CHAPTER 5

A Nationwide Experience in Comprehensive, Coordinated *Treatment* with Proven Cost-Benefit

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The excessive growth of health care industry expenditures in the United States is widely acknowledged. The intractable issue which confronts health care leaders and policy makers is how to appropriately restrain these costs while not sacrificing a desired level of care quality and access. That some medical conditions are under-recognized and under-treated now adds to the complexity of a reasoned solution. Current management approaches have proven inadequate in stemming cost inflation and have raised increasing concerns about their negative impact upon the quality of health care[i,ii,iii]. Further, there is low likelihood that present techniques can have a significant beneficial impact in the future[iv], especially on very complex, costly medical conditions such as severe traumatic brain injury (TBI).

In the United States today, health care, while of generally high quality, is marked by inconsistent and at times inappropriate delivery. Marked variations in practices among physicians are documented. In addition, the complexity of modern health care, involving co-morbidities, questions of long-term outcomes overlaying short-term acute care management, and complex outcome constructs such as "quality of life" versus simple "biological survival" present incredible hurdles to making rational treatment and reimbursement decisions. Evidence-based medicine has emerged as an attempt to guide medical decision-making (and by corollary medical reimbursement decisions). Where applicable, EBM is a powerful tool in such policy and treatment decisions. Strong support exists for the notion that comprehensive rehabilitation, when performed by expert clinical personnel, with adequate social supports, makes an incredible difference in the outcomes of persons surviving after traumatic brain injury. Studies also support the notion that the economic gain to society, (both in terms of reduced dependency, including lessened institutional and supportive care, and increased productivity) from such comprehensive rehabilitation, is significant.

Policy makers may be concerned, despite this evidence, that unrestrained benefits for rehabilitation open a pathway to endless futile intervention, with little or no clinical or functional gain. Rather than rejecting support for rehabilitation methods shown effective, policy should seek other methods to balance financial and clinical demands in managing the TBI survivor's needs. One very widely accepted idea to manage this issue in general is to bundle all healthcare payments for a condition together and make appropriate total payment (severity adjusted) for the health outcome in question. This approach has been utilized in some relatively straightforward conditions such as joint replacements, organ transplants, etc., where all pre-operative evaluations, surgical and hospital costs, and follow-up medical care, medications and therapy are all bundled into one payment. The department of Health and Human Services is currently looking into ways to "bundle" the reimbursement of serious illnesses such as strokes via a "bundled" payment to acute care providers (e.g. acute hospitals and systems.) Consumers and rehabilitation professionals are concerned with this approach in that it may divert most financial

support away from rehabilitation and other chronic needs to pay for increasingly more costly acute care services. In support of this notion, mean acute medical management costs were found to increase from $2,089 per day in 1990 to $5,519 in 1996, an increase of greater than 10% more than the medical rate of inflation. *(Kreutger et al, 2001) By contrast, mean acute rehabilitation inpatient charges increased from $1,008 per day in 1990 to $1,423 in 1996, (7% annually). The increasing daily charges in rehabilitation were offset by annual decreases in length of stay that average 3.65 days per year or 8%. By 2008, acute medical management costs averaged $8,034 per day ($162,194 total stay) while acute rehabilitation charges averaged $2,227 ($59,862 total stay). **(TBI Federal Model Systems data) The concept of paying for health care outcomes for many conditions, including some of the most complex, is attractive as it appears to align payment with results rather than for units of service without reference to outcomes. To date, it has been challenging to design such a system for complex medical conditions.

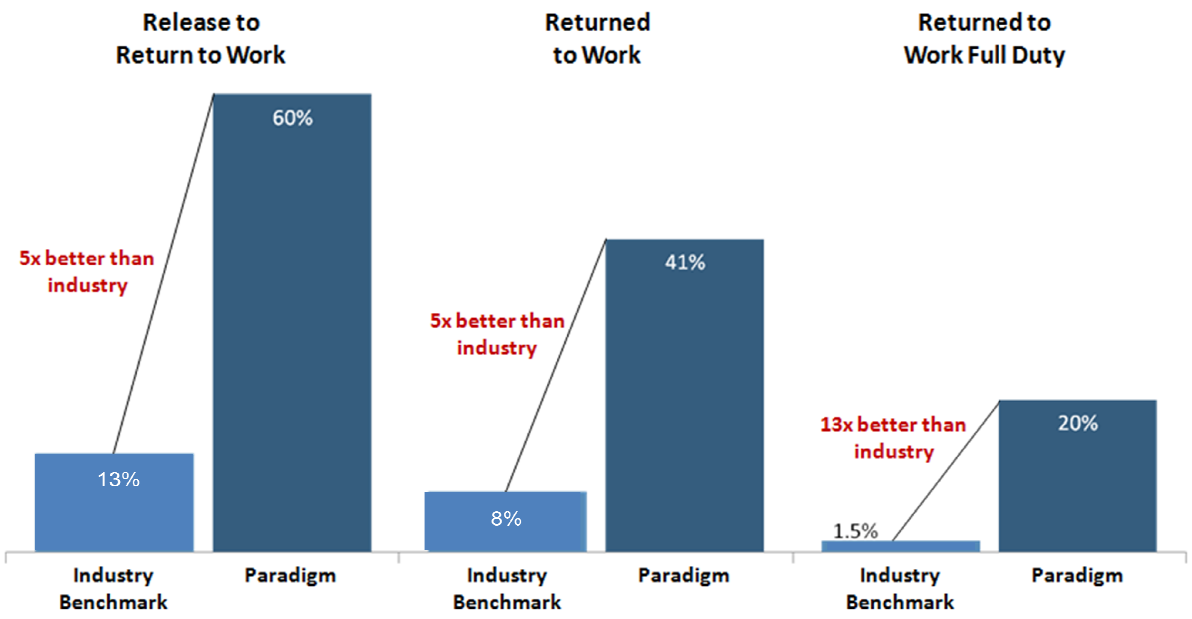
At least one successful model has been implemented and has a long history of delivering outcomes for a fixed payment, however the management approach has been developed to address this dilemma for workers suffering severe trauma (including TBI)[v] with impressive results.

Specifically, Paradigm Management Services, LLC.[vi], is a company which has developed such a Systematic Care Management(SCM)™ process for severe trauma over the last twenty years. It has focused upon contracting to deliver the complete health outcome for serious trauma victims, including all necessary rehabilitation services. It has maintained a unique comprehensive clinical, process and cost, database that allows analysis of its total results, both medically and economically. It has, since 1991, assessed and managed over 9,000 severely injured workers in the United States. This organization has analyzed its outcomes relative to "standard" case management methods in use in the workers' compensation arena. These standard results may be used as a proxy for usual and customary care where oversight is primarily directed towards utilization review[1] These results have been confirmed independently by one of the foremost auditing and actuarial firms in the United States, Milliman, Inc.[2] which has compared the SCM results to matched workers' compensation industry trauma cases. The results are extremely significant. The formal report by Milliman should be accessed for full understanding of methodology and results.[vii] The main outcome assessed by Milliman is summarized in Figure 1. and represents the various categories of vocational outcome achieved by the SCM methodology (including fixed payment for results.)

[1] It is recognized that this is a simplification of standard file management methods in the workers' compensation industry but nevertheless contains sufficient truth to be germane to the present argument.

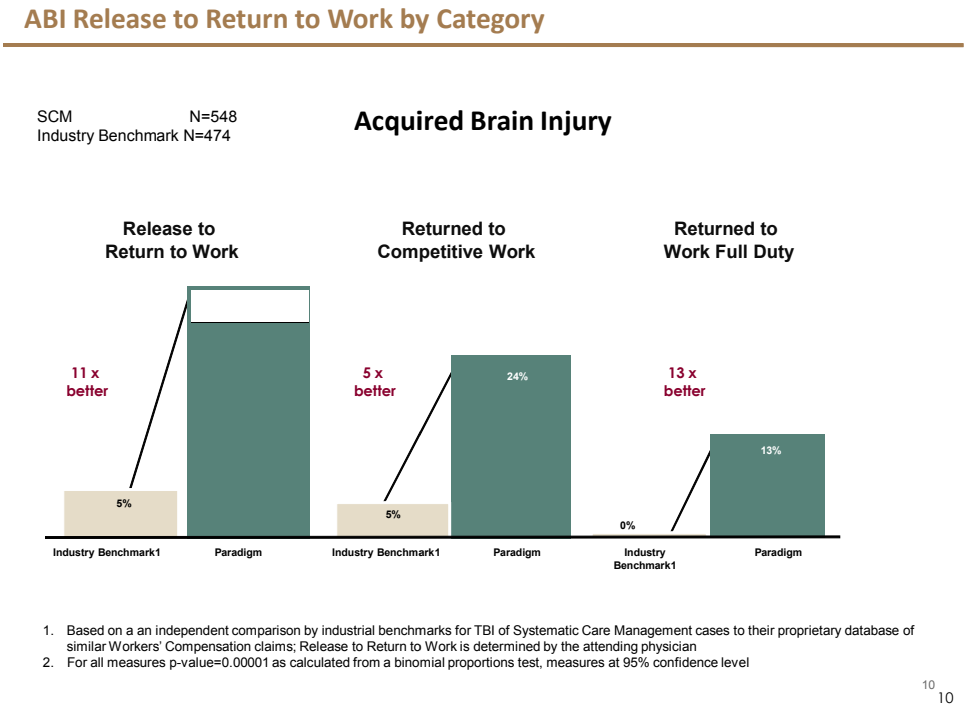
[2] The opinions expressed in this paper are the author's alone and in no way represent the views of Milliman, Inc. whose formal report should be accessed for more detail.

Figure 1: Return to Work Outcomes of Paradigm vs. Milliman's Industry Benchmark



While this report is based upon data of mixed etiologies of severe trauma, Fig 2.represents a more detailed and recent specific analysis, of solely TBI survivors, from this group performed by D. Nathan Cope, M.D., and Ernest Bryant, Ph.D., of Paradigm, which was recently presented at the North American Brain Injury Society[viii]

Figure 2.



In addition to these dramatic and significant ($p < 0.00001$) vocational outcomes for TBI, comprehensive health and functional restitution was produced.

With TBI survivors, the analysis again demonstrates the 5 to 13 times multiple gain in return to work outcomes achieved by this comprehensive, coordinated acute care and rehabilitation management and financing process compared to "usual management and payment (i.e. for units of service delivered). Overall, the independent actuarial analysis suggested a 38% lifetime savings in costs for these comprehensively treated trauma cases (the largest percentage of who were brain injured individuals.) This number represents reduced future medical costs as well as lessened indemnity costs with improved return to work outcomes. What these numbers do not reflect is the significant improvement in the quality of life encompassed in the return to work outcomes, by necessity demonstrating increased function and health.

While these results are reflective of the particular comprehensive coordination and management approach of Paradigm, it should be noted, that the core element of that approach is total, but expertly directed, commitment to the complete continuum of appropriate health services, acute medical-surgical, acute and post-acute rehabilitation (including inpatient, outpatient, community and in-home based care) that will contribute to functionally significant gain. It also represents services delivered in a way that incentivizes the system to attain meaningful outcomes rather than simply generate service bills. Thus, it can stand as a good reflection of what is possible, indeed, what may be critical, in the way of service and coverage needs for brain injured survivors if they are to regain the maximal level of health and functional/vocational recovery while managing costs.

In summary, although these data reflect the results of a particular program of finance and management of severe trauma and finance, it does demonstrate the feasibility of both significantly improving the health and functional outcomes of TBI survivors with appropriate comprehensive acute and rehabilitation care, as well as developing a system of payment based upon comprehensive health outcomes (including the entirety of acute and rehabilitation care) rather than for distinct services with arbitrary limits on days or units of treatment. In any process of health care reform, illustrations such as this, as applied to TBI care, should be given careful consideration.

Bibliography

[i] Schwartz William B (1998) Life without disease: the pursuit of medical utopia. University of California Press, Berkeley, California, pp 92-94.

[ii] Mechanic D (1997) Managed care as a target of distrust. JAMA, June 11, 277(22):1810-1811.

[iii] Jenkins Jr HW (2000) Managed care meets its maker. Wall Street Journal, February 23.

[iv] Ginzberg E (1997) Managed care and the competitive market in health care: what they can and cannot do. JAMA, June 11, 277(22): 1810-1811.

[v] Four main categories of cases are included in following analyses (all of extremely high severity): Brain injury, Spinal cord injury, Burns, Complex-multiple trauma

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[vii] To receive the paradigm outcomes report, contact Guy Avagliano, Principal & Consulting Actuary, Milliman, Inc. 650 California Street, 17th Floor, San Francisco, CA 94108-2702. E-mail: guy.avagliano@milliman.com

[viii] Cope, DN. Systematic Care Management of Severe Traumatic Brain Injury Including Outcome Analysis. North American Brain Injury Society, 7th annual conference, Austin, TX, Oct 15-17, 2009.