https://doi.org/10.1089/hs.2021.0221>.

¹⁸ US Army Corps of Engineers, Europe District, "Contract Awarded for Largest Overseas U.S. Military Hospital," Military Health System, January 21, 2022, <https://www.health.mil/News/Articles/2022/01/21/Contract-Awarded-for-Largest-Overseas-US-Military-Hospital>.

on top of appropriations required for support infrastructure including roads, security access points, and medevac ports.

Stepping away from the solely U.S.-run model of LRMC, an Australian Military Medical Center could reflect the creation of the first multilateral, combined joint medical center with level 1 trauma capability, an international burn center, and a wide variety of ancillary services equivalent to those seen at the highest acuity centers in the United States. The partnerships between the United States and Australia run deep, considering that both states are members of the Five Eyes, the AUKUS security pact, and the Quadrilateral Security Dialogue (QUAD), to name a few collaborative forums. SASC Chairman, Senator Jack Reed (D-RI), stated, “our comparative advantage over China is our network of allies and partners in the region and globally. Strengthening that network should be at the center of any strategy for the Indo-Pacific.”¹⁹ Cooperation within these networks to build this medical center may realize cost savings through the combined generosity of the contributing nations allied against increasing PRC belligerence. In addition, the apparent benefit of such a center will evoke the development of trauma care interoperability, leading to significantly improved patient outcomes for all allied combatant casualties in INDOPACOM.

The Advantage of Effective Military Medicine

The lessons of the Russo-Ukrainian War include significant learning points for planning the INDOPACOM operational medical annex. Effective military medicine, especially in the capability proposed by a downrange OCONUS Role IV medical center, enhances battlefield

¹⁹ The Union Herald, “Senate Armed Services Committee Hearing on Indo-Pacific Command and U.S. Forces Korea,” [www.youtube.com](https://www.youtube.com/watch?v=VaiQtdRmt20), March 22, 2022, <https://www.youtube.com/watch?v=VaiQtdRmt20>.

outcomes for four reasons.²⁰ First, having better medical capability and training saves more lives. Not only does it ensure a higher level of readiness at the onset of the conflict, but it also permits sufficient treatment and a quicker return to duty. Second, it keeps the wounded closer to their units and permits those capable of returning to the fight, thereby improving unit cohesion, and maintaining a high esprit de corps without the need to break in new troops. Third, improved comprehensive care translates into higher troop morale by answering the question: "Can the service take care of me and keep me alive if I am hurt?" The presence of this critical care capability after illness or injury will inspire more confidence among forces to fight hard and take risks. It also reiterates the country's value it holds in each of its servicemembers.²¹ Finally, effective military medicine downrange plays an essential role in shaping public opinion at home. It reinforces the belief that the armed forces can and will care for our family members and friends in the event of injury and illness.

Conclusion

Building an OCONUS Role IV Medical Center on solid ground deep in INDOPACOM under a combined coalition chain of command is a crucial enhancement of the AoR's operational medical capability. First, it ensures the proper delivery of complex medical care within the Western and Southern Pacific. It secures the resuscitation and recovery pathway by decreasing medevac distance and time for any potential casualties from both the South China Sea and South Pacific theaters of operations. Since the logistics of medical evacuation presents a challenging problem due to the geographic expanse of the INDOPACOM AoR and the potential lack of

²⁰ Tanisha M. Fazal, "Ukraine's Military Medicine Is a Critical Advantage," *Foreign Policy*, October 31, 2022, <https://foreignpolicy.com/2022/10/31/ukraine-military-medicine-russia-war/>.

²¹ *Ibid*

guaranteed air superiority, a forward projection of such vital capabilities is necessary. Careful discussion and commitment to building this medical hub must earn consensus among the partner nations of our coalition to develop a site far more comprehensive than the current medical infrastructure in INDOPACOM. Considering the strategic value of LRMC, an equivalent combined Role IV Medical Center in Darwin will integrate firmly within the mission of INDOPACOM and our regional allies, providing flexibility to divert its sick and wounded to a nearby defensible haven for complex medical care and convalescence.

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