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As a result of unsustainable costs and an inordinate share of gross domestic product, the U.S. healthcare system has a new business model—one that is transforming the delivery system from hospital-centric sick care to a super outpatient model that will emphasize community-based health care.

Fueled by the “power of a million ideas,” the transformation is under way. Private employers, consumers, public and commercial payers, hospitals and health systems, physicians and allied providers, healthcare retailers, and other stakeholders are working to reshape care delivery and lower costs while improving quality, outcomes, and access for consumers.

Recent notable initiatives include significant health plan benefit redesign, and efforts to reduce corporate healthcare costs and eliminate uncertainty regarding annual cost exposure. General Electric has a corporate goal to keep healthcare cost increases under 3 percent per year and has been meeting that goal. Walgreens recently announced that it will move 160,000 employees into a private health exchange with a defined contribution to each employee. Organizations such as Advocate and Geisinger have adopted fee-for-value payment and care management strategies that have driven positive results in both quality and costs. These examples are just the tip of the iceberg as new ideas and innovations surface each and every day.

Given the power of disruptive new business models, the key questions are:

- Are these initiatives and innovations making a difference—i.e., is the transformation agenda taking hold?
- If the answer is “yes,” what are the implications for hospitals and health systems nationwide?

DESIGN OF A REGIONAL STUDY

To investigate the first question, we designed a data-rich study to assess whether there is early evidence that progress is being made with the transformation agenda by hospitals and physicians in the greater Chicago area. We obtained comprehensive and current inpatient and outpatient data for the Chicago region. Sources included the Illinois inpatient discharge database, proprietary and provider databases, and the U.S. Census Bureau.

To gain a statistically large sample size, the study population covered a seven-county area with 8.5 million residents. These residents collectively comprise 66 percent of the population of Illinois (Figure 1) or 2.7 percent of the U.S. population, according to 2012 statistics.

The study area demonstrated the diversity of demographics, payer sources, types of providers, and geography (city, suburban, and rural) common in other major regions nationwide.
In 2012, the 71 hospitals in the seven counties discharged approximately 970,000 inpatients. Commercial insurers covered 60 percent of the lives and public insurers (Medicare and Medicaid) covered 26 percent. The remaining 14 percent of residents were uninsured (Figure 2).

If the transformation agenda is taking hold, we would expect study results to show these indicators of progress:

1. Inpatient utilization is declining
2. The depth of utilization declines reflects structural factors at work in changing healthcare (such as those cited in #3 and #4), not solely recession-linked factors
3. Doctors and hospitals are aggressively increasing intensive medical management, and such management is beginning to show positive results
4. Accountable and risk-based care is having an attributable statistical impact above and beyond increased intensive medical management

We carefully compiled and examined the data relevant to these four trends.

**WHAT THE DATA SHOW: INPATIENT UTILIZATION IS DECLINING AND STRUCTURAL CHANGES APPEAR TO BE AT WORK**

Confirming the first trend, inpatient utilization in the counties studied declined by approximately 47,000 discharges—dropping from approximately 1.02 million discharges in 2010 to 970,000 discharges in 2012. Declining inpatient utilization is not a new trend, of course. As documented in previous research, inpatient utilization in the U.S. has been falling during most of the last decade. Relevant to the new study’s results, however, is the fact that inpatient utilization rates per 1,000 declined across all age groups, averaging 5 percent across the board. Utilization declines in the adult population ranged from 5 percent for 45- to 64-year-olds to a much larger 8 percent to 9 percent for those age 65 and older (Figure 3).
Because most of their healthcare costs are covered by Medicare, patients age 65 and older would not be expected to reduce their use of healthcare services due to economic factors more than other age groups. Price-sensitive deferral of care due to rising Medicare managed care plan co-payments and deductibles may be at work to some degree, but such deferral is unlikely to account for so large a drop in use rates. Something else more structural in nature appears to be at work with this older population.

Additionally, use rates per 1,000 in the greater Chicago region declined in almost every hospital service line. The median drop between 2010 and 2012 across 33 services was 5 percent (Figure 4). Utilization declines in cardiology (including interventional), medical gastroenterology, general medicine, deliveries, and psychiatry accounted for more than 60 percent of the total decline in volume.

**FIGURE 4. CHANGE IN UTILIZATION RATE PER 1,000 POPULATION: 2010-2012**

Note: Not shown are services with discharges of less than 5,500 in the counties, and labels with less than a 2 percent drop. Data exclude MS-DRG 795 normal newborns.

Sources: Kaufman, Hall & Associates, Inc. analysis based on proprietary market and client data; U.S. Census Bureau population data.
Table 1 shows the decline in inpatient use rates in surgical areas, including cardiac surgery, spine/back surgery, orthopedics (joint replacements and implants), and urology. Utilization rates declined across all age groups, effectively cancelling out any increase in volume that occurred due to population aging and growth. The age groups covered by Medicare showed the highest use-rate drops, again suggesting that structural changes—such as increased use of outpatient care—might be boosting the rate of decline.

Observation stays often are cited as a major contributor to reduced inpatient utilization. The dramatic increase in assignment of patients to observation status by U.S. hospitals, as documented elsewhere, reflects aggressive efforts to proactively move non-acute admissions to lower-cost, outpatient settings.

The number of patients with one-day inpatient stays would be expected to decline dramatically as a result of this trend, since these patients would be prime candidates for transfer to observation status and outpatient settings.

In fact, the data show that drops between 2010 and 2012 in medical/surgical patients with one-day length of stay (LOS) accounted for only 9 percent of the total drop in medical/surgical volume (Table 2). Of this 9 percent drop, cases with surgical diagnosis-related groups (DRGs) dropped faster than those with medical DRGs. This suggests some continued movement of surgeries into ambulatory surgical settings.

However, most of the volume decline—91 percent—must be attributed to factors other than shift to observation status and movement of short-stay surgical cases to ambulatory settings.

### Table 1. Inpatient Utilization Rates Per 1,000 in Selected Service Lines: Percent Change in Adult Age Groups, 2010-2012

*Sources: Kaufman, Hall & Associates, Inc. analysis based on proprietary market and client data; U.S. Census Bureau population data.*

<table>
<thead>
<tr>
<th>Service Line</th>
<th>15-44</th>
<th>45-64</th>
<th>65-74</th>
<th>75+</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV Surgery</td>
<td>-14%</td>
<td>-8%</td>
<td>-12%</td>
<td>-6%</td>
</tr>
<tr>
<td>Spines/Back</td>
<td>-6%</td>
<td>-4%</td>
<td>-3%</td>
<td>-11%</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>-5%</td>
<td>-3%</td>
<td>-4%</td>
<td>-7%</td>
</tr>
<tr>
<td>Urology</td>
<td>-8%</td>
<td>-10%</td>
<td>-19%</td>
<td>-16%</td>
</tr>
</tbody>
</table>

### Table 2. Drop in Volume of One-Day Stays as a Percentage of Total Decline in Medical/Surgical Volume

*Sources: Kaufman, Hall & Associates, Inc. analysis based on proprietary market and client data; U.S. Census Bureau population data.*

<table>
<thead>
<tr>
<th>1-Day LOS Cases</th>
<th>Total # of Cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-3,434)</td>
<td>(-36,690)</td>
<td>(-9.4)</td>
</tr>
</tbody>
</table>
WHAT THE DATA SHOW: PROVIDERS ARE INCREASING INTENSIVE MEDICAL MANAGEMENT AND SUCH MANAGEMENT IS SHOWING POSITIVE RESULTS

To identify whether a more structural change related to improvements in patient care management are starting to contribute to reduced inpatient use rates, we looked closely at “Ambulatory Care Sensitive Admissions” (ACSAs). The Agency for Healthcare Research and Quality (AHRQ) defines ACSAs as patient admissions “for which good outpatient care (related to underlying chronic conditions, such as adult asthma, diabetes, and congestive heart failure) can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease.”

AHRQ has identified 16 ACSAs, including admission rates for uncontrolled diabetes, hypertension, dehydration, and asthma in older adults, as “prevention quality indicators.” A reduction in ACSAs to hospitals would suggest that providers are doing a better job of helping patients manage chronic conditions by meeting their prevention and care needs in outpatient and home settings.

Using our data sources, each patient’s primary diagnosis code at admission was identified as either one of the 16 ACSAs, or not one of the 16. The sorting of such codes was completed for patients across service lines.

For example, a patient with “uncontrolled diabetes” as her primary diagnosis on admission to a hospital’s endocrinology services would be accounted for in the “Endocrine” service line as part of the “% ACSAs” population. A patient without an ACSA-related diagnosis would be accounted for as part of the “% All Other Cases in the Service Line” population.

If progress is being made through early care management efforts, the utilization drops in the “% ACSAs” patients should be greater than those in the “All Other Cases in the Service Line” population.

The eight service lines where this is the case are outlined with a dotted line in Table 3, which provides the results of the analysis.

For example, discharges of ACSA patients fell 12 percent from 2010 to 2012 in the Endocrine service line, while discharges of non-ACSA patients fell only 1.4 percent. Similarly, discharges of ACSA patients in the Cardiology, Interventional line fell 23.5 percent while discharges of non-ACSA patients dropped 12.7 percent.

These data signal that early care management efforts are lowering ACSAs in the greater Chicago market, suggesting that doctors and hospitals have started to change the way they care for patients.

### Table 3: Change in ACSA Utilization Drops Versus All Other Cases by Service Line: 2010-2012

<table>
<thead>
<tr>
<th>Service Line</th>
<th>% ACSAs</th>
<th>% All Other Cases in the Service Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiology, Interventional</td>
<td>(23.5%)</td>
<td>(12.7%)</td>
</tr>
<tr>
<td>General Medicine</td>
<td>(13.6%)</td>
<td>(5.7%)</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>(12.8%)</td>
<td>(6.2%)</td>
</tr>
<tr>
<td>Endocrine</td>
<td>(12.0%)</td>
<td>(9.0%)</td>
</tr>
<tr>
<td>Thoracic Surgery</td>
<td>(12.0%)</td>
<td>(1.4%)</td>
</tr>
<tr>
<td>Neurology</td>
<td>(11.1%)</td>
<td>(5.6%)</td>
</tr>
<tr>
<td>General Surgery</td>
<td>(7.8%)</td>
<td>(3.2%)</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>(6.8%)</td>
<td>0.3%</td>
</tr>
<tr>
<td>Cardiology</td>
<td>(10.2%)</td>
<td>(11.5%)</td>
</tr>
<tr>
<td>Vascular Surgery</td>
<td>(5.8%)</td>
<td>(9.3%)</td>
</tr>
<tr>
<td>Urology</td>
<td>(3.8%)</td>
<td>(12.1%)</td>
</tr>
</tbody>
</table>
TABLE 4. COMPARATIVE ACSA UTILIZATION DROPS, TRADITIONAL CARE VS. ACO-STYLE CARE: 2010-2012
Source: Kaufman, Hall & Associates, Inc. analysis based on proprietary provider data

<table>
<thead>
<tr>
<th></th>
<th>Using Traditional Care Model</th>
<th>Using ACO-Style Care Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Discharges with ACSAs</td>
<td>(3.8%)</td>
<td>(6.3%)</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>(2.4%)</td>
<td>(3.9%)</td>
</tr>
</tbody>
</table>

WHAT THE DATA SHOW: USE OF ACCOUNTABLE AND RISK-BASED MODELS IS HAVING AN EVEN GREATER POSITIVE IMPACT

Research next focused on whether care provided under an accountable-style model, which aligns hospital and physician incentives through performance-based arrangements and risk-based payment, is starting to achieve even better results than care under traditional models. For example, might the new models be accelerating improvements in admissions and lengths of stay?

The results of such an analysis show that accountable care organization (ACO) style care outperformed traditional care in reducing avoidable hospital admissions and shortening lengths of stay (Table 4). Discharges of adult ACSA patients treated under a traditional care model declined 3.8 percent while lengths of stay declined 2.4 percent. With ACO-style care, discharges declined 6.3 percent and lengths of stay declined 3.9 percent.

The results provide early evidence that hospitals and doctors working under accountable care principles are more effective in keeping patients with chronic conditions out of the hospital, and shortening hospital stays when hospitalization is required.

GIVEN THE COMBINED IMPACT OF TRENDS #1-#4, WHAT MIGHT THE FUTURE HOLD?

The Chicago regional study indicates that there is indeed early evidence that the transformation agenda is taking hold.

The inpatient-centric healthcare model is declining in the region, and the depth of the inpatient utilization drop suggests that structural factors are at work in changing healthcare provision in the region, not solely recession-linked factors. Examination of admissions data for ACSA patients suggests that doctors and hospitals are changing the way they care for patients with chronic conditions, likely using intensive medical management to keep such patients out of the hospital. Accountable and risk-based care is having a statistical impact above and beyond intensive medical management.

We examined what might be ahead for the greater Chicago area given confirmation of these trends. The regional market still includes a significant portion of inpatient admissions that might be eliminated through proper ambulatory care. These admissions thus represent “vulnerable” admissions for the area’s hospitals.

As noted in Table 5, approximately 139,000 ACSA patients and approximately 96,000 medical/surgical patients with one-day stays were admitted to Chicago-region hospitals in 2012. If these 235,000 “vulnerable” inpatient cases were eliminated, the greater Chicago hospital market would experience a 24 percent loss of inpatient discharges and a 15 percent reduction of average daily census for its 71 hospitals.
TABLE 5. PROJECTED IMPACT ON GREATER CHICAGO MARKET OF LOSING “VULNERABLE” ADMISSIONS
Source: Kaufman, Hall & Associates, Inc.

<table>
<thead>
<tr>
<th></th>
<th>Discharges</th>
<th>Average Daily Census</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2012 Base</strong></td>
<td>968,746</td>
<td>12,987</td>
</tr>
<tr>
<td>ACSAs</td>
<td>(-138,576)</td>
<td>(-1,651)</td>
</tr>
<tr>
<td>Med/Surg Cases with 1-Day LOS</td>
<td>(-96,280)</td>
<td>(-264)</td>
</tr>
<tr>
<td><strong>Market Impact</strong></td>
<td>733,980 (-24%)</td>
<td>11,072 (-15%)</td>
</tr>
</tbody>
</table>

In other words, the region could lose up to another 1,900 inpatients per day. This provides an early signal that the greater Chicago region—and by analogy many other regions in the nation—are likely not to need as many hospital beds or hospitals going forward. Such dramatic change would require the hospital industry to aggressively “rightsize,” while moving the focus of care away from the four walls of the hospital. The long-term implications of all of this are equal only to the boundaries of the reader’s imagination.

WHAT ARE THE IMPLICATIONS OF THE STUDY FOR HOSPITALS AND HEALTH SYSTEMS NATIONWIDE?

To answer this final question, market-specific information, like what is presented here for the Chicago region, should be at-hand in every hospital management suite and board room nationwide. Up-to-date data and analysis of rapidly developing trends and external market realities must drive strategic decisions going forward. Predictive modeling also is required to address the opportunities and challenges organizations will face as the transformation agenda and its structural changes progress. These include unexpected market entrants, increasing consolidation, new partnership arrangements, narrowing of provider networks, and shifting payer rates and mixes. With such data and analyses in hand, four discussion items should be on the table for boards and executive teams: rightsizing the business, reengineering care delivery, achieving operating sustainability, and transformational leadership.

Rightsizing the Business

Key questions are: What size will our inpatient and outpatient businesses be going forward? What level of volume for our service lines is sufficient to ensure quality outcomes and financial viability?

Honesty about inpatient requirements will be mandatory. Although the numbers of commercially insured and Medicare patients are projected to grow, so will the effectiveness of approaches taken by doctors and hospitals to keep patients out of the hospital by coordinating their care needs in community settings. Improved ambulatory management of chronic conditions resulted in double-digit discharge declines in many service lines in the greater Chicago area. Past inpatient volume increases cannot be expected to continue in the nation’s communities given the trends described here. Volume is flattening nationwide and has decreased as much as 3 percent to 8 percent overall in some areas of the country in the past 18 months.8

Capital investment should be shifted from adding new hospital beds—which permanently increase an organization’s fixed cost—to restructuring inpatient care management processes and delivering care in ambulatory settings. Clinical services must be offered only in places where adequate volumes can be achieved for quality goals organization-wide and community-wide. Difficult decisions about merging or closing services and facilities cannot be deferred in an era of declining volume and payment.
Reengineering Care Delivery

Key questions are: How will we expedite progress in getting physicians to rethink and reshape care delivery under value-based arrangements, as is occurring with select organizations in the Chicago area and other regions? How will we build our care management capabilities? Will we need to partner with other organizations to do so?

Organizations that effectively challenge and incentivize physicians to rethink healthcare under value-based arrangements will start to achieve real change in physician behavior. As indicated by the Chicago-area study, performance-based contracts discourage or penalize unnecessary utilization, so admissions, testing, and procedures per hospitalization will decline as care management capabilities increase. Use of effective tools, such as protocols and guidelines, will be critical; so will meaningful physician performance goals that have been developed with clinical leadership. Progress toward these goals must be continuously monitored and reported to participating physicians and the full executive team. Organizations in the Chicago area that use accountable care-style models regularly report key metrics to physicians and the industry, believing that healthcare’s transformation can be accelerated through increased transparency.

Achieving Operating Sustainability

Key questions are: How will we ensure that the reorganized care platform has a cost structure in line with expected revenue? How do we keep the organization’s cost curve below the revenue curve at all times?

The days of comfort with fee for service as the predictive revenue model are over. The revenue stream for value/risk arrangements is yet to be determined for most hospitals and health systems. Experience under various types of contracts over time in a changing competitive environment will be required. Because revenue going forward will be much less predictable than it has been in past years, organizations must shape a new and scalable cost structure. High flexibility is key. To keep the costs of care well below revenue at all times, cost structures must be able to adjust downward quickly. Executive teams should challenge themselves to identify how they would bring their cost structures down to a level that would ensure profitability in an environment with a one-year loss of discharges as high as 24 percent and an average daily census drop off of 15 percent, as were projected in the Chicago-area study.

Organizations that have been building their care coordination and management capabilities will be better prepared to “pull the switch” on fee-for-service arrangements, crossing over to performance- and risk-based contracts with greater understanding of revenue flow. One organization in the Chicago area market has been out in front using accountable-care models to ready themselves for the more complete cross-over to value-based payment. In contrast, providers that continue to rely exclusively or mostly on fee-for-service payment in an environment of both declining rates and utilization will experience diminishing financial performance with a significant downward multiplier effect.

Transformative Clinical and Management Teams

Key questions include: What human resource chassis (number/types of professionals) will be required for the future delivery system and how should this be achieved? Do we have enough intellectual capital to make the transformation?

As the care delivery system of the future, population health management is not only a new playing field for providers, but an entirely different sport. Imagine being a head coach who has built a top-notch team to play football. The coach has acquired the top quarterback, tight end, defensive linebackers, and other players to be successful at playing this sport. But now, all of a sudden, that coach is not playing football; he’s playing baseball. He doesn’t need a quarterback; he needs a starting pitcher. He doesn’t need a defensive end, but a great short stop instead, and so forth.
Today’s competencies are not tomorrow’s competencies. Human capital needs have changed in significant ways. The executives trained to run one kind of healthcare system are now being asked to run a very different kind of healthcare system. Some will be able to make the change; others will not.

Because keeping the cost curve below the payment curve at all times is the most important leadership objective at this time, organizations must be rightsized not only from a business perspective but from a competency and labor perspective as well. Which professionals will be required to deliver the right amount of work under the right cost structure for the right delivery system? The payment system of the future will not support the current labor chassis of hospitals. As indicated in the Chicago-area study, fewer hospital beds and hospitals can be expected; personnel will change and deployment will be focused in community settings.

Results of the Chicago-area study show that the inpatient-centric healthcare model is starting, through behavioral and structural changes, to be replaced by a community-centric model. The speed of change will vary by market, but the research suggests that all healthcare markets will be transformed in a significant way.

Your comments are welcome. Rob York (ryork@kaufmanhall.com), Ken Kaufman (kkaufman@kaufmanhall.com), and Mark Grube (mgrube@kaufmanhall.com) can be reached at 847.441.8780.

A shorter version of this article was posted to Health Affairs Blog on January 6, 2014 at http://healthaffairs.org/blog/2014/01/06/where-have-all-the-inpatients-gone-a-regional-study-with-national-implications/

References

3. Data include all payers—commercial, Medicare, and Medicaid—and all ages, excepting newborns.