



UNITED STATES  
DEPARTMENT OF VETERANS AFFAIRS

Report of the Task Group for  
**INNOVATIVE 21<sup>ST</sup> CENTURY  
BUILDING ENVIRONMENTS  
FOR VA HEALTHCARE DELIVERY**





# final draft

## **PART 1**

### **REPORT OF THE TASK GROUP FOR “INNOVATIVE 21<sup>st</sup> CENTURY BUILDING ENVIRONMENTS FOR VA HEALTHCARE DELIVERY”**

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# **PART 1** Innovative 21<sup>st</sup> Century Building Environments for VA Healthcare Delivery

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# EXECUTIVE SUMMARY

Transformation to 21<sup>st</sup>-century care delivery presents the Department of Veterans Affairs (VA) with critical challenges similar to those confronting private sector healthcare facility owners and operators. Healthcare facilities must meet new requirements to optimize care, increase productivity, enhance sustainability, and improve disaster resistance, while reducing energy consumption and operating and maintenance expenses. Facilities may become outdated by emerging medical practices and technologies; older facilities may be vulnerable to disasters and inaccessible to patients, caregivers, and other users. Additionally, increasing operating costs in both new and existing facilities lead to deferred maintenance resulting in significantly reduced performance.

The National Institute of Building Sciences (NIBS) coordinated the VA exploration for a new paradigm that would transform VA care for the 21<sup>st</sup> century by creating a new generation of high-performance, sustainable healthcare environments for the changing population of veterans. NIBS convened a multi-disciplinary Task Group to investigate and document the state of practice and art for high-performance, sustainable, and flexible environments for healing. The Task Group (see page 1-17) was composed of more than 25 architects, engineers, hospital administrators, doctors and healthcare professionals, and other renowned experts in the healthcare industry. A VA Advisory Group, comprising VA representatives, complemented the Task Group and provided data and information on the current practices of VA operations and facilities.

The Task Group was charged with making specific recommendations, based on 21<sup>st</sup>-century opportunities and technologies, to develop and implement comprehensive and innovative solutions for new and renovated healthcare facilities. The purpose of the recommendations is to transform VA care into the most effective healthcare facility system for veterans, based on anticipated needs and state-of-the-art solutions. This report details the assumptions, conclusions, and recommendations resulting from Task Group deliberations.

The Task Group made five assumptions during the course of its deliberations.

1. Building design decisions critically influence health outcomes and the quality of care.
2. Building design decisions critically influence the nature of operations and the costs of services provided.
3. VA care delivery is transitioning from inpatient care to home- and community-based care.
4. VA has a substantial inventory of existing facilities that may or may not be suitable to meet current standards of care.
5. To meet the changes to transform the delivery of health, rehabilitative, mental health, and long-term care services, VA needs near-term guidance on facility development, operations, and maintenance.

The Task Group divided into nine topical committees to study and make recommendations across the full range of transformative and innovative design principles, technologies, and business practices for improving the environment of care. The following is a brief synopsis of each. Full recommendations from the nine committees make up Part 2 of this report.

1. Care Optimization: *Provide more effective and efficient building environments that can flexibly accommodate and adapt to more optimized functional processes and procedures.*
2. Healing Environments: *Provide buildings designed to support the creation of optimal healing environments that reduce adverse health and safety threats, improve health outcomes, expedite patient recovery, and promote the overall health and wellbeing of occupants, the communities in which facilities are located, and global environmental conditions.*
3. Satisfaction: *Provide building environments that respond to veteran, family, and staff needs and provide for a more satisfying healthcare experience for these populations.*
4. Adaptability: *Provide transformable building environments that accommodate changing needs, functional programs, and care-delivery practices over time.*
5. Sustainability: *Provide sustainable building environments that meet the needs of the present without compromising the ability of future generations to meet their own needs.*
6. Building Operations and Maintenance: *Provide more effective and efficient building environments through innovative monitoring, operations, and maintenance.*
7. Building Acquisition: *Provide more effective and efficient strategies for the acquisition and delivery of new healthcare buildings and for their ongoing adaptation and expansion.*
8. Data Acquisition: *Provide self-monitoring facility environments that become a source of research data and information.*
9. Continuous Innovation: *Develop new solutions for optimum coordination of best practices in healthcare and in the design, adaptation, and operations for the transformation of healthcare facilities that will provide 21<sup>st</sup>-century care.*

The Task Group as a whole developed five principal conclusions with supporting recommendations that are applicable to the transformation of new and renovated healthcare facilities.

- 1. Organizational collaboration is essential to achieve VA goals for transformation to 21<sup>st</sup>-century care.**
  - *Collaboratively develop performance metrics and benchmarks.*
  - *Evaluate and adopt external “best practices” for operational processes.*
  - *Collaborate with industry partners and external groups.*
- 2. Data acquisition, communication, and use are critical to clinical outcomes, cost of care, and effective operational evaluation.**
  - *Support the establishment of an evaluation culture.*
  - *Create “living laboratories” within VA.*
  - *Use data for both research and training of staff.*
- 3. Coordinated decision-making is required to ensure VA goals and objectives are met.**
  - *Explore veteran- and family-centered care in the design of VA facilities.*
  - *Create environments that promote health and safety.*
  - *Define and support the desired veteran experience in the VA care system.*
  - *Conduct case studies of “best practice” environments.*
  - *Investigate business process improvement techniques for the optimization of healthcare service delivery venues.*
  - *Assess institutional barriers that inhibit adaptability of healthcare facilities.*
  - *Strengthen the relationship between sustainable building practices and their positive impact on veteran healing.*
- 4. Implementation of new priorities requires new facility acquisition processes.**
  - *Conduct an assessment of alternative procurement models for obtaining and operating facilities.*
  - *Establish a means of investing in research and innovations beyond budgetary norms where these are likely to produce improved facility acquisition methods or long-term operational savings.*
  - *Investigate potential and actual design impacts of merging the budget authority for capital asset acquisition with the budget for maintenance.*
- 5. Testing and validation of new healthcare delivery concepts is necessary for implementing new ideas.**
  - *Establish an “Innovation Center” within VA.*
  - *Create a panel for advice on new facility delivery methods and design concepts.*

If implemented, these recommendations will provide VA with a model that is not only paramount to the future success of veteran healthcare delivery, but is without precedent in the U.S. healthcare industry. VA is in a position to transform and lead healthcare delivery into a completely new and revolutionary force within our society.



# **PART 1 Innovative 21<sup>st</sup> Century Building Environments for VA Healthcare Delivery**

## **INTRODUCTION**

Transformation to 21<sup>st</sup>-century care delivery presents the Department of Veterans Affairs (VA) with critical challenges similar to those confronting private sector healthcare facility owners and operators. New healthcare facilities are subject to growing requirements for patient-centered care, increased productivity, reduced operating and maintenance expenses, enhanced energy and sustainability, higher disaster resistance, improved accessibility, and other societal objectives. Existing healthcare facilities can quickly become outdated as new medical practices and technologies emerge; older facilities are recognized as vulnerable to disasters and inaccessible to patients, caregivers, and other users. In addition, increasing operating costs in both new and existing buildings lead to deferred maintenance resulting in significant reductions in system performance.

At the same time that energy and sustainability demands are forcing innovations in building design and operation, new care delivery methods and technologies are changing where, how, and by whom care is provided. The demand for higher performing facilities and the desire to provide world-class service to veterans and their families are driving VA to pursue new and innovative solutions for care delivery. VA's buildings have been and are being produced under conditions that are insufficient to support future care delivery and technology developments, and, in fact, can often constrain their implementation. True high-performance buildings will support the VA healthcare delivery mission and goals for transformation to 21<sup>st</sup>-century care.

**Care delivery.** Healthcare has experienced a dramatic revolution in terms of care delivery methods and the latest technology of care. Developments to improve the quality of veterans' healthcare are moving care from traditional VA medical centers to alternative care environments including Community-Based Outpatient Clinics (CBOC), Community Living Centers (CLC), storefront readjustment counseling Vet Centers, the new Mental Health Residential Rehabilitation and Treatment Programs domiciliary (MHR RTP), and home- and community-based care with the healing process supplemented by others such as veterans' families and supported by Veterans Service Organizations (VSO).

The U.S. healthcare system will undergo significant changes in the near future. High domestic costs and international competition will transform the industry and

have major implications for VA facilities. Planning for the advent of new and advanced systems of care and the flexible, innovative facilities required in a future healthcare system is a principal challenge for VA and its facilities program.

Changes in healthcare delivery are taking place more quickly than present healthcare facilities can adapt. The facility itself will constrain care if it cannot be changed to accommodate newer methods of care delivery. Responsive, effective design based on optimized workflow has a strong impact on staffing required to deliver care as well as the quality of that care, resulting in a care model that delivers high quality outcomes for less costs and resource requirements than is the standard today. Future healthcare facilities should be designed with flexibility to accommodate growth and expansion and critical changes in clinical flow patterns.

**High-performance buildings.** As an executive branch agency, VA is subject to the provisions of the *Energy Policy Act of 2005* (EPAAct)<sup>1</sup> and the *Energy Independence and Security Act of 2007* (EISA)<sup>2</sup> that require Federal agencies to achieve mandated energy and sustainability goals in new and existing buildings. Both acts define high-performance buildings as the integration and optimization on a lifecycle basis of all major high-performance attributes, including energy and water conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.

Additionally, agreeing to coordinate with complementary efforts in the private and public sectors, VA and 18 other Federal agencies signed a Memorandum of Understanding<sup>3</sup> which was followed by Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, which set forth additional goals and objectives for building performance.

VA, in support of these goals, recognizes that its building stock must elevate its performance including providing higher degrees of functionality and productivity in support of VA's mission. The process to obtain a high-performance building must link design and construction with operations and maintenance as well as with staffing costs in order to realize value over the whole lifecycle of the facility. VA is committed to Federal leadership in the design, construction, and operation of high-performance and sustainable buildings. Meeting this commitment within time and cost frames is a principal challenge for VA and its facilities program.

**Charge to the Task Group.** Recognizing these challenges, VA's Office of Construction & Facilities Management asked the National Institute of Building

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<sup>1</sup> Public Law 109-58.

<sup>2</sup> Public Law 110-140. EISA establishes a new and aggressive plan for achieving energy independence in our nation's building stock by the year 2030. The act requires that Federal buildings (both new construction and renovations) achieve fossil fuel-generated energy consumption reductions on the order of 55 percent in the year 2010 to 100 percent in 2030.

<sup>3</sup> *Federal Leadership in High Performance and Sustainable Buildings*, 2006.

Sciences (NIBS) to coordinate the exploration for a new paradigm that would transform VA care for the 21<sup>st</sup> century by creating a new generation of high-performance healthcare environments for the changing population of veterans. NIBS convened a multi-disciplinary Task Group,<sup>4</sup> composed of more than 25 architects, engineers, hospital administrators, doctors and healthcare professionals, and other renowned experts in the healthcare industry, to investigate and document the state of practice and art for high-performance, sustainable, and flexible environments for healing. A VA Advisory Group, comprising VA representatives, complemented the Task Group and provided data and information on the current practices of VA operations and facilities.

The Task Group was charged with making specific recommendations, based on 21<sup>st</sup>-century opportunities and technologies, to develop and implement comprehensive and innovative solutions for new and renovated healthcare facilities. The purpose of the recommendations is to transform VA care into the most effective and efficient healthcare facility system for veterans, based on anticipated needs and state-of-the-art solutions. This report details the assumptions, conclusions, and recommendations resulting from Task Group deliberations.

The Task Group, supported by the VA Advisory Group, met four times from September to December 2008. During its deliberations, the Task Group divided into nine topical committees to study and make recommendations across the full range of transformative and innovative design principles, technologies, and business practices for improving the environment of care. The Task Group deliberations resulted in five principal conclusions with specific recommendations that are presented in this report under “Principal Conclusions and Recommendations of the Task Group.”

The nine committee topics and their reports form the chapters of Part 2: care optimization, healing environments, satisfaction, adaptability, sustainability, building operations and maintenance, building acquisition, data acquisition, and continuous innovation. It must be noted that the committee discussions were not made in isolation of the broad context of the Task Group challenge. The nine chapters of Part 2 focus on individual aspects, but the importance of their inter-relationship cannot be overstated.

**Background data used by the Task Group.** The following information from the *Department of Veterans Affairs 2008 Organizational Briefing Book* is of particular significance to this report.

- Veterans numbered 23,816,000 at the end of FY 2007; their median age was 60 years, 25% were under age 45, and 39% over 65; 7.5% or 1,780,000 were female. Veterans are projected to number 22.7 million by 2010.

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<sup>4</sup> Members of the Task Group and the VA Advisory Group are listed at the end of Part 1.

- VA is the second largest Federal department and has over 260,000 employees including physicians, nurses, counselors, statisticians, architects, engineers, computer specialists, attorneys, and others.
- The FY 2008 budget for VA is \$90 billion, approximately \$2 billion of which is for construction.
- In 2007, VA provided healthcare for 5.5 million veterans. It is among the largest providers of health professional training in the world; operates one of the largest and most effective research organizations in the U.S.; is a principal Federal asset for providing medical assistance in major disasters; and serves as the largest direct-care provider for homeless citizens.
- Services and benefits were provided through a nationwide network of 153 hospitals, 909 outpatient clinics, 132 nursing homes, 47 domiciliary residential rehabilitation treatment programs, and 225 readjustment counseling centers, as of the third quarter of FY 2008.

## ASSUMPTIONS OF THE TASK GROUP

The Task Group, during the course of its deliberations, made the following five assumptions.

### **Assumption 1: Building design decisions critically influence health outcomes and the quality of care provided within the facility.**

The physical environment of healthcare plays a vital role in making it safer, less stressful, and more conducive to promoting patient healing and quality care from satisfied staff. VA should take advantage of the profound impact facility design can have on both health outcomes and quality of service when planning future facilities or renovating existing facilities.

A 2008 comprehensive review of the research literature on evidence-based healthcare design found a growing body of rigorous studies that indicate “well-designed physical settings play an important role in making hospitals safer and more healing for patients, and better places for staff to work.”<sup>5</sup> According to this review, design characteristics have an effect on a variety of patient and staff outcomes.

Patient outcomes affected by physical design include infection rates, falls, pain, stress, anxiety, depression, spatial disorientation, and quality of sleep. The built environment also influences patient privacy and confidentiality, communication with and between patients, providers, and families, patient social support, length of stay, and patient/family satisfaction.

Equally important, the built environment directly affects staff outcomes such as injuries, stress, effectiveness, medical errors, ability to spend time in direct patient-care activities, ability to work as part of a team, and staff satisfaction as well as retention and recruitment.

### **Assumption 2: Building design decisions critically influence the nature of operations, the character, and, ultimately, the costs of services that are provided within the facility.**

As schematically depicted in Figure 1, the cost of design and construction—for new construction as well as for renovations and alterations to an existing facility—is very small when compared to the cost of operations and maintenance. What is more notable, the service-life cost of a facility—including

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<sup>5</sup> Ulrich, R., C. Zimring, X. Zhu, J. DuBose, H-B. Seo, Y-S. Choi, X. Quan, and A. Joseph. 2008. A Review of the Research Literature on Evidence-Based Healthcare Design (Part 1, Part 2, and References). *Health Environments Research & Design Journal* 1: 61-125. <http://www.herdjournal.com>

the cost of design and construction and the cost of operation and maintenance—is infinitesimal when compared to the overall cost or value of the services provided through the facility. This is especially true for high value-added, high-cost services such as healthcare in all of its forms.



**Figure 1. Relative facility costs and values**

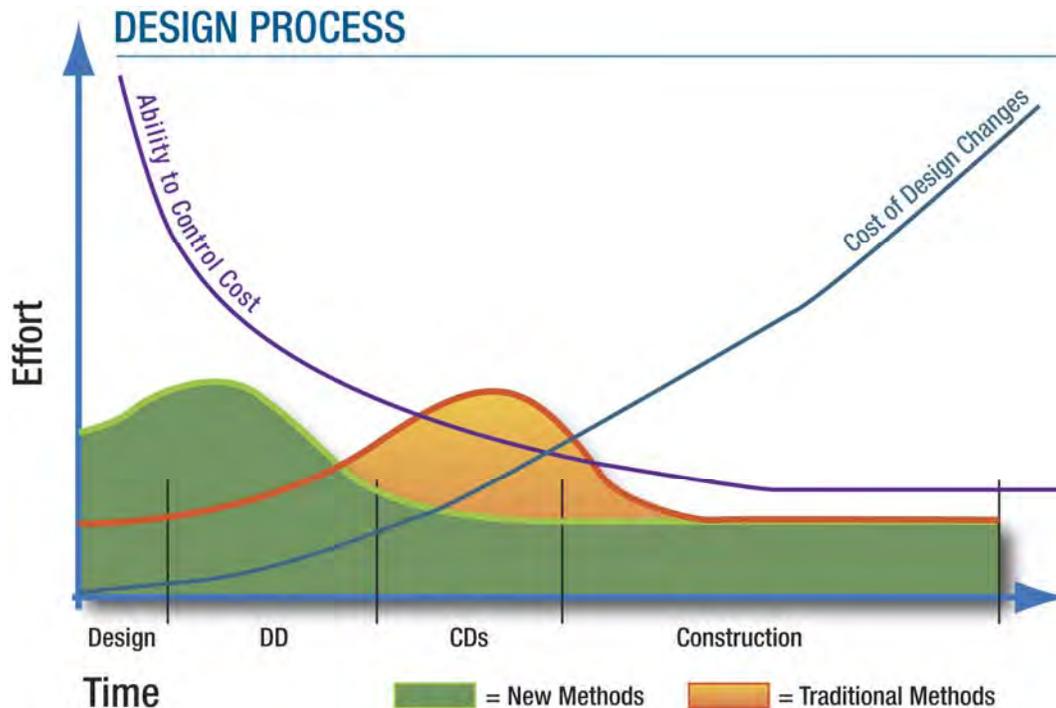
What is well understood in the building community but not always among healthcare providers is that the cost of healthcare delivery can be significantly increased or decreased as a result of decisions made at the early design phases of a new construction or renovation project. Healthcare facility design solutions at any level, from spatial layout to equipment and furniture placement, play a major role in the cost of healthcare operations. Building maintenance and operation costs, such as energy use,<sup>6</sup> vary significantly based on the design and subsequent modifications of the systems used in the building. Healthcare delivery and operations, such as staffing levels,<sup>7</sup> will also be raised or lowered based on the efficiency and effectiveness of the design of the facility initially and as it transforms over time. Finally, the costs of renovations over a facility's lifespan are significant and can vary substantially depending on the design and its built-in capability for change.

Building upon this understanding, Figure 2 illustrates that ability to control costs decreases as the project advances from design through construction. The design of the structural and mechanical/electrical/plumbing (MEP) systems must be determined based on careful analysis of capacity for change to meet new functional parameters. The cost to build in the capacity for change is

<sup>6</sup> Discounted present values of energy costs are several times greater than building capital costs.

<sup>7</sup> Discounted present values of personnel costs are orders of magnitude greater than building capital costs.

significantly less when taken into account in the early design stages. Further reduction in costs may be achieved when decisions to include change-ready features are made during facility pre-planning using processes such as scenario planning.



**Figure 2. Opportunity to control costs during design and construction (applicable to new facilities as well as alterations/renovations of existing facilities)**

New methods such as building information modeling (BIM)<sup>8</sup> and integrated design<sup>9</sup> may be more effective tools for the design team by moving the design decision-making capacity closer to the beginning of the project.

**Assumption 3: VA healthcare service delivery is moving away from the traditional VA medical center campus setting. Transitioning from inpatient care in specialized facilities to an increase in the level of care in other**

<sup>8</sup> A Building Information Model (BIM) is a digital representation of physical and functional characteristics of a facility. As such, it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its lifecycle from inception onward. <http://www.wbdg.org/bim/bim.php>

<sup>9</sup> The integrated design process enables project team members (including architects, code officials, building technologists, cost consultants, civil engineers, mechanical and electrical engineers, structural engineers, specifications specialists, contractors, consultants from many specialized fields, property managers, and building operations and maintenance staff) to work together with users from the project outset to develop solutions that have multiple benefits. [http://www.wbdg.org/design/engage\\_process.php](http://www.wbdg.org/design/engage_process.php)

**settings requires physical facilities that support the trend from hospital-centered to home- and community-based care.**

In the past, VA medical centers attempted to encompass all healthcare services that VA provided to the population of eligible veterans. The medical center may have been designed to accommodate increases or decreases in population and, ideally, increases in the complexity of care.

Today, advances in information (IT) and healthcare technology, increased cost of services, and changing customer preferences and perceptions of convenience are shifting veterans' service delivery away from the centralized VA medical center setting.

VA has established a continuum of care for veterans with a national system of programs and physical facilities for communication and delivery of VA services: Community-Based Outpatient Clinics (CBOC), Community Living Centers (CLC), storefront Vet Centers, the new Mental Health Residential Rehabilitation and Treatment Programs (MHR RTP) domiciliary, and Home-Based Primary Care (HBPC) teams. These are supplemented by others such as veterans' families and supported by Veterans Service Organizations (VSO). An example of the move away from an institutional medical campus is the recent significant efforts VA has made within mental health to promote healing in homelike and recovery-oriented environments of care.<sup>10</sup>

VA is improving the coordination of patient care through IT. Electronic medical records, VA's Computerized Patient Record System (CPRS), integrate care providers in all VA facilities from hospitals to outpatient and residential care, coordinating care, reducing errors, and improving safety. Additionally, the Internet has become an integral VA healthcare partner, supporting veterans' ability to successfully manage disease and age in their own homes.<sup>11</sup>

These alternative modes of care delivery indicate that now and in the future, VA healthcare services are and will be delivered significantly differently than suggested by a full-service medical center model. In the future, a preponderance of VA care engagements may be delivered in individual veterans' residences, either by remote means or through mobile teams. The number of engagements at acute care hospitals will be dramatically lessened by reliance on out-patient clinics, extended-stay residential, and storefront facilities for delivery of less complex (less acute) healthcare services.

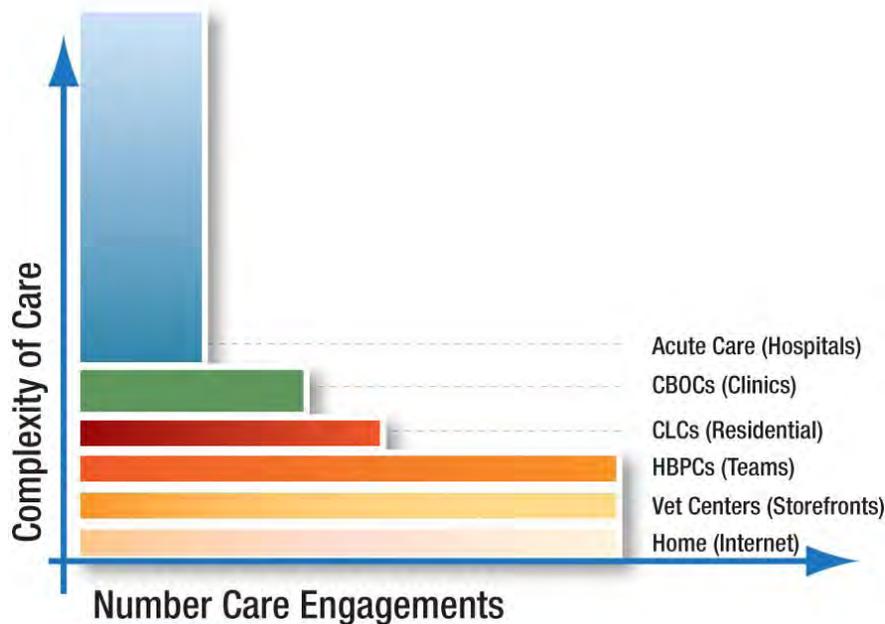
Figure 3 schematically depicts how VA is segmenting care delivery venues and transforming the delivery of care. The diagram approximates the distribution of

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<sup>10</sup> Karlin, B. E., and R. A. Zeiss. 2006. Environmental and Therapeutic Issues in Psychiatric Hospital Design: Toward Best Practices. *Psychiatric Services* 57(10): 1276-1378. <http://ps.psychiatryonline.org/>

<sup>11</sup> VA *Organizational Briefing Book*, May 2008, page 8.

VA health, rehabilitative, mental health, and long-term care services with a series of overlays (shaded bars) of several possible service delivery venue regimes defined in terms of numbers of anticipated engagements and levels of services offered by each venue type. Some overlap and redundancy is necessary for actual system operation, but the underlying presumption is that segmentation of services and types of engagements is an efficient and effective approach to transform service delivery.



**Figure 3. Future care engagements by VA venue**

Based on the foregoing, the number of veterans treated in VA acute care hospital facilities is expected to continue to decrease while the level of care in each of the other VA care-delivery settings will increase. Specialization of care is expected to increase, especially in hospitals. VA facilities must be flexible enough to adapt to the dramatic changes that are and will occur as VA transforms healthcare delivery.

**Assumption 4: VA has a substantial inventory of existing facilities in all stages of suitability for providing healthcare consistent with current and future standards. VA needs guidance to evaluate the potential use or disposal of existing facilities.**

Many existing VA facilities may be headed for premature obsolescence. That is, a facility may no longer support VA's mission of delivering healthcare long before some of the building components reach the end of their functional life.

The challenge of upgrading selective components of existing buildings is compounded when the original building was not designed for change. VA has

some hospitals that were designed using the VA Hospital Building System (VAHBS), an integrated building system with a highly organized system of utilities and high floor-to-floor heights. Upgrading VAHBS facilities may be considerably more cost effective and should be evaluated.

The Task Group recognizes the challenge VA faces in evaluating the initial cost of upgrading against the long-term savings in operational cost for the many distinct building types in their inventory.

**Assumption 5: Given the ongoing transformation of VA delivery of health, rehabilitative, mental health, and long-term care services, VA needs near-term guidance on facility development, operations, and maintenance.**

With VA's current and active transformation of care delivery models, the Task Group believes that VA needs guidance on how to handle emerging trends regarding facility development and operations and maintenance in the near term, not over the horizon. Very soon, VA will be making decisions that affect system-wide facilities procurements and operations for the next decade.

Assessment of alternative procurement models such as lean business process management concepts, lease, lease-to-buy, public/private joint ventures, and other models of obtaining and operating facilities should be undertaken. Developing procurement methodologies that support best-value delivery and integrated design and construction would facilitate the process of obtaining high-performance buildings and assist VA in realizing value over the whole lifecycle of the facility.

Establishing an Innovation Center, with a dedicated budget for the Center's activities, within VA would provide the opportunity to develop concurrently new solutions for optimum coordination of best practices in the delivery of healthcare and the design, alterations, and operations of healthcare facilities. As VA care delivery transforms for the 21<sup>st</sup>-century, an Innovation Center establishes the place to create transformation of the facilities where that care will be delivered.

## PRINCIPAL CONCLUSIONS AND RECOMMENDATIONS OF THE TASK GROUP

The principal conclusions and supporting recommendations of the Task Group mainly focus on near-term needs and strategies to aid VA facilities decision-making. In addition, every recommendation includes the need for specific operational performance metrics and data requirements for each topic area.

The Task Group developed five principal conclusions. The highest priority recommendations supporting each conclusion are given below. All recommendations may be found in the committee chapters which make up Part 2 of this report.

**Conclusion 1: Organizational collaboration is essential to achieve VA objectives for transformation to 21<sup>st</sup>-century care delivery.** All affected organizational elements within the Department should work closely together and continuously consult in order to achieve VA objectives by establishing, measuring, and benchmarking the effect of individual facilities on patient outcomes and the entire VA facility system on all VA operations.

### **Task Group Recommendations for VA to Consider:**

- *Collaboratively and jointly develop facility system and healthcare service system performance metrics and benchmarks.*
- *Evaluate and adopt external “best practices” for VA operational processes, but only as proven effective through assessment and evaluation in collaboration with VA healthcare operations.*
- *Collaborate with industry partners and external groups affected by VA operations.*

**Conclusion 2: Data acquisition, communication, and use are critical to clinical outcomes, cost of care, and effective operational evaluation.** All affected VA organizational elements should work collaboratively to effectively monitor, report, and respond to VA operational performance metrics, based, to the extent possible, on readily accessible and timely outcome data for real-time evaluation feedback. See Part 2, Chapter 8

### **Task Group Recommendations for VA to Consider:**

- *Support the establishment of an evaluation culture within VA by making evaluation a separate, funded mandate.*
- *Create “living laboratories” within VA to gather clinical, quality of care, satisfaction, financial, and facility information that is useful to local sites as well as VA- and industry-wide.*

- *Facilities must support both research and training of staff. Include ongoing training of staff as IT systems and informatics play an increasingly prominent role in care delivery and shape facility design.*

**Conclusion 3: Coordinated decision-making is required to ensure VA care delivery transformation goals and objectives are met.** All affected organizational elements should work directly to ensure that the design, construction, alteration/renovation, operation, and lifecycle management of VA facilities support and enhance VA healthcare operations in all its dimensions. Specifically, VA facility attributes related to adaptability, sustainability, and high-performance building systems operation and maintenance (see Part 2, Chapters 4, 5, and 6, respectively) must be coordinated with objectives related to care optimization, healing environments, and satisfaction (see Part 2, Chapters 1, 2, and 3, respectively).

**Task Group Recommendations for VA to Consider:**

- *Explore how design of VA facilities can influence veterans' and their families' satisfaction and experience of health, rehabilitative, mental health, and long-term care delivery through implementation of veteran-centered and family-centered care.*
- *Undertake a comprehensive report of environments and procedures to promote healing for individuals experiencing military-related trauma.*
- *Define the desired veteran experience and idealized service delivery setting from initial contact to departure from the VA care system.*
- *Model staffing levels for idealized service delivery to determine lean workflow based staffing metric as a baseline objective for staffing in new facilities.*
- *Conduct a series of case studies of "best practice" environments both inside and outside the VA system to determine actual experiences and lifecycle costs of "change-ready" healthcare facilities.*
- *Investigate the application of business process improvement techniques for the optimization of healthcare service delivery venues. Specifically, determine how business process management concepts and practices from other industries and the commercial sector can be applied to VA operations and facilities development strategies.*
- *Assess institutional barriers within and external to VA that inhibit increased adaptability of healthcare facilities over time.*
- *Create initiatives to strengthen the relationship between sustainable building practices and their positive impact on veteran healing.*

**Conclusion 4: Implementation of new priorities requires new facility acquisition processes.** The Task Group concludes that new building acquisition strategies and tools are needed to manage efficiently and effectively the acquisition processes throughout the lifecycle of the facility to provide optimum healthcare to the VA-eligible veteran population. See Part 2, Chapter 7

### **Task Group Recommendations for VA to Consider:**

- *Conduct a detailed and wide-ranging assessment of alternative procurement models including lean business process management concepts, lease, lease-to-buy, public/private joint ventures, and other models of obtaining and operating facilities.*
- *Establish a means of investing in research and innovations beyond budgetary norms<sup>12</sup> where these are likely to produce improved facility acquisition methods or long-term operational savings. Establish a system of tracking long-term savings and/or cost return on these investments (ROI).*
- *Conduct a limited (10-year) experiment to investigate potential and actual design impacts of merging the budget authority for capital asset acquisition with the budgets for maintenance and upgrades.*

**Conclusion 5: Testing and validation of new healthcare delivery concepts is necessary for implementing new ideas.** Given the scale of the VA system, it is likely that at any given time new service delivery venues are being planned, others are being built, upgraded, or renovated, while others are being retired or demolished. Decisions about how and when to change service delivery models or venues are of critical importance. New concepts and approaches need to be tested and validated. In some instances, analysis needs to occur regarding possible implications system-wide. As implementation of a new delivery system is contemplated, questions of staging and effects on current and future operations must be addressed. The Task Group believes that testing and validation of new or upgraded service delivery venue concepts before, during, and after implementation is a key function within the Department. See Part 2, Chapter 9

### **Task Group Recommendations for VA to Consider:**

- *Establish an “Innovation Center” within VA to provide the opportunity to develop concurrently new solutions for optimum coordination of best practices in healthcare and in the design, adaptation, and operations of healthcare facilities.*
- *Create an on-going advisory panel, perhaps by extending the Task Group charge, which would continuously monitor and advise VA, providing high-level, peer-review feedback concerning new facility delivery methods and design concepts.*

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<sup>12</sup> These budgetary norms statutorily require facility funds to be authorized, appropriated, allocated, and spent through separate fiscal mechanisms, which currently may not be mixed for lifecycle management.

## TASK GROUP COMMITTEE RESULTS

The Task Group offers a broad range of recommendations emanating from the deliberations of the nine multi-disciplinary study committees. The committees were charged with examining each topic area and recommending a broad set of initiatives for VA to consider. Individual committee deliberations and recommendations were then presented to the full Task Group for discussion and acceptance through a series of subsequent collaborative iterations and joint meetings.

The Task Group considered cross-functional and inter-organizational collaboration within VA, as well as strong external alliances, prerequisites for all subsequent Task Group conclusions and recommendations. Collaborative development of meaningful operational performance metrics for VA is a critical undertaking.

The following is a brief synopsis of each committee's primary recommendation and findings. Complete committee reports are contained in Part 2 of this report.

- Care Optimization: Provide more effective and efficient building environments that can flexibly accommodate and adapt to more optimized functional processes and procedures. Optimization of care requires an integrated examination of process, facility, and veteran experience. An effective approach to integrated planning and design is to review the concept of operations, which considers all components of care delivery, including patient/resident interactions, clinical and administrative support systems, facility design, and technology requirements. Concept of operations involves an in-depth examination of the operational processes, space, technology, and culture. An integrated concept of operations can provide a framework for innovation, optimization, and transformation of the care delivery process and facility design for VA. See Part 2, Chapter 1
- Healing Environments: Provide buildings designed to support the creation of optimal healing environments that reduce adverse health and safety threats, improve health outcomes, expedite patient recovery, and promote the overall health and wellbeing of occupants, the communities in which facilities are located, and global environmental conditions. Therapeutic, healthy, and safe building environments can improve veteran and staff health and safety. Physical environments that are designed in ways familiar to veterans can reduce the anxieties and potential stressors generated by being in a foreign, institutional environment. Environments that optimize veteran movement and continuity of care through multiple service centers and allow families to participate in the care process can improve both the perceived and measurable quality of care. Likewise, caregivers who are provided a healthy physical and social environment tend to be more satisfied, less stressed, and

contribute better to the veteran's care. The physical environment should be designed to meet these ends. See Part 2, Chapter 2

- Satisfaction: Provide building environments that respond to veteran, family, and staff needs and provide for a more satisfying healthcare experience for these populations. VA should achieve improved healing relationships through veteran- and family-centered care and satisfaction, improved healing organizations through staff satisfaction and enhanced team development and team care, and improved healing spaces through evidenced-based use of nature, color, light, artwork, architecture, aroma, music, and technology. Such environments should be achieved in all new and existing facilities. See Part 2, Chapter 3
- Adaptability: Provide transformable building environments that accommodate changing needs, functional programs, and care delivery practices over time. Healthcare delivery changes faster than present healthcare facilities can adapt. The facility itself will constrain care if it cannot adjust at several levels to accommodate newer methods of care delivery. Future healthcare facilities should be designed with the capacity to accommodate growth and expansion, as well as changes in clinical flow patterns. Adaptability focuses on the capacity of the physical asset to accommodate change on at least four levels of intervention: the site and its infrastructure, the base building and its MEP infrastructure, the fit-out or spatial layout, and the equipment and furnishings specific to VA healthcare operations. The capacity for change at all levels of intervention is vital to all VA service venues—hospitals, clinics, residential facilities, storefronts, team facilities, and veterans' homes. See Part 2, Chapter 4
- Sustainability: Provide sustainable building environments that meet the needs of the present without compromising the ability of future generations to meet their own needs. VA should create initiatives to strengthen the relationship between sustainable building practices and their positive impact on veteran healing. VA should develop approaches to provide adequate support and oversight necessary to ensure that sustainable strategies are successfully incorporated into VA projects. Central to the selection and implementation of sustainable strategies and best practices should be a commitment to whole lifecycle value in lieu of initial cost. Cost-benefit analyses and return-on-investment (ROI) calculations should be used to evaluate both quantifiable benefits (such as energy-saving features) and qualitative benefits (such as error reductions, productivity, and retention of care-delivery professionals). See Part 2, Chapter 5
- Building Operations and Maintenance: Provide more effective and efficient building environments through innovative monitoring, operations, and maintenance. The effective performance of building environments over time results from the proper design, procurement, installation, operation, and

maintenance of building systems. Building systems consist of several subsystems—structure, exterior envelope, interior space division and finishes, mechanical and electrical networks and equipment, and equipment and furnishings—that provide the performance to support occupant functions, health, safety, comfort, and satisfaction. VA should develop effective mechanisms to realize improved operational performance both in new buildings and in the large existing portfolio of VA facilities as they undergo change. See Part 2, Chapter 6

- Building Acquisition: Provide more effective and efficient strategies for the acquisition and delivery of new healthcare buildings and for their ongoing adaptation and expansion. Building acquisition encompasses acquisition and delivery of VA healthcare facilities and equipment, suggesting attention to construction and installation processes and management throughout the entire lifecycle of a facility and across all levels of facility intervention. Building acquisition should consider care service delivery even in cases where design and construction may not be needed or is minor, such as in home-based care. See Part 2, Chapter 7
- Data Acquisition: Provide self-monitoring building environments that become a source of research data and information. VA should create an evaluation culture applicable to all facility types. This evaluation culture should include self-monitoring as well as program evaluation, creation of living laboratories for innovative building projects, and three-way knowledge translation activities where innovations and information are exchanged both vertically and laterally. Data should cover clinical outcomes and facility attributes and draw correlations between them, making effective use of performance metrics and standard benchmarks. See Part 2, Chapter 8
- Continuous Innovation: Develop new solutions for optimum coordination of best practices in healthcare and in the design, adaptation, and operations for the transformation of healthcare facilities that will provide 21<sup>st</sup>-century care. To support the development of new solutions, the Department should establish and fund an “Innovation Center” within VA. Planning for future healthcare facilities will require an understanding of alternative futures in the healthcare system. Achieving dramatic gains in efficiency and quality to reduce costs requires fundamental reengineering of healthcare processes. The center should include a way to continuously monitor and advise VA. See Part 2, Chapter 9

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