**AIDAN Medical Companion: Expanding Healthcare Innovation Across Age Groups**

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**Abstract**

While Part A of this research project demonstrated AIDAN Medical Companion's transformative impact on elderly populations through Margaret's story, an 82-year-old Dutch immigrant managing diabetes, high blood pressure, mild memory issues and in need of companionship. Part B expands this analysis to working-age adults facing distinctly different healthcare challenges. Unlike Margaret's gradual adaptation to aging-related health decline and her need for cultural and linguistic support in medication management, David represents individuals who experience sudden, traumatic health changes requiring immediate adaptation to complex medical protocols while maintaining active professional and social aspirations. Where Margaret's primary concerns centered on medication confusion, cultural barriers in healthcare communication, and family anxiety about her living alone, David's challenges involve sophisticated monitoring of spinal cord injury complications, professional image management, and the psychological adjustment to his acquired disability. This contrast demonstrates AIDAN's remarkable versatility, the same core technology that provided Margaret with Dutch-language communication, diabetes monitoring, and gentle companionship adapts to offer David specialized pressure monitoring, autonomic dysreflexia management, and discrete professional integration, proving that AIDAN Medical Companion can address diverse healthcare needs across British Columbia's multi-generational population with condition-specific customizations**.**

**Description of Novel Idea: AIDAN's Expanded Applications**

**The Challenge for Younger Adults with Disabilities**

David’s experience is representative of thousands of British Columbians living with acquired disabilities who face unique healthcare challenges distinct from the elderly populations (Statistics Canada, 2023). Unlike seniors who may gradually adapt to increasing medical needs, individuals like David experience sudden, dramatic changes requiring immediate adaptation to complex medical management while maintaining career and social aspirations (Sawik et al., 2023).

The gap in current healthcare technology becomes particularly evident for working-age adults with spinal cord injuries. While rehabilitation programs provide excellent initial training, long-term independent living requires sophisticated medical monitoring that current systems cannot provide (BC Ministry of Health, 2023). Home care services focus primarily on elderly populations, leaving younger adults with complex conditions to navigate medical management largely alone (Chiu et al., 2022).

**AIDAN's Specialized Capabilities for Spinal Cord Injury**

AIDAN's adaptation for spinal cord injury management demonstrates the technology's versatility beyond elderly care. The system's specialized features include:

**Advanced Pressure Monitoring:** Using thermal imaging and pressure sensors, AIDAN continuously monitors skin integrity to prevent pressure sores, a leading cause of hospitalization for individuals with spinal cord injuries (Trafton, 2020). This proactive approach prevents the type of infection that hospitalized David for two weeks before receiving AIDAN.

**Autonomic Dysreflexia Management:** AIDAN's ability to recognize and respond to this potentially life-threatening condition showcases sophisticated pattern recognition capabilities (Sawik et al., 2023). The system can identify triggers, guide immediate interventions, and communicate with healthcare providers using real-time vital signs data.

**Professional Integration:** Unlike elderly-focused medical robots, AIDAN adapts to professional environments, providing discrete monitoring during work activities and adjusting alert systems to avoid interrupting client meetings (Berridge et al., 2023).

**Google Search: Verification of Innovation**

**Search Methodology**

Comprehensive searches were conducted using terms including "spinal cord injury monitoring robot Canada," "medical companion robot young adults," "workplace disability technology BC," and "integrated health monitoring spinal cord." Searches included academic databases, government health websites, and medical technology companies.

**Search Findings**

The search confirmed that while various assistive technologies related to rehabilitation exist for spinal cord injury management, no integrated system combines comprehensive medical monitoring, emergency response, and companionship features specifically designed for working-age adults in BC's healthcare system. Current technologies include:

**Separate Monitoring Devices:** Pressure mapping systems and heart rate monitors exist independently but lack integration with healthcare systems or emergency response (Trafton, 2020).

**Basic Alert Systems:** Medical alert devices provide emergency calling but cannot assess medical conditions or provide guided interventions (BC Emergency Health Services, 2023).

**Rehabilitation Robotics:** Robotic systems exist for physical therapy and mobility training but do not provide ongoing health monitoring for independent living (Chiu et al., 2022).

The search revealed no comparable integrated solution addressing the comprehensive needs of individuals like David in BC's healthcare context, confirming AIDAN's innovation.

**Narration: David's Transformation**

**Target Population: Working-Age Adults with Acquired Disabilities**

The target population includes British Columbians aged 25-50 living independently while managing complex medical conditions resulting from acquired disabilities. This represents approximately 85,000 individuals in BC who maintain active professional and social lives while requiring sophisticated medical monitoring (Statistics Canada, 2023).

**David's Story: Professional Independence Redefined**

David, 40, represents this population's unique challenges and AIDAN's transformative potential. As a construction project manager in Vancouver, David's workplace accident two years ago resulted in paraplegia, fundamentally altering his life trajectory while maintaining his professional ambitions and personal independence goals.

**Before AIDAN: Constant Medical Anxiety**

David's pre-AIDAN experience illustrates the gap in current healthcare technology for younger adults with disabilities. Despite accessing excellent care through Vancouver General Hospital's spinal cord program, David lived with constant anxiety about medical emergencies when alone (BC Ministry of Health, 2023). His technical background and motivation to manage his health independently conflicted with the fragmented nature of current monitoring devices and his legitimate concerns about emergency response times (BC Emergency Health Services, 2023).

The pressure sore incident that led to a two-week hospitalization demonstrates how current healthcare approaches fail to provide the proactive monitoring that individuals like David require for safe independent living (Sawik et al., 2023). This incident not only threatened his health but also jeopardized his career rebuilding efforts and reinforced his fears about living independently.

**After AIDAN**

**Comprehensive Independence:** AIDAN's integration into David's life transformed his relationship with his medical condition and his confidence in independent living. The robot's specialized monitoring capabilities immediately addressed his primary health risks while supporting his professional and personal goals (Chiu et al., 2022).

**Medical Transformation:** AIDAN's pressure monitoring sensors and predictive analytics prevented three potential hospitalizations by identifying problems 24-72 hours before symptoms appeared. The robot's management of his autonomic dysreflexia episode during a work call, identifying the kinked catheter, guiding positioning changes, and contacting his healthcare team, demonstrated life-saving capabilities while maintaining his professional image (Trafton, 2020).

**Professional Reintegration:** AIDAN's integration with David's work schedule and discrete monitoring enabled his return to full-time consulting work. The robot's ability to provide medication reminders without interrupting client meetings and to adjust monitoring intensity based on activity levels supported his career rebuilding efforts (Berridge et al., 2023).

**Social Life Revival:** Perhaps most significantly, AIDAN provided David with the confidence to resume dating and social activities. The robot's comprehensive health monitoring eliminated his anxiety about medical emergencies during social situations, enabling him to pursue relationships and adaptive sports activities that had seemed impossible after his injury (Sawik et al., 2023).

**Key Improvements from Part a Documented:**

1. Naming Consistency - From inconsistent "Smart Companion Robot/AIDAN" to consistent "AIDAN Medical Companion".
2. Expanded Population - From elderly-only focus to multi-generational (ages 25-82).
3. Enhanced Medical Capabilities - Added specialized spinal cord injury management, predictive analytics.
4. Stronger Academic Structure - Better balance of medical/companionship features.
5. Realistic Challenge Assessment - Comprehensive analysis of technology dependence/dependence and privacy.
6. Enhanced Visuals - From 10 to 17 total images with specialized scenarios.
7. Improved Narratives - Dual character development with rich backgrounds.
8. Healthcare System Integration - Specific to British Columbia.
9. Added Citations - Improved APA formatting and source utilization.
10. Learning Growth - Demonstrated responsiveness to feedback.

**Conclusion**

David's experience with AIDAN Medical Companion demonstrates the technology's remarkable versatility beyond elderly care, proving its potential to transform healthcare for British Columbians across age groups and medical conditions. The integration of sophisticated spinal cord injury monitoring with professional and social support addresses critical gaps in current healthcare technology for working-age adults with complex medical needs. However, the significant challenges of technology dependence anxiety and privacy concerns revealed through David's story highlight the need for careful design in system implementation. The success of AIDAN across different populations, from elderly Margaret managing her comorbidities to young professional David adapting to spinal cord injury, reinforces the technology's potential as a comprehensive healthcare solution. This technology demonstrates the moral imperative to provide innovative care that preserves dignity and independence regardless of age or medical condition in British Columbia's diverse healthcare landscape.

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