Redesigning Primary Care For Breakthrough in Health Insurance Affordability

Model I: The Ambulatory Intensive Caring Unit

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Table of Contents

I. Executive Summary

Rising per capita health benefits spending by employers and their insureds is eroding their joint global competitiveness and financial viability. Health insurance premiums and out-of-pocket spending for a family of four currently exceed 40% of the total compensation package of a minimum wage worker.

The current health care delivery system and support network have improved through small incremental change. Due in part to enormous investment in existing infrastructure, and the equally enormous effort required to sustain current delivery, the system has failed to innovate sufficiently to achieve dramatic performance improvements in quality, cost, or satisfaction. Concerted effort to fundamentally redesign care delivery to achieve breakthroughs in health care affordability in particular has not been sustained due to resistance from mainstream providers and middle- to upper-income insureds.

This initiative (the "Bug Project") focuses on the design of two much lower cost primary care delivery models aimed at solving the problem of health insurance unaffordability for low-wage workers. The first model, described in this report, is the Ambulatory Intensive Caring Unit, the A-ICU. The second model, the Video Visit Booth (VVB), is described in a separate report.

The A-ICU is a new primary care model designed **to serve exclusively the 20% predicted highest cost segment of working populations. Multiple cost-saving innovations are "baked in" to primary care delivery itself, as well as to referral relationships with specialists, hospitals, and other non-primary care service providers.** The prospectively identifiable 20% predicted highest cost segment of a typical PPO insurance pool ("highest risk quintile") utilizes more than 60% of the pool's subsequent year total spending. **The design team's goal is to limit average actual per capita spending per highest risk quintile enrollee to less than 50% of expected cost in the subsequent year, while improving quality of care and patient experience.**

Three cost-saving health care "production methods" are the backbone of the A-ICU:

- ***"First Floor Team": Intensive Upstream Cost Risk Reduction.*** Relies primarily on a team of well-trained, RN-managed, physician- or NP-advised, outcomes-accountable community health workers, pharmacists, dietitians, and RNs. Using frequent ("high-touch"), psychologically nuanced, rules-based individual, group, and electronic interactions to boost patients' motivation and skills in self-management, the First Floor Team's goal is to **minimize downstream need for traditional physician and nurse practitioner-delivered health care services. We estimate that it will reduce gross per capita spending for its patients by approximately 23 percentage points compared to western PPO norms.**

- ***"Second Floor Team": IT-Enabled Streamlined MD and NP Visits.*** Adapts the industrial engineering concept of continuous flow manufacturing to achieve more efficient production of an expanded range of primary care MD and NP visits. Using First Floor Team-enabled planned visits and a largely pre-populated interoperating electronic health record (EHR), the Second Floor Team adds maximum reliance on medical assistants and nurse practitioners, instant cell-phone-mediated specialist consults, and selective "insourcing" of specialist services in order to **produce primary care visits and high-frequency specialist care visits more efficiently. We estimate that it will reduce per capita spending by approximately 5 additional percentage points compared to western PPO norms.**

- ***"Third Floor Team": Performance-Based Selection and Continuous Management of the Balance of the Health Care Supply Chain.*** Leverages patient trust built by the First and Second Floor Teams and a partnership with a large insurer to obtain specialist and hospital "all-in" cost-efficiency and quality profiles, in order to adapt the principles of supply chain management in three steps: **(1) concentrate non-primary care services within the highest performing quintile of specialist, hospital, pharmacy, and other supply chain partners; (2) ensure clear allocation of tasks from each patient's care plan and authority to ensure their completion or revision; and (3) coordinate capture of further efficiency gains via cost-effective integration with, and incentivization of, each supply chain partner. We estimate that the virtual Third Floor Team will further reduce per capita spending by approximately 20 additional percentage points compared to western PPO norms.**

Inspired by the application of disruptive technologies as disruptive innovations in other retail service markets, the A-ICU would expressly serve today's *least desirable health care customer*: uninsured or under-insured low-income adults (age 18-64) who are not covered by Medicare or Medicaid are expected to incur substantial health care costs in the next 12 months (2.85 times the average costs for adults). Most of these patients have at least one chronic condition requiring ongoing management, coordination, and support. Pariahs in individual health insurance markets, they are increasingly so regarded in group health insurance markets.

In order to maximize its value to the majority of high-risk patients, the A-ICU would not serve the subset of high-risk patients for whom enhanced primary care is likely to be of little value—for example, those with severe persistent primary diagnoses of mental illness or substance abuse, or of non-behavioral chronic illnesses such as severe CNS injuries requiring prolonged institutionally based care.

Other industries have seen discontinuous advancement through the introduction of a disruptive innovation, whereby a new model enters the market often addressing a neglected, underserved, or less profitable market segment. Over time, the innovator overturns the incumbent by initially filling a low-end niche that the incumbent cannot or does not want to fill, steadily improving product and finally supplanting the established entity by providing equal or higher quality at a lower cost.

The A-ICU is designed as a health insurance affordability solution for "undesirable customers." It competes against non-consumption in two respects. It offers more affordable *health insurance* to consumers who would only buy health insurance if offered at a lower price. It also offers more affordable *health care* to uninsured or underinsured consumers who do not seek health insurance at any price, but currently avoid desired care because they find it unaffordable. If successful, it carries the potential to constructively disrupt the current mode of delivery of primary care, as well as the entire downstream health care supply chain.

Our cost models predict that the A-ICU is likely to achieve 47% gross savings from average expected subsequent spending year of $6,525 for the majority of high-risk western PPO enrollees for whom the A-ICU is designed. Savings net of incremental costs to deliver the A-ICU's cost-savings features is estimated to be 37% to 40% of expected spending. In essence, we project that about one-fifth of gross savings will be offset by the higher cost of operating the A-ICU compared to conventional PPO primary care.

If such PPO savings were achieved and passed along to the customer via lower priced PPO insurance and care, it would likely stimulate vigorous cost-saving innovation by California's nationally distinguished managed care industry, much to the benefit of all consumers.

The A-ICU is a work in progress. Additional significant cost-saving enhancements, including those suggested by peer reviewers, should be further explored. Potential enhancements may achieve significant further savings, expand access to care, and improve quality both for the A-ICU's initially targeted market and for the larger general population. Highest priority potential enhancements include partnerships with non-U.S. insurers, hospitals, and physicians, based on either telemedicine or patient international travel for non-urgent hospital and specialist care. These greater departures from conventional care may be needed to attain the Bug Project's 50% net savings goal. Such departures carry more risk of political and regulatory resistance and we have suggested mitigation methods based on limited preliminary analysis.

The A-ICU is designed as a partnership with patients to enable more affordable health insurance and high-quality care. In exchange for an estimated net savings of up to 40% compared to average PPO insurance coverage for high-risk patients (if available), A-ICU patients would incur three obligations: (1) completing a health risk appraisal at enrollment and at annual re-enrollment; (2) participating in self-management activities and other risk reduction efforts recommended by A-ICU staff; and (3) accepting A-ICU primary care, specialists, hospitals, and treatment options, explicitly selected by A-ICU staff based on their superior cost-efficiency at average or above average levels of quality. In these three obligations and in several other features, such as its emphasis on phone and group visit-mediated contact with RN-supervised non-MD, non-NP staff, the A-ICU is explicitly "not as good as" traditional more expensive care.

The A-ICU would allow substantial reduction in premium and out-of-pocket spending for high-risk consumers. It would also allow reduction in spending for any current or aspiring

health benefits plan sponsor—especially insurers participating in a government-sponsored high-risk insurance program, re-insurance companies, self-insured employers, publicly funded health insurance programs, and health and hospital systems with substantial numbers of uninsured high-risk patients, as well as employers and/or unions with uninsured low-wage workers. The division of A-ICU savings between insurers and insureds can be accomplished via a number of options that will be shaped by the nature of the A-ICU's funding sources. Depending on the clinic's ownership, potential funders might include financial and strategic investors; foundations and other various nonprofit private organizations; private health benefits plan sponsors such as employers, unions, or associations; and government entities.

Estimated A-ICU start-up costs to serve a population of 18,000-20,000 very high-risk working age adults are $10.8 million. In view of the many uncertainties created by newly combining a formidable list of individually challenging redesign elements, we recommend starting with a less costly, minimalist version of the A-ICU that would serve an initial population of 2,000 patients over the course of a less costly one-year "pre-pilot" project. In addition to reducing the capital required to test the A-ICU, such a pre-pilot would enable an initial round of rapid cycle improvement to test and refine the essential features of A-ICU design. Important test questions include the feasibility of the A-ICU's multi-component design, the accuracy of its 37%-40% net projected savings, and the validity of its premise that many low-income consumers with high health risks would be willing to switch to a new provider and accept the A-ICU's "not as good as" features, in exchange for much greater affordability at likely equal or superior patient experience and quality of care.

In the course of modeling the A-ICU, we sparked interest among multiple purchasers, insurers, providers, suppliers, and additional foundations. They are a logical starting point for building a partnership of A-ICU co-sponsors willing to contribute resources to implement an A-ICU pre-pilot.

II. Problem Statement

- **Rising premiums for self-insured employers are negatively impacting workers and employers.** Rates of real growth in U.S. health insurance premiums and premium-equivalents for self-insured employers have continuously exceeded the real rate of per capita GDP and worker earnings growth for more than four decades. When combined with broader U.S. economic trends that have created increasing numbers of low-wage service workers, this steady erosion in health care affordability has increased private sector uninsurance and underinsurance, depressed job and wage growth, and forced the contraction of multiple publicly funded non-health services.

- **There has been no concerted effort to reengineer care comprehensively to reduce cost.** With the exception of a handful of HMO-exclusive medical group practices, efforts to reengineer ambulatory care in order to lower the rate of increase of per capita health insurance costs have been rare. In addition, insufficient competition and managed care "backlash" have yet to push HMO-exclusive group practices to the frontier of responsible cost-efficiency. None of the country's leading efforts to redesign ambulatory care—such as the Idealized Design of Clinical Office Practice initiative, IHI's Breakthrough Series, and Pursuing Perfection—have incorporated the impact of delivery system redesign on total per capita health insurance spending as a primary tracking or outcome variable. As a result, no new comprehensive ambulatory care delivery vehicles are being built with the primary focus of breakthrough in total per capita health insurance spending while maintaining or improving quality care.

- **The health care sector would benefit from a disruptive low-cost alternative.** In other U.S. economic sectors, such as airlines, retail stores, and financial services, very low-cost entrants have triggered industry-wide breakthroughs in affordability and customer-perceived value. While new innovation has emerged in narrow segments of health care delivery, such as pharmaceuticals and devices (e.g., drug-eluting stents and remote robotic surgeries), most have been insurance cost-additive and there has been no disruptive comprehensive health care delivery innovation since the entry of Kaiser Permanente more than 70 years ago. Health care delivery has largely evolved (or devolved) through incrementalism. The A-ICU is a wholly redesigned (and potentially disruptive) primary care delivery model.

  In the early 60s, Volkswagen constructively disrupted the U.S. personal transportation market with the VW "Bug," a dramatically more affordable car which attracted a large following. It catalyzed the formation of a continuing robust U.S. subcompact car market, which has kept personal transportation and new car ownership within reach for many Americans. Accordingly, we named our redesign initiative the "Bug Project."

III. Study Objectives

The Bug Project's disruptive redesign effort identified two promising lower-cost alternatives to current health care delivery. We estimate that they address more than 70% of total current commercial PPO spending.

- **The first model, described in this report, is the Ambulatory Intensive Caring Unit (A-ICU).** The A-ICU is a primary care model that is wholly redesigned, systematically focused on supporting patient self-management, streamlining primary physician visits, and managing specialists and hospitals the way industrial supply chain partners would be managed. The practice is custom-tailored to serve exclusively the prospectively identifiable 20% of workers and their dependents that drive 60% of a subsequent year's PPO plan medical costs. The A-ICU's goal is to limit actual per capita spending per high-risk enrollee to less than 50% of expected cost.

- **The second model is the Video Visit Booth (VVB).** The VVB is a low-cost, convenient, telemedicine-based alternative for patients with an ostensibly non-life threatening acute primary care problem who are considering a visit to the emergency room, urgent care facility, or physician office. The VVB is initially targeted to serve half of the acute ambulatory care visit needs of workers and their dependents. The objective is to limit total cost per visit and the patient's elapsed time per visit to 50% of the current average experience of visits to the ER, urgent care center, and physician's office. It is described in a separate report and, if implemented in conjunction with the A-ICU, would increase the A-ICU's projected net savings.

IV. Methodology

Four primary sources of information and expertise formed the basis of this research.

- **A core team of national and regional experts in primary care innovation, operations, and health care process redesign convened in weekly teleconferences** to review data and discuss the implications for breakthrough models of care delivery. The explicit design emphasis was on developing concepts from innovative best practices or innovating anew. Assumptions based on traditional practice were limited, and constraints were "backloaded" instead of frontloaded, allowing for more design freedom. The team was selected and led by Arnold Milstein, MD. Team members included:

  - Tom Bodenheimer (UCSF-SFGH)
  - Melissa Buckley (independent consultant)
  - Roger Chaufournier (Patient Infosystems)
  - Mark Cloutier (Health Commons Group)
  - Susan Colen (Project management consultant)
  - Rushika Fernandopulle (Inter-faculty Program for Health Systems Improvement, Harvard University and Renaissance Health, Partners Health Care)
  - Weston Headley (Next Wave Partners)
  - Pranav Kothari (Inter-faculty Program for Health Systems Improvement, Harvard University and Renaissance Health, Partners Health Care)
  - Arnold Milstein (Mercer, Pacific Business Group on Health, Leapfrog, Pursuing Perfection)
  - Paul Plsek (Directed Creativity)
  - Neil Solomon (NAS Consulting)
  - Jeffrey Street (independent financial modeling consultant, now at Wells Fargo Bank)

- **Relevant studies in academic literature and everyday practice were assessed for key insights.** Resources accessed in everyday practice were accessed via the core team and the peer review panel. The PPO claims experience of one of the largest low-wage unions, UNITE HERE, as well as that of Regence Blue Shield, provided additional valuable resources.

- **A peer review panel of subject matter experts was interviewed to ground the core team's design assumptions and critique the team's draft designs** related to clinical operations, business structure, legal barriers, and financial modeling. A subset also served as the project's peer reviewers. They were deliberately drawn from delivery systems serving low income and/or high-risk customers. The latter are the health insurance and health care industries' "undesirable customers," typically served by disruptive innovations in other industries. These experts included but were not limited to:

  - Richard Baron (Greenhouse Internists)
  - Molly Coye (Institute for the Future)
  - David Frazzini (Mercer Actuarial Practice)
  - Jane Garcia and staff (La Clínica de la Raza)
  - Betsy Gilbertson (Las Vegas HEREIU Health Fund)
  - Jennie Chin Hansen (On Lok and AARP)
  - Halsted Holman (Stanford University)
  - Chuck Kilo (GreenField Health System)
  - Bob Master (CommonwealthCare Alliance)
  - Karen Nelson (New York City UNITE HERE Health Center)
  - Jeremy Nobel (Department of Health Policy and Management, Harvard School of Public Health)
  - Mitchell Olejko (Ropes and Gray)
  - Dan Roble (Ropes and Gray)
  - Cheryl Scott (Retired CEO, Group Health Cooperative of Puget Sound)
  - Morris Weinberger (Department of Health Policy and Administration, University of North Carolina)
  - Mark Woodard (Lifelong Medical Center)

  Their listing does not imply their endorsement of either model.

- **A financial model of estimated cost and savings associated with the operation of the A-ICU and with an initial A-ICU pilot was developed** to inform and test the design process.

V. The Ambulatory Intensive Caring Unit: Clinical Operations

The Ambulatory Intensive Caring Unit (A-ICU) would constitute a new primary care delivery model that integrates and extends multiple cost-saving innovations into direct care delivery and relationships with specialists, hospitals, and other non-primary care service providers. Its unique emphases are (1) heavy prioritization of intensive upstream cost-saving risk reduction via well-trained and RN-supervised ancillary staff that enables proactive and coordinated patient care; (2) application of the principles of continuous flow manufacturing to provide physician and nurse practitioner visits cost-effectively; and (3) use of industrial supply chain management methods to connect patients to highly cost-effective referral care by increasingly aligned clinical supply chain partners.

At the core of this model is a strong relationship between the patient and her "medical home." The word "intensive" signifies that patients would receive frequent "touches"—monitoring and management—from members of the primary care team. Analogous to a hospital inpatient ICU, the A-ICU will provide more attentive care through proactive self-management support and tighter care coordination, information and communication technology, improved (and at times immediate) access to specialized care, more comprehensive teams with a dedicated 1:1 relationship, highly customized care plans, and expanded access for urgent care. Designed to serve a higher level of care intensity, the A-ICU is an entirely differentiated primary care system—not an adaptation of the current model—specifically addressing the needs of a neglected or poorly served segment of the market. "Intensive" is not intended to mean that the practice will provide urgent or emergency ambulatory services to patients with potentially life-threatening illnesses.

The unique staffing model allows for increased flexibility and encourages ownership of patient relationships. Similar to best practices in the hospitality industry, each staff member will be specifically cross-trained to play several roles, and have the responsibility and privilege of resolving patient issues, often without need for senior consultation. Daily team meetings ("huddles") will further facilitate rapid response and resolution of administrative and clinical issues.

Three Core Elements of A-ICU's Approach

- **Three cost-saving health care "production methods" are the backbone of the A-ICU:**

  - ***"First Floor Team": Intensive Upstream Cost Risk Reduction.*** Relies primarily on a team of well-trained RN-managed, physician- or NP-advised, outcomes-accountable community health workers, pharmacists, dietitians, and RNs. Using frequent ("high-touch"), psychologically nuanced, and rules-based individual, group, and electronic interactions to boost patients' motivation and skills in self-management, the First Floor Team's goal is to **minimize downstream need for traditional physician- and nurse practitioner-delivered health care services.**

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- ***"Second Floor Team": IT-Enabled Streamlined MD and NP Visits.*** Adapts the industrial engineering concept of continuous flow manufacturing to achieve more efficient production of an expanded range of primary care MD and NP visits. Using First Floor Team-enabled planned visits and a largely pre-populated interoperating electronic health record (EHR), the Second Floor Team adds maximum reliance on medical assistants and nurse practitioners, instant cell-phone-mediated specialist consults, and selective insourcing of specialist services in order to **produce primary care visits and high-frequency specialist care visits more efficiently. We estimate that it will reduce per capita spending by approximately 5 additional percentage points compared to western PPO norms.**

- ***"Third Floor Team": Performance-Based Selection and Continuous Management of the Balance of the Health Care Supply Chain.*** Leverages patient trust built by the First and Second Floor Teams and a partnership with a large insurer to obtain specialist and hospital "all-in" cost-efficiency and quality profiles in order to adapt the principles of supply chain management in three steps: **(1) concentrate non-primary care services within the highest performing quintile of specialist, hospital, pharmacy, and other supply chain partners; (2) ensure clear allocation of tasks from each patient's care plan and authority to ensure their completion or revision; and (3) coordinate capture of further efficiency gains via cost-effective integration with, and incentivization of, each supply chain partner. We estimate that the virtual Third Floor Team will further reduce per capita PPO health insurance spending by approximately 20 additional percentage points compared to western PPO norms.**

- **Overview of the First Floor Team: Intensive Upstream Cost Risk Reduction**

  - While both the First Floor Team and Second Floor Team would support upstream risk reduction, most would be accomplished by the First Floor Team. **Two characteristics of the First Floor Team would reduce the downstream need for physician- and nurse practitioner-provided primary care, specialty care, and hospital admissions.**

    - **An evidence-based emphasis on psychologically nuanced patient self-management support** including patient education, motivational interviewing, collaborative decision-making, goal-setting, problem-solving, and other interactions designed to strengthen patient management of their own conditions.

- **Frequent and coordinated contact with patients led by a designated, personally accountable member of their First Floor Team via** phone, e-mail, scheduled group and individual visits, and home visits.

The rationale, bolstered by a considerable scientific literature, is that paying close, personalized attention to chronically ill patients—before they spiral downward into a serious exacerbation or complication—improves quality and reduces cost. The mediating effects include improved patient and caregiver knowledge, skills, self-sufficiency, and, perhaps most important, trust in their providers' advice.

The accountable team member, or clinical partner, is responsible for the overall coordination of the patient's care, with the frequent touches and upstream management systematized to ensure nothing falls through the cracks. The increased costs of this intensive, customized care program are offset by the upstream savings.

– **The First Floor Team would be responsible for:**

  - **Supporting patient self-management and routine protocol-driven chronic illness care.** Support includes self-management training, advance directive completion, regular screening and testing, medication renewal and titration under protocol, triage and referral, and post-referral care follow-up.

  - **Responding to urgent care needs that can be managed by protocol.** Examples of urgent care protocols include management of uncomplicated urinary tract infections, viral symptoms, certain rashes, joint and muscle pains, and most headaches.

  - **Coordinating care between the First Floor Team and Second Floor Team as well as among specialists and outside institutional care.** The coordination function includes prompt and thorough follow-up of all patients discharged from the hospital.

– **First Floor Team members would include a wide range of individuals with expertise in teaching and motivating patient self-management.** Led by a registered nurse, the team would primarily rely on community health workers, medical assistants, health educators, a dietician, a pharmacist, and a receptionist.

– **Cross-training and rotation of the staff would provide flexibility in scheduling and encourage continuous learning on the job.** Medical assistants, community health workers, and receptionists would be trained to perform each other's functions and would rotate with each other and with counterpart Second Floor Team staff on a regular basis. The First Floor Team would also receive intensive initial and in-service follow-up training on protocols such as those developed by Dr. Charles Burger. These protocols would allow receptionists or medical assistants to assess properly the kind of treatment encounter a patient

needs, including whether the patient needs urgent transport to an emergency room.

- **First Floor Team staff would interact with patients in a variety of ways—in-person at the clinic or at the patients' homes, or by phone, email, or web-application**—based on what is most efficient for promptly meeting the patients' clinical and social needs.

- **Each patient would be assigned a primary contact person, or clinical partner, from the First Floor Team staff**, and would have a longitudinal, personalized relationship with their care team and clinical partner. By explicitly placing overall accountability for each patient with a designated First Floor Team staff member, the A-ICU aims to replicate or exceed the high levels of patient trust achieved by pioneers such as On Lok and Commonwealth Care Alliance.

- **First Floor Team clinicians would have access to excellent web, phone and group visit self-management tools, as well as easy access to Second Floor Team clinicians and behavior change experts.** They would have moderate caseloads, allowing for rapid accessibility, flexible durations of patient interactions, and routine daily huddles with Second Floor Team staff, exemplified by the Charles Burger practice.

- **There would be a close linkage between the First Floor Team and Second Floor Team.** The First Floor Team would refer to the Second Floor Team patients whose needs are beyond their scope. Before the referral to Second Floor Team, key EHR data would be updated (e.g., pertinent studies, lab work, key patient information) in order to streamline more expensive Second Floor Team evaluation. While the First Floor Team would typically serve as the patient's first point of contact, it would not act as "gateshutter" to keep patients away from the Second Floor Team. Rather, the First Floor Team would help patients reduce their need for physician services, thereby allowing physicians time to concentrate on those who truly need their services. The Second Floor Team clinicians would also play an active role in creating and monitoring the care plans for each patient, periodically review the progress of both individuals and populations with the First Floor Team, and participate in at least daily huddles with First Floor Team staff.

- **First Floor Team care—primarily disease management interventions "intensified" via face-to-face contact and use of psychologically nuanced patient engagement methods such as motivational interviewing—is designed to generate downstream cost savings.** The underlying premise is that incremental investment in psychologically informed in-person risk reduction by a results-accountable primary contact and team will generate substantial gains compared to "average" disease management savings. We conservatively estimated incremental savings from face-to-face contact and personal accountability for results at 4.3% of total spending, 25% higher than savings achieved by current best-in-class remote DM vendors for the 20-30% of

potentially manageable high risk chronic illness patients who participate in relevant risk reduction programs delivered remotely. (The A-ICU savings model also assumes 100% participation in relevant risk reduction programs by chronically ill A-ICU patients by making participation *a condition* of reduced health insurance premiums).

- **Overview of Second Floor Team: IT-Enabled Cost-Efficient MD and NP Visits**

  - **Three characteristics will allow the Second Floor Team to further reduce total health care spending.**

    - An advanced EHR would enable MDs to (1) leverage First Floor Team and Second Floor Team paraprofessional staff's clinical data (history and initial physical exam) collection and entry, (2) monitor adherence to clinical and formulary guidelines, and (3) eliminate duplicative testing.

    - Cell-phone-available frequently utilized specialists would enable the elimination of approximately one-third of such specialist referrals and convert half of other such referrals from two assessment visits to one assessment visit preceded by patient-specific lab and imaging studies ordered by the Second Floor Team clinician based on advice from the cell-phone-accessed specialist.

    - For highest-volume specialties, the community's most cost-effective specialists would be in-sourced to deliver scheduled specialist care on the Second Floor Team.

  - **The Second Floor Team would be responsible for:**

    - **Caring for patients with the spectrum of illnesses commonly seen by primary care clinicians.** The focus would be to care for urgent care or a subset of non-urgent care patients who are too complicated or brittle to be managed by First Floor Team staff or whose problems do not lend themselves to evidence-based protocols. Examples of patients with health conditions best addressed by clinicians on the Second Floor Team include patients whose diabetes remains out of control after completing medication titration protocols, patients with increasing bouts of angina, patients with walking pneumonia, and patients with severe migraine headaches or chronic abdominal pain.

    - **Managing External Physician Selection and Integration and First Floor Team Protocols.** This includes ensuring that A-ICU patients are returned to the A-ICU for ongoing care after specialist referrals. An important aspect of working with First Floor Team personnel includes constantly developing and revising rules-based clinical protocols based on new medical literature and on internal A-ICU experience via teaching, training, ongoing case review, and daily huddles with First Floor Team staff.

- **The Second Floor Team would consist of physicians, nurse practitioners, physician assistants and medical assistants** trained to manage complex and non-routine chronic and acute encounters. The initial division of labor would begin with advanced levels of delegation to non-physician personnel and would continue to push toward the clinically responsible "outer limit" of cost-effective delegation.

- **Cross-training and rotation of medical assistants would provide scheduling flexibility, encourage continuous learning, and allow for less expensive care.** Medical assistants would receive constant on-the-spot education and training from Second Floor Team clinicians. They would rotate between the First Floor Team and Second Floor Team such that they could perform Second Floor Team patient flow management and history-taking functions as well as First Floor Team patient self-management support functions.

- **Patients would connect with Second Floor Team personnel in person and remotely by email and phone** based on the patients' clinical and social needs.

- **The Second Floor Team would partially in-source high-volume specialist care and expertise by restructuring how primary care physicians and specialists work together.** Rather than referring patients out for specialty care, the A-ICU would contract with a set of providers to work in-house on a part-time basis (typically a half-day per week based on service needs). The A-ICU would provide specialists with the basic equipment central to their practice at "wholesale prices"—the cardiologist's echocardiogram, treadmill, and EKG, for example. Only those patients undergoing procedures requiring equipment not available at the clinic, or needing specialists not contracted to work at the clinic, would be referred out.

- **Internalizing some specialist care would allow primary care physicians to take on additional responsibilities and would ultimately lower cost.**

    - **Skills transfer.** In-house specialists would teach skills related to routine conditions through formal instruction and side-by-side practice. A-ICU specialists would conduct didactic and interactive learning sessions and demonstrate specialist methods when seeing patients in partnership with primary care physicians.

    - **Responsibility transfer.** Primary care physicians, in partnership with patients' First Floor Team care managers, would conduct or order all "pre-work" required for specialists to make their medical decisions—including conducting labs and x-rays, collecting relevant clinical information, and identifying authorized diagnostic and therapeutic procedures. Specialists would agree to be available in the A-ICU at specified times and by cell phone to provide brief real-time advice to primary care physicians ("curbside

consults"), which would help eliminate low-value referrals and ensure patients who are referred have specialist-guided and clinician-endorsed primary care testing completed prior to their specialty visit. This would enable a sizeable fraction of specialist assessments to be completed in a single visit.

- **Specialists practicing at the A-ICU part-time would be paid on a case rate or "contact capitation" basis,** subject to meeting specified quality-of-care and patient-experience performance targets. This would disincentivize "flat-of-the-curve" treatment. The contract would also prohibit specialists from permanently transferring patients seen in the A-ICU to their own practices where costs would be uncontrollable. In general, specialists who see A-ICU patients on a referral basis also would not be paid fee-for-service. Specialists would be eligible for bonuses based on their teaching and training services, their phone-based consultations, and their quality-of-care and patient-experience ratings.

- **Overview of the Third Floor Team: Performance-Based Selection and Continuous Management of the Balance of the Health Care Supply Chain**

  - **The A-ICU would contract with a network of highly efficient specialists and hospitals for care outside of the A-ICU.** The networks affiliated with the A-ICU would be drawn from a cadre of practitioners and organizations that score above average on quality indicators and are within the top quintile on measures of cost-efficiency based on the most advanced "all-in" physician cost-efficiency and quality assessment methods. Selection would be enabled by a partnership with a large California insurer or large provider organization with sufficiently high claims data density to enable performance-based external provider selection.

  - **While the A-ICU would provide for telephonic 24/7/365 coverage, it would contract with an efficient network of urgent care centers to provide around-the-clock in-person care for its patients.** To the extent possible, these centers would reflect the same culture and care patterns as would the A-ICU itself.

  - **When hospital stays are required, patients would be managed by hospitalists working in partnership with the A-ICU.** Hospitalists would be performance-selected like other specialists and would be charged with ensuring that admission is truly necessary, eliminating zero-value specialist interactions, minimizing lengths of stay and rates of re-admission through close communication with A-ICU personnel during the critical post-hospital period, and achieving above average scores on specialty-relevant measures of quality and patient experience. Hospitalist compensation would reward these outcomes.

  - **Lab, pharmacy, DME, and other providers would also be selected and rewarded according to claims-based quality and cost-efficiency profiling.**

  - **All specialized supply chain partners would be continuously challenged to push their performance and levels of integration with the A-ICU to higher**

levels and would be rewarded via increased referrals or more favorable payments.

- **Out-of-network urgent and emergency care would be managed via the A-ICU's 24/7 telephonic and, where feasible, onsite assessment capability, with immediate "repatriation" when patients are stable for transfer. Out-of-network providers would be paid at PPO rates negotiated by the A-ICU's insurer partner.**

- **Ongoing Innovation and Refinement**

  The A-ICU is designed as an innovative model practice. As with other disruptive business models, success will hinge on refinement of the model and an in-built continuous innovation process. The A-ICU team will be selected for their ability to work in an environment that encourages process improvement. Team huddles will also be formal venues for new idea generation. The team will monitor clinical performance measures and total spending measures on an ongoing basis, learning and refining continuously. Finally, and equally important, will be the feedback loop from the patients. Patients will be asked for formal input through surveys and focus groups, and the practice culture will foster informal feedback at all times. Team members will be accountable for rapid cycle improvements based on this systematically elicited guidance from customers.

VI. Patient Population Mix and Practice Scale

- **A-ICU target customers would be high-risk adults (age 18-64) not covered by Medicare or Medicaid. This group of patients is among the least desirable in the health care system, and is currently underserved. Marketing and sales effort would focus on uninsured patients or insured patients whose insurers (such as those participating in the state's MRMIB High Risk Program) seek a more cost-effective care delivery solution for high-risk patients.**

  - **Among the patients in the A-ICU clinic, the average targeted expected cost of health care would be approximately three times average costs in an adult (non-medical) population.** As a few patients whose costs can not be significantly reduced via improved ambulatory care (e.g., those with severe CNS damage) would be excluded (see below), we anticipate that the actual expected cost of health care would be 2.85 times the population average. The projected average per capita health care expenditure for adults in 2005 is $2,290 (excluding administrative costs). Therefore, the average A-ICU patient's expected cost would be $6,525 (2.85 x $2,290), ranging from approximately two to 10 times average PPO enrollee costs.

  - **"2.85x patients" make an average of 12 primary care physician visits per year.** To model the mix of primary care physician visit types, we asked our expert panel to estimate, starting with PPO physician visit mix for average PPO patients. The average person age 45-64 in 2002 made 4.3 physician visits. Sixty-three percent (63%) of those visits were to primary care. Forty-two percent (42%) of primary care visits were for acute problems, 30% for chronic problems, and 23% for preventive care. The A-ICU population would likely be skewed toward chronic problems.

  - **Most A-ICU patients will have one or more chronic conditions requiring ongoing management, coordination, and support.** The pool of patients insured by the California Managed Risk Medical Insurance Board (MRMIB), California's high-risk insurance pool, reflects a typical spectrum of illnesses and needs among high utilizers. In 1999, MRMIB provided insurance to 21,000 people—generally people unable to purchase private insurance due to chronic illness. Approximately 70% of the MRMIB population had at least one chronic illness requiring regular self-management and ongoing chronic disease management support. The most common chronic conditions included cardiovascular disease, diabetes, musculoskeletal disease, and asthma or COPD.

  - **A-ICU patients must be willing to actively participate in their own care.** Typically just one-quarter to one-third of patients with chronic illnesses agree to work with disease management vendors' telephone-based counselors. In exchange for double-digit savings compared with the average costs of PPO insurance coverage (if available) for high-risk patients, A-ICU patients would incur three

obligations: (1) completing health risk appraisal at enrollment and upon annual re-enrollment; (2) participating in self-management activities, care management, and other risk reduction efforts recommended by A-ICU staff; and (3) accepting specialists, hospitals, and treatment options selected by A-ICU staff based on a criterion of high cost-efficiency at average or above average levels of quality.

- **The A-ICU would not serve patients for whom enhanced primary care is likely to be of little value**—for example, those with severe debilitating neurological conditions, or primary diagnoses of severe persistent mental illness or substance abuse.

- **The number of languages and cultures in the patient panel would have a major impact on how the practice functions.** Safety net health care institutions in many metropolitan areas of the U.S. are faced with 10 to 20 languages among their patients. Translation services are an added expense and increase visit time. Particularly for non-face-to-face visits, language discordance is a huge barrier. After a specific site and population are chosen, the A-ICU will determine what core languages it will be able to service in an efficient manner, and staff will be chosen to reflect this decision. These likely will include at least English and Spanish.

The ideal initial scale for the A-ICU is likely to be approximately 18,000-20,000 patients. A critical mass of patients is necessary to make the delivery model operate cost-efficiently. Financially, a panel of less than 6,000-10,000 patients would have insufficient scale to cover fixed costs (electronic health record, space for group visits, management staff, etc.), raise unit cost per patient, and reduce expected savings. A much larger initial population than 18,000-20,000 may prove too complicated to manage. The model's economies of scale will limit the A-ICU's initial location to a metropolitan area where there are likely to be enough high-utilizing individuals who seek low-cost coverage.

Because there are many operational and organizational culture issues that need to be developed in the course of daily operations, we recommend that **the A-ICU begin its first year as a pre-pilot**, with an average census of 2,000 patients, and a much smaller clinical team. Although some features of the full A-ICU would not be implemented at this stage (such as in-house specialists and 24/7 in-house First Floor Team staffing), this pre-pilot would nonetheless allow development of essential processes, start-up of the IT systems, one rapid improvement cycle, and establishment of a robust organization culture prior to the full-scale pilot.

VII. Important Aspects of the Patient Experience

The A-ICU is designed to serve a segment of the population that is currently underserved. As with other disruptive innovations, at its core is a service delivery method that lacks familiar features. To help induce this trade for a lower price, we believe that an *improved* patient experience is vital to the success and sustainability of the A-ICU. The development of a partnership and trust between the primary care team and the patient is fundamental to the care process. Through conscious trust-building and team development, a more deliberate customer service ethic, and advanced access to patients' care needs, the A-ICU primary care model is designed to maximize patient experience. The following five aspects of the model will institutionalize it.

- **Orientation.** The first visit of a patient to the A-ICU would involve a one-hour visit with one or two First Floor Team caregivers who are candidates to be the patient's primary accountable contact person, and with a clinician from the Second Floor Team for a portion of the visit. The visit would include an orientation to the practice, a description of the team process, an initial assessment of the patient's problems, and an opportunity for the patient and practice to become familiar with each other. The team approach will be emphasized, and the patient will have the opportunity to meet the entire proposed primary team. The information gathered in the detailed intake and history-taking processes would be stored in an EHR. For patients at or below the average risk of a 2.85x cost patient, the orientation visit would set patient expectations that most care will be provided on the First Floor Team. For those at significantly higher than average risk, the orientation process would emphasize a team approach involving a clinician on the Second Floor Team supported by caregivers on the First Floor Team. Primary care team and patient responsibilities would be discussed, and a philosophical mutual compact would be established. The orientation visit would be followed up with immediate frequent touches, to establish the unique partnership and high levels of trust.

- **Designated primary accountable caregivers, or clinical partners.** All patients would have consistent contact with the same clinical partner, who would usually be a First Floor Team or Second Floor Team provider. For the very highest-risk patients, the primary accountable provider would be a clinician from the Second Floor Team. Patients who are frequent users of specialists and inpatient services would receive more frequent touches by physicians, and the First Floor Team would be liberal in ensuring easy access to the Second Floor Team by these high utilizers.

- **Access.** A critical feature of the A-ICU would be 24/7/365 primary care access for the patients. If this access were not guaranteed, patients would rightfully self-select care outside the practice—in non-partner emergency rooms, specialists' offices, and urgent care centers—and the benefits of the practice's cost-management features would be lost. This 24/7/365 remote access (by phone, email, etc.) would be provided by the A-ICU, in combination with a contracted cost-effective and collaborative urgent care center and a back-up call center. Support for the cost-control and self-management culture of the A-ICU would be a managed condition of the contract.

- **Same-day care.** The A-ICU would utilize principles of advanced access, such that patients who need either First Floor Team or Second Floor Team care would receive that care on the same day as the need is expressed if the patient so desires.

- **Cost Sharing.** While the A-ICU will defer to its insurance partners/clients in terms of benefits design, the A-ICU will advocate for cost-sharing by patients for First Floor Team and Second Floor Team care that is below current PPO norms, as well as for recommended external referral care.

VIII. Components of A-ICU Infrastructure

The A-ICU is designed to provide a one-stop medical home for a high-utilizing population. A few infrastructure components are effective in facilitating this medical home.

- **Several pieces of infrastructure are critical to the A-ICU's success:**
  - **An integrated electronic health record to ensure all providers have access to relevant data**. Patients would be encouraged to view and enter data to gain efficiencies and further enforce concepts of self-management. This will likely involve some degree of modification to a best-in-class existing EHR solution. An important piece of the EHR solution will include a robust CRM component, in order to track non-clinical information and interactions such as social needs, support structure, hobbies, recent personal events, and other details that will allow for a customized health experience and development of a deeper relationship.
  - **Diagnostic equipment for basic testing and specialist practice** within the A-ICU. Equipment needs would include basic x-rays, echocardiogram/ultrasound, pulse oximeter, EKG machine, spirometer, retinal camera, and phlebotomy equipment.
  - **Adequate space for all providers** (including contracted specialists) to work together and see patients, including conference rooms for group appointments and staff meetings.
  - **Internet access to communicate with patients** over the Internet, including web teleconferencing and home clinical data capture abilities. Electronic communication capabilities will allow for seamless information management with partnering facilities and allow for fluid, efficient remote monitoring and care provision.
  - **Access to a partnering insurer's quality and cost-efficiency provider profiles** to support optimal provider selection and management.
- **Outsourcing.** Other important capabilities may or may not be fully or partially outsourced, depending on the needs of the A-ICU and empirically based cost-effectiveness analyses as the A-ICU approaches its projected optimal scale of 18,000-20,000 patients. These capabilities include laboratory testing, full pharmacy services, and CT, MRI, and x-ray equipment and expertise**.**

IX. Location

The initial A-ICU would likely be located in a metropolitan area in order to attract enough high-risk uninsured individuals and high-performing practitioners. Ideally, the precise location of the practice would have the following characteristics:

- A pool of potential patients that reflects the A-ICU's target population in terms of its health conditions, relatively high cost, and motivation to find less expensive health insurance.

- A sufficiently convenient location to make A-ICU visits easy for patients (especially versus the emergency room).

- A sufficiently large space that all staff members can work at a single site. Providers would need to communicate directly regarding specific patients and how to refine A-ICU processes for greater efficiency and quality care.

- A high concentration of competent clinicians and staff who are eager to participate in a unique and innovative practice.

- An oversupply of specialists such that the A-ICU has access to performance data and can selectively contract with a network of highly efficient practitioners.

X. Savings Opportunities and Operating Costs

To estimate A-ICU savings, savings and incremental costs associated with each discrete component were quantified based on available research, prior operating experience, or core team consensus. The key assumptions that underlie the model are presented below; sources are provided in parentheses. Please note: where available, known benchmarks have been used to guide the cost estimates, and actual vendor conversations are reflected in some of the estimates. That said, given the innovative nature of the A-ICU, in many instances, experts in the respective areas were consulted to provide guidance for these estimates. The financials have been peer-reviewed as well, and, where possible, conservative estimates have been used. As with any innovation, the model is (and should be) continually refined through the subsequent processes of discovery and design evolution.

The A-ICU is likely to achieve 46.7% gross savings compared to expected western PPO per capita health care spending, before netting out the incremental costs of A-ICU's operations. Estimated A-ICU operating costs are $1,018 PMPY, an additional $644 over the cost of the typical primary care clinic. The $644 additional cost is likely an overestimate, since (1) we were unable to access normative primary care monthly operating costs specifically for high-risk patients, and (2) many on the core team believe that the A-ICU staffing is higher than will be actually required (see "Lean Variant" staffing discussion below). However, we opted to preserve these two sources of cost overestimation in order to offset unforeseen operating costs that may be incurred when implementing a new care model. We estimate that **net savings per patient per year will be 36.9%, or $2,407, less than expected PPO spending of $6,525.**

- **Assumptions about the A-ICU patient population**
  - The A-ICU patient's expected health care expenses average 2.85 times the mean health care expenditure for the adult western non-Medicare PPO population, or $6,525 per patient per year. This excludes the 20% of a health insurance premium estimated to be administrative in nature, some of which supports care management that an insurer could discontinue since that support would duplicate A-ICU care management functions.
  - Approximately 70% of patients require ongoing management for chronic conditions and would benefit from the chronic disease management services provided by the clinic. (California Major Risk Medical Insurance Population data)
  - All patients (100%) who are candidates for chronic disease management services will become actively engaged in their own care, as it will be a precondition for accessing the A-ICU and its lower associated health insurance premiums.

- **Assumptions about savings from discrete A-ICU interventions-overall:**

  - **Disease management.** The A-ICU will achieve 25% gross savings over expected costs of its chronic disease patients through its disease management interventions. This level of savings is comparable to those attained by full-scope best-in-class commercial disease management companies that care for chronically ill patients who have a spectrum of concurrent conditions and who participate in such programs. Savings largely stem from averted admissions from better self-care. (LifeMasters)

  - **Proximity of care managers.** A-ICU will achieve savings (approximately 5%) beyond those achieved by commercial disease management companies because it would provide face-to-face interactions, group visit opportunities to enhance self-management support, and close integration of First Floor Team care managers and Second Floor Team primary care providers. (Interviews with K. Lorig, T. Bodenheimer, & N. Solomon)

  - **"Warwick Fanaticism."** Named after the Minneapolis cystic fibrosis expert who doubled the best-in-class benchmark for patient survival due to fanatic dedication to better results, we estimated that the A-ICU will achieve an additional 1% savings from its disease management interventions via careful staff selection and motivation, including assigning patient-specific outcomes accountability to a single designated primary A-ICU staff contact person and team. To ensure conservatism in applying this phenomenon to incremental savings expected from A-ICU disease management, we used a small fraction of the .44 standard deviation difference in results that Mercer Human Resources estimates to be the typical net differential between average and best HR motivational practices (D. Keifer).

  - **Post-discharge care coordination.** A-ICU will save 5% of the costs related to inpatient and outpatient hospital care through focused post-discharge care coordination by the A-ICU's First Floor Team (N. Solomon, T. Bodenheimer).

  - **Generic substitution.** The A-ICU will reduce drug costs by 25% by aggressively using careful internal and external MD selection, training, and feedback, as well as EHR-mediated prompts, in order to convert most patients to generic and preferred-brand medications and keep almost all new starts to generics (Fischer & Avorn).

  - **Internalizing specialty care.** The A-ICU will reduce spending for specialist-related care by 6% via cell phone consults and other methods specified in this report to "internalize" components of specialty care. The A-ICU will expand the service capability of primary care physicians and deliver specialty care inside the clinic more often (Analysis of Regence data and analysis by and experience of N. Solomon, T. Bodenheimer, & A. Milstein).

- **Efficient specialist networks.** By contracting with the most cost-efficient quartile of specialists, the A-ICU will decrease the cost of specialist referrals by 15% (Analysis of Regence data provided by M. Rattray & J. Andrianos).

- **Hospitalists.** The A-ICU will reduce the cost of hospital care by 13% by employing the best performing hospitalist groups to manage the patient's inpatient experience and treatment. Hospitalists will work to (1) reduce hospital length of stay, (2) minimize the number of specialists touching the patient in the hospital, (3) divert impending admissions when appropriate, and (4) minimize hospital re-admissions by working with A-ICU personnel to ensure that patients receive intensive management during the critical post-hospital period (D. Melzer & Averbach, and multiple hospitalist interviews)

- **Preference-sensitive procedures.** The A-ICU will reduce costs related to preference-sensitive surgeries by 22% by providing physicians and patients a decision-support tool to determine if and when those procedures align with patient preferences. (Health Dialog, L. Lang)

Summary of Gross Savings from A-ICU Interventions

Interventions	Estimated Savings Within Discrete Spending Categories		Estimated Percentage Point Savings from Western PPO Expected Medical Cost
First Floor Team Interventions			
Best-in-class disease management interventions	25%	of total costs related to A-ICU chronic disease patients	17.8%
Proximity of care managers	5%	of total costs related to A-ICU chronic disease patients	3.6%
"Warwick Fanaticism"	1%	of total costs related to A-ICU chronic disease patients	0.7%
Post-discharge care coordination	5%	of costs related to hospital in- and outpatient care and testing in care-coordination categories that could truly be affected	0.9%
Second Floor Team Interventions			
Generic substitution	25%	of drug expenditures	4.6%
Substitution away from PCPs*	n/a	(Accounted for separately*)	n/a
Specialist Effects			
Internalization of specialty care	6%	of total costs	4.6%
Efficient specialist network	15%	of total costs	11.6%
Efficient hospitalist network	13%	of costs related to hospital care for a subset of patients managed by hospitalists	1.0%
Reduction in preference-sensitive procedures	22%	of costs related to preference-sensitive procedures, adding back costs incurred due to alternative courses of treatment	2.0%
Total savings			**46.7%**

* Accounted for in staffing assumptions within financial model of A-ICU operating costs

Note 1: Additional costs of providing A-ICU services modeled separately (see below)

Note 2: Estimated savings within discrete spending categories must be multiplied by the baseline cost in that category in order to derive the estimated percentage point PPO savings.

- **Assumptions about incremental costs of A-ICU interventions-The "Base Case"**

  - **The A-ICU is likely to increase cost by up to $644 PMPY more than current primary care practice** because it will provide far more intensive monitoring and interactions with patients in order to improve quality and reduce total costs. Total annual operating costs are estimated to be almost $18.4 million, of which over 70% is payroll expense.

  - **Key assumptions about the cost of the Base Case A-ICU** are the following:

    - **Staff.** We estimate total payroll is $12.9 million annually. First Floor Team and Second Floor Team adult primary care comprises 85% of the expense, with in-sourced specialists, lab and imaging, physical therapy, and administrative expenses making up the balance. We acknowledge that these staffing estimates are both critical to the success of the A-ICU and also the most unknown figures, given the innovative nature of A-ICU design and communications. One of the goals of the pre-pilot phase is to solidify these estimates. Assumptions about salary and benefits are based on data provided by Salary.com. Staffing level assumptions were developed by analyzing the treatment requirements of similar patient populations.

      - **First Floor Team staff.** Each First Floor Team care manager serves 200 patients, resulting in 30 care managers for every 6,000 patients. (A-ICU's total patient base is 18,000.) Head nurses manage care managers. The First Floor Team care management team is complemented by clinical social workers, health educators, and a pharmacist.

      - **Second Floor Team staff.** Each patient panel of 6,000 will require two primary care physicians, six nurse practitioners, and four medical assistants. Fifty percent (50%) of all visits are referred to the Second Floor Team and each Second Floor Team practitioner is able to see 22 patients per day, including remote visits.

      - **Specialists.** Types of specialists associated with the A-ICU include: orthopedics (2 days/week), cardiology (2½ days/week), endocrinology (2 days/week), podiatry (3 days/week), GI (½ day every other week), neurology (1½ days/week), ob-gyn (½ day every other week), ENT (2 days per week), dermatology (½ day/week), hospitalists (24/7). Although specialists are likely to be contracted, the financial model uses salary and benefit data as the best proxy for their contract rates.

      - **Lab, imaging, and physical therapy staff.** The A-ICU would include two imaging technicians, a part-time contract radiologist, and two physical therapists.

- **Administrative staff.** Includes one medical director, a clinic administrator, IT staff, one medical billing clerk, one quality assurance coordinator, HR and finance staff, and four receptionists. In addition, there will be a head nurse to supervise the medical assistants and other paraprofessionals.

- **Non-payroll operating expenses.** Total non-payroll operating expenses are $5.3 million per year, of which $1.7 million is facility leasing cost. These estimates were developed based on clinic benchmark data, interviews with relevant experts (EHR vendors, health care real estate specialists, and others), and academic literature.

  - **Facility costs.** The A-ICU is housed in a building with 62,000 gross rentable square feet at an expense of $27 per square foot, or almost $1.7 million, per year. Another $250,000 is included to operate the facility, including expenses to cover utilities, security, environmental services, and telephones.

  - **Equipment, technology, and supply costs.** The financial model assumes maintenance (of medical equipment, technology, and software, including licenses) costs of approximately $200,000 per year. The cost of medical and office supplies adds another $320,000 per year.

  - **Insurance.** General and malpractice insurance are estimated to be approximately $200,000 per year in California.

  - **Language translation services.** The A-ICU would hire staff fluent in the major foreign languages represented in California. The A-ICU would rely on a phone-based language translation services to support patients who speak those languages not covered by the staff. While the actual cost of these services would depend on the number of non-English speaking patients, the model conservatively allots $400,000 for the expense.

  - **Fleet management.** Several cars will be maintained at an annual cost of $7,000 to enable A-ICU staff to make house calls.

  - **Sales & Marketing.** Sales and marketing expenses are estimated to be 10% of total operating costs ($1.66 million) based on the team's experience with similar businesses.

  - **Depreciation.** The financial model includes $350,000 per year for depreciation.

- **Assumptions about incremental costs of A-ICU interventions-The "Lean Variant" case:**

  - **The team developed a second scenario which makes more aggressive assumptions** about the A-ICU's ability to implement and rely on advanced throughput processes, efficient technologies, group care visits, remote care, and care shifting to lower-cost staff.

  - **Key assumptions in the Lean Variant case** are the following:

    - First Floor Team care managers carry 400 rather than 200 patients.

    - Second Floor Team practitioners see roughly 3.5 patients per hour or 28 per day, versus 22 per day in the Base Case scenario. Higher physician productivity is partially offset by an increase in the number of medical assistants, who cover more of the practitioners' routine paperwork-related activities.

  - **Net savings in the Lean Variant A-ICU increase to 40% from 37%** after incremental costs, relative to average primary care costs, decrease to less than $500 PMPY from $644.

- **Assumptions about incremental cost of A-ICU interventions-The "Super-Lean Mexican Supply Chain" case:**

  - Late in the peer review process we uncovered an additional large potential source of A-ICU savings that may offer additional appeal, especially to Spanish-speaking populations: use of selected providers within Mexico's lower cost base health care delivery and health insurance administration systems. We have preliminarily confirmed the feasibility of this source of incremental savings via Mercer-Mexico City, UCSF's seasonal laborer insurance coverage initiative, and the offering of such group coverage among California agricultural companies on both a self-insured and insured basis (via SIMNSA, a Mexican HMO licensed in California). Savings are generated through outsourcing health administrative functions and non-urgent specialist and hospital services to ISO 9000-certified facilities in Monterrey and Mexico City. Since commercial domestic Mexican group health insurance policies are currently offered at approximately $600 per adult per year, including an allowance for $50,000 in care received while traveling outside of Mexico, this may offer an opportunity to close the gap between the 40% net savings for high-risk patients via the Lean Variant A-ICU and the Bug Project's 50% net savings target for an entire working population. As of this report's issuance, we are pursuing the benefits design adjustments needed to estimate actual savings compared to western PPO norms.

XI. Business Structure

- **Value Proposition.** A broad range of patients and organizations would benefit from the A-ICU's lower cost method of providing care.
  - **The A-ICU would benefit low-income, uninsured, and underinsured patients** by offering much lower cost health insurance, coordinated care, superior access, and personalized, highly motivated health care providers.
  - **The A-ICU would benefit any organization that explicitly (e.g., an insurer or re-insurer, self-insured employer, trust, association, or capitated delivery system) or implicitly (a hospital service for uninsured patients) assumes global insurance risk for high-cost patients.** The A-ICU would enhance these organizations' ability to reduce costs incurred by high-risk patients. These organizations include:
    - **Self-insured employers** with concentrated employee populations
    - **Employers interested in health insurance** who judge current costs to be unaffordable
    - **Unions and Taft-Hartley trusts** that negotiate or manage health care benefits for their members
    - **Insurance companies** that are directly accountable for costs for high-risk patient care or that pay re-insurance premiums to cover it
    - **Re-insurers** that provide stop-loss coverage for high-cost patients to insurers, self-insured employers, and trusts
    - **Public insurance programs,** particularly California insurers who typically lose money on their MRMIB high-risk program assignees
    - **Health and hospital systems** that currently act as community safety net providers to sizeable numbers of uninsured patients
  - **The A-ICU would also benefit innovative health care workers** by providing them the opportunity to work with kindred spirits in an innovative care delivery model, practice advanced health risk-reduction techniques, take on additional responsibility, learn new skills, and be eligible for bonuses linked to above-average performance.
- **Potential Ownership Structures.** Three general ownership structures might be considered.
  - **A-ICU could be owned and/or sponsored by a single, very large geographically concentrated payor or well-funded consumer organization that employs or contracts with its clinical staff.** This may initially hold

particular appeal for unions with low-wage members who are currently uninsured or underinsured, or who struggle to balance health care spending with other financial priorities.

  - Given the challenge of trying to actuarially predict the impact of the A-ICU, a premium reflecting two-thirds of estimated savings could be established as a starting point.

  - The A-ICU savings would flow to the owner and would be shared with its customers, patients, and providers through lower premiums or higher pay (or both), or could be reinvested in the business.

  - The owner (a re-insurer, for example) could offer its institutional customers a lower re-insurance premium in exchange for a commitment to strongly incentivize their high-risk members to use the A-ICU exclusively and participate in care management.

– **The A-ICU could be owned and/or run by an independent A-ICU provider group or management company and offer services to multiple insurers, re-insurers, or self-insured employers.**

  - A-ICU services would be offered on an insured basis, such as Paradigm's catastrophic case premium, or non-risk bearing service fee, such as disease management organizations, based on market research.

  - If risk-bearing, A-ICU savings would flow to the A-ICU owner and would be shared with institutional customers, patients, and staff through lower premiums and higher staff salaries.

  - Institutional customers would be responsible for incentivizing individual patients to use the A-ICU.

– **The A-ICU could be a cooperative jointly owned and managed by A-ICU providers and one or more payors, especially employers or unions with a substantial fraction of low-wage workers.**

  - The cooperative would be funded as a self-insured model with contributions by both employee and employer, and would be the legal entity providing employment to the provider care team.

- The cooperative board would include representatives of each of the three stakeholder groups (employees, employers, and provider care teams). The board would oversee benefit design and rationing decisions, as well as distribution formulas for gain-sharing.

- Marketing of the program to employers could be accomplished through distribution channels such as group health brokers and Third Party Administrators. Employers would provide the retail marketing to beneficiaries.

- As savings are generated, they could be distributed in a number of ways:
  - Based on a pre-determined formula
  - Utilized to subsidize premiums in future years
  - Distributed to beneficiaries as a dividend yield reducing their quarterly premium costs
  - Distributed to employees as a bonus and/or to subsidize benefits and retirement

- **Estimated A-ICU start-up costs.** Start-up costs are estimated to be approximately $11 million, driven by capital expenditures and clinic build-out or refurbishment costs. The important financial assumptions are as follows:

  - **Capital expenditures.** Capital expenditures and other up-front expenses would be approximately $3.9 million and would include medical equipment, non-medical hardware and software, health care information systems and an electronic health record system, telephone equipment, and furnishings.

  - **Clinic build-out/refurbishment.** Estimates include $3.8 million for refurbishment, based on a conservative assumption that gross build-out costs are $80-$120 per square foot and are offset by Tenant Improvement dollars (TI$) of $50-$65 per square foot provided in California markets. Depending on the ultimate landlord and terms of the lease, it is possible that TI$ will be higher, thus lowering the total refurbishment costs incurred by the A-ICU.

  - **Payroll.** Pre-opening payroll expenses would exceed $2 million, including time and resources required to recruit and train the A-ICU team.

  - **Non-payroll.** Additional non-payroll expenses related to preparing the clinic to open are estimated to be $1.3 million. This expense is driven by sales and marketing costs, consulting fees (for legal and other professional services, for example), and leasing expenses.

- **Estimated Pre-Pilot Project Costs.** Estimated costs for a limited pre-pilot project serving an average of 3,000 patients over a one-year period include first-year operating costs of $3.7 million and a start-up cost of $2.7 million.

- **Operating costs**. Pilot operating costs were estimated using the same inputs as the overall A-ICU cost model, scaled to a patient population of 3,000**. Estimated A-ICU pilot operating costs are $1,250 PMPY, or an additional $232 over the cost of the full scale A-ICU.** This increase is primarily driven by the lack of scalability in the administrative team. Specifically, the pilot requires a medical director and clinic administrator to guide the careful implementation of the program and assessment of the results. Other increases are due to a non-linear scaling of certain non-payroll costs, such as technology requirements. **Total annual pre-pilot operating costs are approximately $3.7 million**, 20% of the full scale A-ICU (versus 17% of the patient base). In assessing the effectiveness of the savings measures during the pilot, the cost benefit of scaling the clinic should be taken into account.

  Key operating cost assumptions for the pre-pilot are:

  - **First floor, second floor, specialist, and administrative staff** in general use the same assumptions as the 18,000 patient A-ICU, but were scaled to 3,000 patients. Staff was kept in those situations where the number was not scalable (e.g., one person in the position), but important to a successful pilot test-and-measure effort. This includes the health educator, RN, nutritionist, part-time pharmacist, physical therapist, medical director, and clinic administrator.
  - **Non-payroll operating expenses.** Total non-payroll operating expenses are $1.0 million per year (19% of full-scale A-ICU), of which $315,000 is facility leasing cost. The assumptions used to develop the full-scale A-ICU model were applied to the pilot.

- **Start-up costs.** Pilot start-up costs are estimated to be $2.7 million, driven by capital expenditures and clinic build-out costs. This is 24% of the projected $11.3 million full A-ICU start-up costs. The inability to scale down to 17% of the total (based on patient base) is largely driven by the increased cost of build-out due to a short-term (one-year) lease. With a short-term lease the landlord will not provide the tenant improvement dollars associated with a long-term lease. Finding a way to obtain a long-term lease (either by planning to keep the small-scale clinic in operation or leasing space with large-scale expansion potential) could reduce the start-up costs by $500,000.

  The important start-up financial assumptions are as follows:
  - **Capital expenditures.** Capital expenditures and other up-front expenses would be approximately $755,000 and would include medical equipment, non-medical hardware and software, health care information systems and an electronic health record system, telephone equipment, and furnishings. Major pieces of equipment, such as x-ray and echocardiogram machines, would not be acquired for the pilot. The impact of these omissions on the overall savings rate would have to be monitored.

- **Clinic build-out/refurbishment.** Estimates include $1.3 million for refurbishment, based on a conservative assumption that gross build-out costs are $80-$120 per square foot without a tenant improvement dollar offset.

- **Payroll.** Pre-opening payroll expenses are approximately $200,000, including the time and resources required to recruit and train the A-ICU pilot team. Here, the small team reduces the overall time requirements, resulting in pre-opening payroll costs being only 9% of the full scale A-ICU requirement.

- **Non-payroll.** Additional non-payroll expenses related to preparing the clinic to open are estimated to be $460,000. This expense is driven largely by consulting, legal, and other professional service fees.

- **Potential Funding Sources.** Capital would be required to launch the A-ICU. Depending on the clinic's business structure, potential funders might include financial and strategic investors, nonprofit organizations, foundations, and government entities, among others.

  - **If the A-ICU were structured as a nonprofit organization designed to meet the needs of underserved patient populations, union trusts, government agencies, and foundations and other philanthropic entities may be interested in funding the clinic**. The federal government may also represent a resource. Under the aegis of President Bush's commitment to expand the Community Health Center program, the Bureau of Primary Health Care (BPHC) offers expansion grants for "new start" clinics. The BPHC offers these expansion grants for medically underserved areas or areas where there are demonstrable health disparities. Their grants are up to $600,000 for start-up of a new practice to be designated as a Federally Qualified Health Center (FQHC) for a medically underserved area. Once accepted and deemed an FQHC, the health center is eligible for malpractice coverage (under the federal tort reform act), national discounted pharmacy benefits, and an assortment of other federal perks.

  - **If the A-ICU were structured as a for-profit entity serving multiple customers, a broad range of funding sources might still be available.** Major potential customers themselves—re-insurers or self-insured employers—might offer seed funding. Angel investors or low-wage employers struggling to afford health insurance, such as religious groups, might be interested in investing if the pre-pilot could demonstrate substantial savings and pre-sell several potentially large customers.

  - **If the A-ICU were structured as a for-profit serving just one large customer, sources of funding may be more limited.** Without the potential of bringing the delivery system to a broader audience, philanthropic, strategic, and financial investors may be cautious.

XII. Regulatory and Political Issues and Their Mitigation

There are several regulatory and derivative political issues that need to be considered. In the base A-ICU, the concerns are similar to traditional practices. Unique regulatory and legal constraints would need to be further investigated for several enhancements suggested by the reviewers, especially the "super lean" Mexican supply chain variant. Three issues are primary:

- **Standard of Care**: Potential exposures to malpractice risk if care is not delivered in a manner that is consistent with the community standard of care.

  - While unique in philosophy and design, the A-ICU delivery is generally consistent with current standards of physician and nurse practitioner care with support staff involvement. By bringing certain services in house (e.g., disease management, radiology), these services will also fall under the practice's liability.

  - Malpractice insurance and malpractice claims will likely be consistent with current California standards. As in all cases, a provider is liable for malpractice claims when a patient suffers a medical injury in the course of receiving medical care. The legal definition varies from state to state, but it is summarized by the duty of care owed the patient. Potential malpractice arises when the patient suffers medical injury as a result of the breach of duty in the provision of care as defined by an acceptable standard of care in the medical community.

  - The best summation of medical malpractice is standard language provided to juries who are deciding malpractice cases. While each state varies in the wording employed in jury instructions, a typical instruction dealing with a physician's duty reads as follows:

    "In performing professional services for a patient, a physician has the duty to have that degree of learning and skill ordinarily possessed by reputable physicians, practicing in the same or similar locality and under similar circumstances. The further duty of the physician is to use the care and skill ordinarily exercised in like cases by reputable members of the profession practicing in the same or similar locality under similar circumstances, and to use reasonable diligence and his or her best judgment in the exercise of skill and the application of learning, in an effort to accomplish the purpose for which the physician is employed. The failure to fulfill any such duty is negligence." [i]

    In so far as there are similarly organized clinics which rely on technology or operations, it could be argued that this is the standard of care.

Remediation

(1) The core A-ICU model compares well in relative terms whereby physicians are practicing under similar circumstances as traditional practice. If the A-ICU model does render care in a way that is different from the community standard of care (e.g., using the Mexican Supply Chain model), analysis could be done on the gap between them. That gap should then be modeled and analyzed to predict and assess if and what kind of patient injury could happen as a function of the gap. This analysis would be necessary to seek prospective provider and malpractice insurer buy-in.

(2) Patients cannot sign away their rights to receive a standard of care when they could be exposed to injury as a result of that variation in the standard of care. If the A-ICU is intentionally creating care guidelines that are below the community standard of care, it should establish the evidence of how the A-ICU approach results in equivalent or superior patient outcomes and avoids exposing the patient to harm in greater measure than the community standard of care. Other sources of defining the community standard of care are medical textbooks or JCAHO standards.

- **Patient Privacy Protection:** Under HIPAA, patients are protected from unauthorized use of their medical information in medical records, referrals, and data reporting to insurers and governmental entities. These issues will require standard HIPAA procedure that will be fully followed and implemented from the onset, including a formal Notice of Privacy Practices in the unique cases of group visits, where patients will share personal information with other patients (who are not members of their care team).

  Remediation

  When health services are provided in a group setting, patients will be requested to sign a written authorization (in 14 point font). In the course of explaining treatment strategies, patients will be introduced to the benefits of group visits. Their care provider will also discuss these privacy issues with the patient prior to enrollment in a group care setting.

- **Informed Consent and Telemedicine:** The A-ICU will heavily utilize non-visit based care, including email and phone visits, and, if linked with a Video Visit Booth model for acute ambulatory care, potentially tele-video conferences. California has specific code written to guide the delivery of these types of telemedicine. The code defines the circumstances under which informed consent is ascertained and provided by the physician in this practice environment.[ii] This parallels the informed consent process outlined in the Code for California licensed physicians.

Remediation

The A-ICU would adhere to code provisions as follows. Prior to the delivery of telemedicine, the health care practitioner who has ultimate authority over the care or primary diagnosis of the patient would:

(1) Receive verbal and written consent from the patient or the patient's legal representative;
(2) Provide a description of risks, consequences, and benefits of telemedicine; and
(3) Observe all confidentiality protections including HIPAA.

Dissemination of any patient-identifiable images or information to another provider or insurer would not occur without the consent of the patient. Written consent would become a part of the medical record.

[i] [BAJI 6.00.1 (8th Ed.)] Jury instructions given to ascertain medical malpractice.

[ii] 2290.5. (a) (1) For the purposes of this section, "telemedicine" means the practice of health care delivery, diagnosis, consultation, treatment, transfer of medical data, and education using interactive audio, video, or data communications. Neither a telephone conversation nor an electronic mail message between a health care practitioner and patient constitutes "telemedicine" for purposes of this section. (2) For purposes of this section, "interactive" means an audio, video, or data communication involving a real time (synchronous) or near real time (asynchronous) two-way transfer of medical data and information. (b) For the purposes of this section, "health care practitioner" has the same meaning as "licentiate" as defined in paragraph (2) of subdivision (a) of Section 805. (c) Prior to the delivery of health care via telemedicine, the health care practitioner who has ultimate authority over the care or primary diagnosis of the patient shall obtain verbal and written informed consent from the patient or the patient's legal representative. The informed consent procedure shall ensure that at least all of the following information is given to the patient or the patient's legal representative verbally and in writing:
(1) The patient or the patient's legal representative retains the option to withhold or withdraw consent at any time without affecting the right to future care or treatment nor risking the loss or withdrawal of any program benefits to which the patient or the patient's legal representative would otherwise be entitled.
(2) A description of the potential risks, consequences, and benefits of telemedicine.
(3) All existing confidentiality protections apply.
(4) All existing laws regarding patient access to medical information and copies of medical records apply.
(5) Dissemination of any patient identifiable images or information from the telemedicine interaction to researchers or other entities shall not occur without the consent of the patient. (d) A patient or the patient's legal representative shall sign a written statement prior to the delivery of health care via telemedicine, indicating that the patient or the patient's legal representative understands the written information provided pursuant to subdivision (a), and that this information has been discussed with the health care practitioner, or his or her designee. (e) The written consent statement signed by the patient or the patient's legal representative shall become part of the patient's medical record. (f) The failure of a health care practitioner to comply with this section shall constitute unprofessional conduct. Section 2314 shall not apply to this section. (g) All existing laws regarding surrogate decisionmaking shall apply. For purposes of this section, "surrogate decisionmaking" means any decision made in the practice of medicine by a parent or legal representative for a minor or an incapacitated or incompetent individual. (h) Except as provided in paragraph (3) of subdivision (c), this section shall not apply when the patient is not directly involved in the telemedicine interaction, for example when one health care practitioner consults with another health care practitioner. (i) This section shall not apply in an emergency situation in which a patient is unable to give informed consent and the representative of that patient is not available in a timely manner. (j) This section shall not apply to a patient under the jurisdiction of the Department of Corrections or any other correctional facility. (k) This section shall not be construed to alter the scope of practice of any health care provider or authorize the delivery of health care services in a setting, or in a manner, not otherwise authorized by law.

XIII. Other Challenges

In addition to the regulatory and political issues noted above, the A-ICU will face a number of important challenges in achieving its goals. While each may seem formidable, none are unsolvable given the right attitude, creativity, resources, and determination.

- It may be hard to find the right leadership team for the A-ICU. This team (including head nurse, medical director, and administrator) will be crucial to creating the right culture, hiring the right staff, and resolving details of the model that will need to be developed in the course of practice. The A-ICU would, however, likely be viewed as a unique professional opportunity, thus making it easier to attract outstanding candidates.

- It may be difficult to recruit the number of patients needed (18,000) within a short period of time. We believe the attraction of a much higher level of service at a price point significantly below the current market rate for insurance will serve as an important attractor. We have also allowed for a generous marketing budget to help publicize the effort.

- It may be difficult to attract the right specialists to this model, given that most financially thrive under the current system and would be asked to significantly change how they practice. This argues for setting up the A-ICU in an area with an oversupply of specialists, and creating a compensation model that motivates the most efficient of them to work in the practice.

- It may be hard to achieve the 25% gross cost savings budgeted for better chronic disease management. While no peer-reviewed studies to our knowledge have shown this level of savings, the best of the commercial disease management firms have reasonable documentation that they are able to save even more with their more motivated patients. Active participation by patients will be an explicit requirement for accessing the A-ICU (in exchange for the better service and significantly lower costs). Accordingly, it is possible that the A-ICU may be able to save more than commercial disease management firms, given its capacity for in-person interactions and access to the full clinical record, which commercial disease management companies lack.

- It may be difficult to foster a culture of ongoing innovation, especially if the staff is accustomed to working in the traditional settings. The A-ICU will have to formalize channels of open communication and demonstrate the ability for rapid innovation and refinement early on, in order to emphasize the continual innovation process.

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