



Baylor Health's Strategy for Advancing Healthcare and Leveraging the Value of Laboratory Testing

Executive War College

Discussion document

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Disclosures of conflict of interests

- Fully employed by Baylor Health Care System (BHCS)
- Direct business and indirect personal interest in med fusion
 - BHCS is an equity owner of med fusion, a joint ventured molecular diagnostics and precision medicine company
 - I am a Trustee of med fusion and have annual goals set by BHCS for med fusion's performance
 - I have no personal investment in med fusion
- Many of the slides are courtesy of McKinsey and Company, my previous employer, and are their intellectual property that cannot be used without their written consent
- Opinions presented are mine alone and do not reflect those of BHCS or McKinsey and Company

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Discuss the forces at play in the US health care market

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Explain Baylor Health Care System's position in the health care value chain

3

Show what actions we are taking to meet these new market forces



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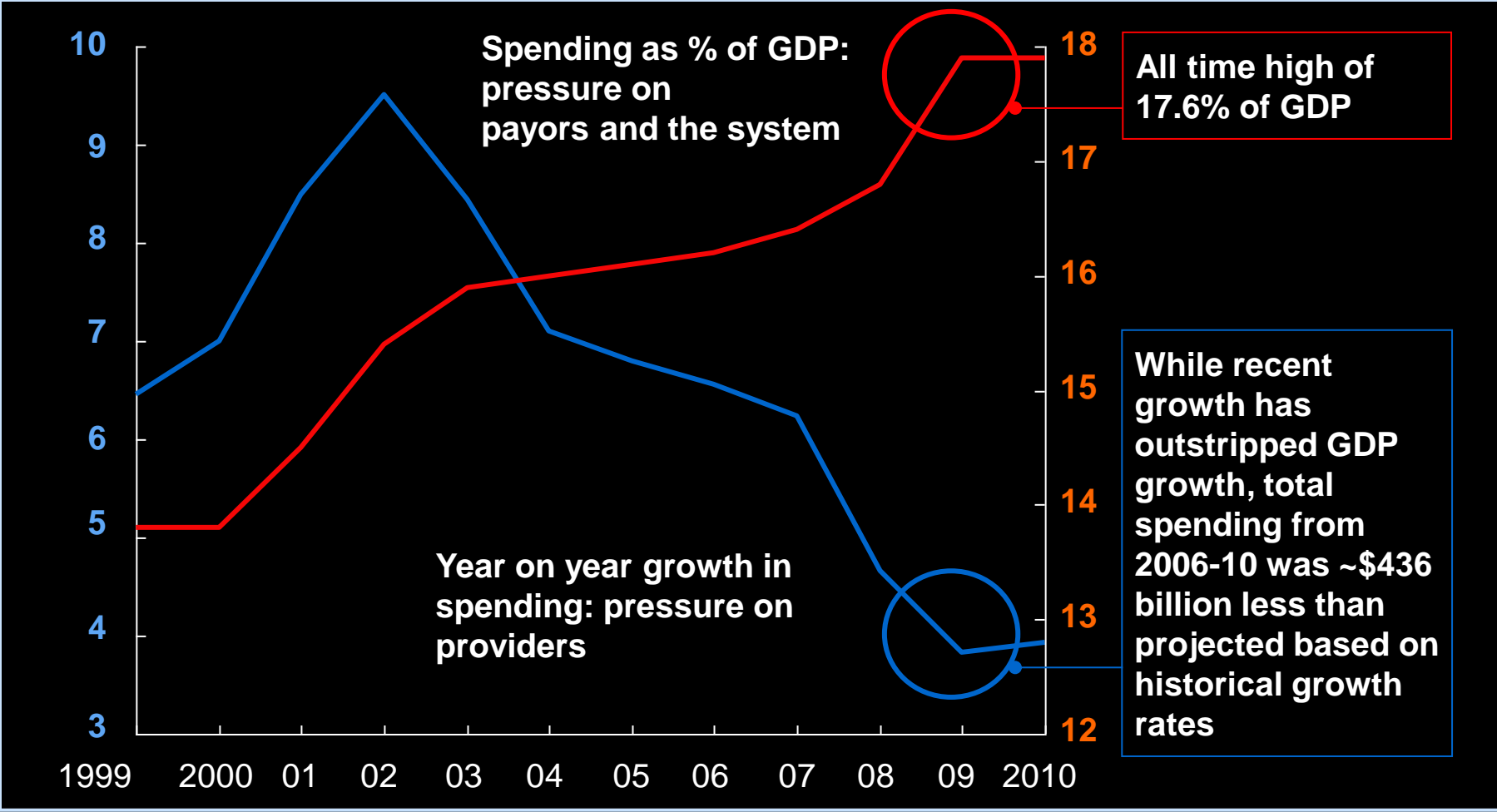
Forces at play



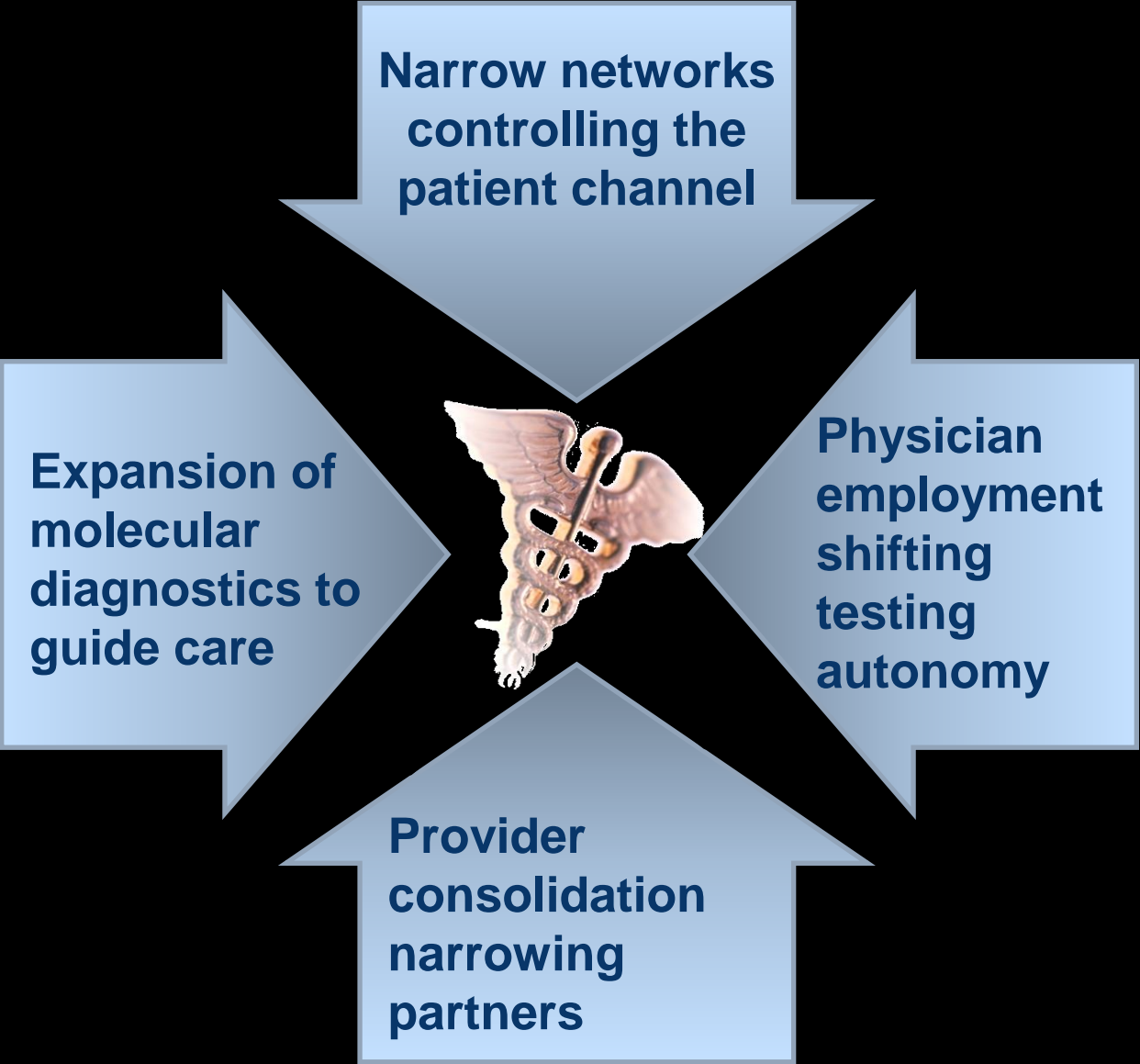
The pace of change is picking up, with increasing pressure across the system on both the population, providers, and payors

% growth in spending (left), % of GDP (right)

Yearly growth in total health care spending vs. spending as % GDP



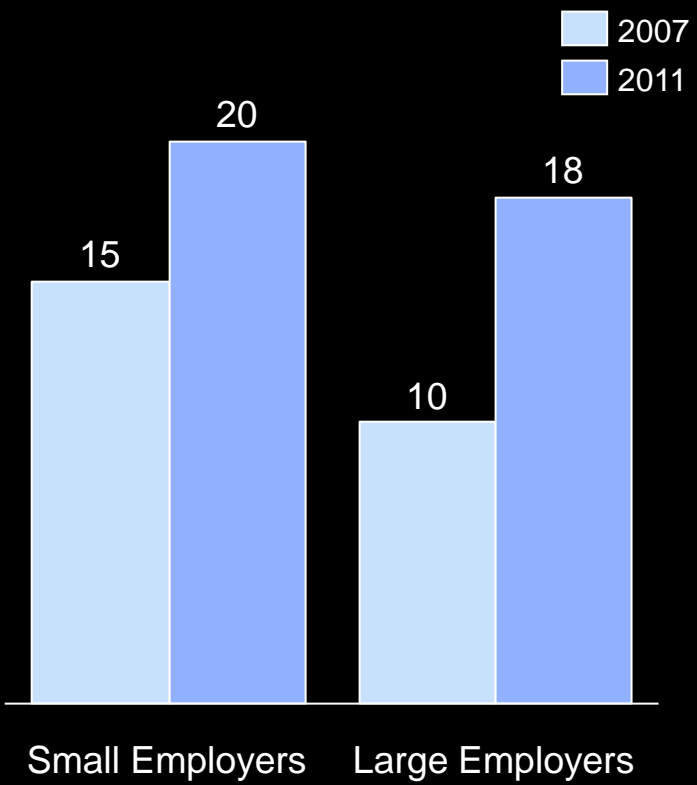
Four forces increasingly shape the US healthcare system, shifting power in the channel from the physician to the payor or health system



Payors are increasingly using tiered or narrow networks to manage costs down

Employers offering tiered or narrow network plans¹

Percent



Payors with tiered or narrow network plans



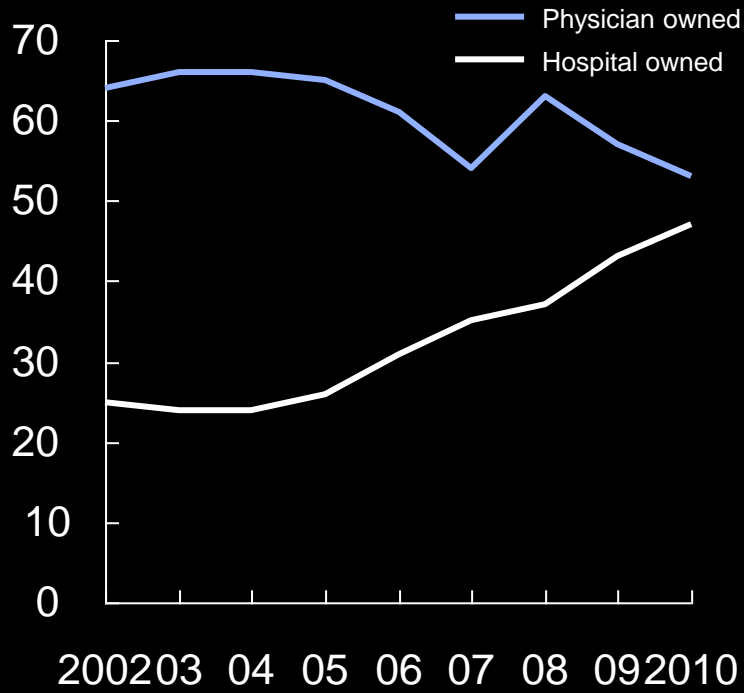
¹ Small employers have <200 employees

Accelerating trend towards more hospital-owned medical practices and hospital-based physicians, giving the hospital more potential sway in guiding practice decisions

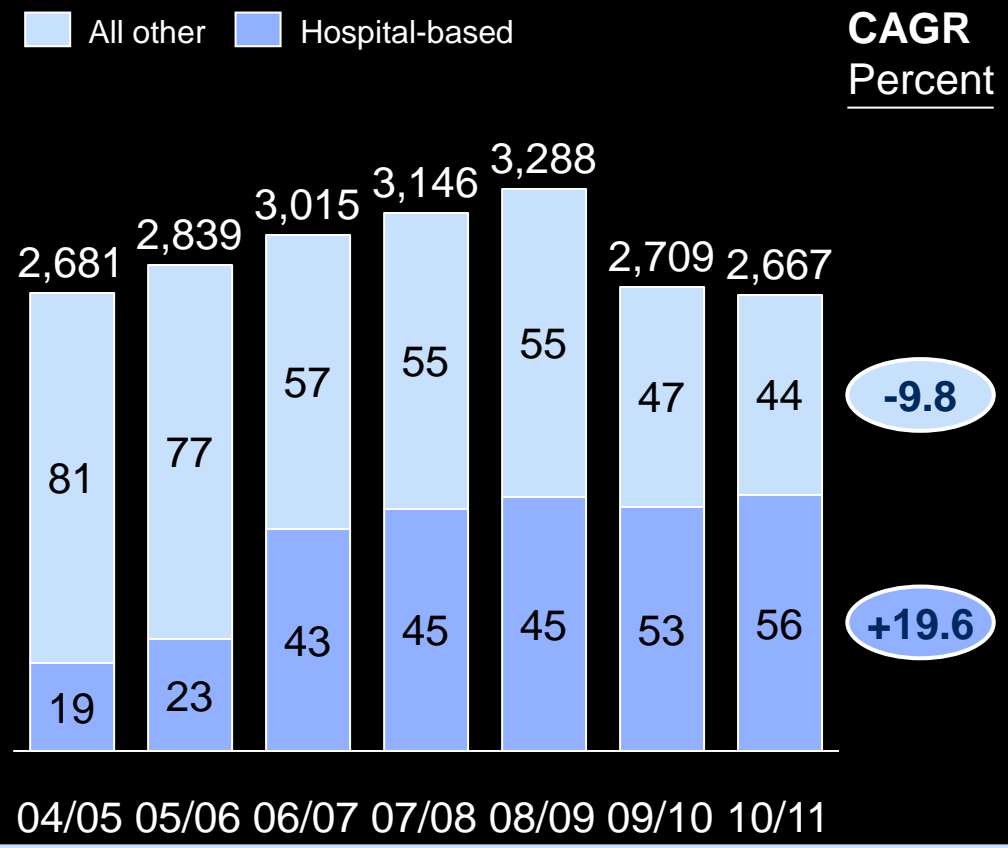
Hospital employment of physicians is increasing

Provider¹ ownership trends

Percent



Physician search assignments for hospitals continues to rise

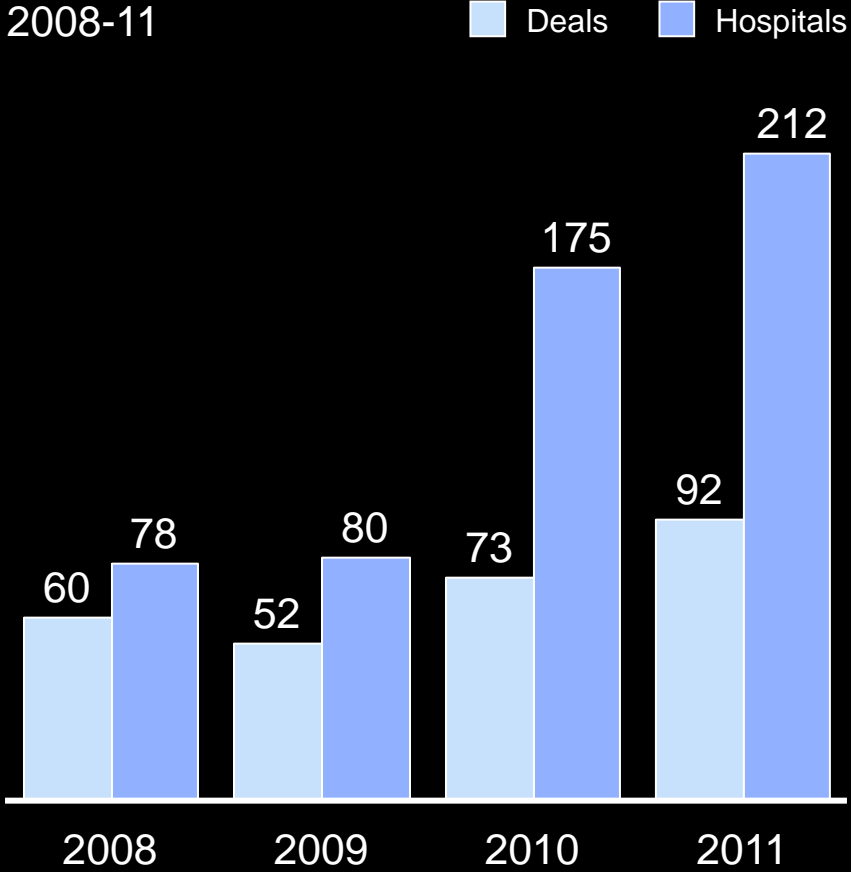


¹ Primarily physicians but also includes a small percentage of physician extenders

Dramatic increase in M&A activity to capture perceived scale and synergy benefits, which may leave lab providers looking at fewer partners

Healthcare systems/providers only

Hospital mergers and acquisitions



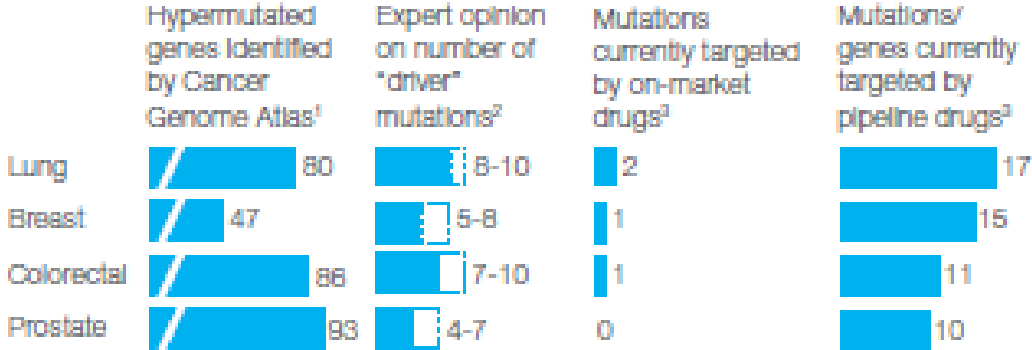
Some prominent recent examples (of actual or proposed deals)



Large difference in mutations currently targeted by on-market drugs and mutations targeted in pharma pipeline indicates a growing market, even if applying traditional trail attrition factors

FIGURE 1

Potential for additional personalized therapeutics in Oncology



¹ Based on q-value analysis using MutSig software from the Broad Institute
² Based on expert interviews
³ Based on Evaluate Pharmaceuticals database; for pipeline, includes Phase 1 and above only

A significant number of hyper-mutated genes have been identified in the four major tumor types, although only a limited set have been shown to be true "driver" mutations

However, pharma companies are developing drugs against a number of other gene targets, and applying typical attrition factors show that there is likely to be a significant increase in number of relevant markers in each of the tumors

2

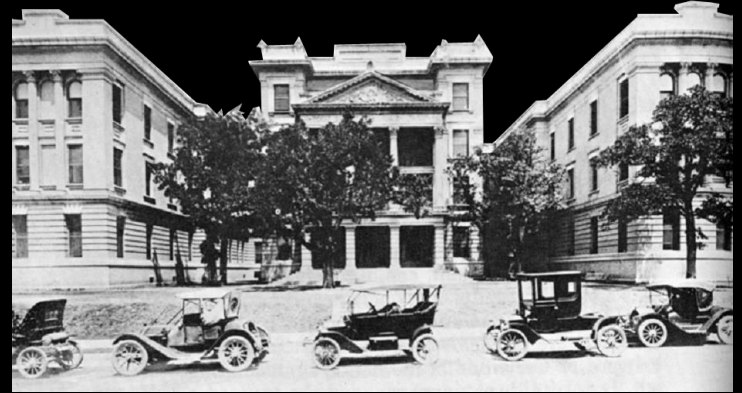


Baylor Health Care System



At 110 years old, Baylor Health Care System retains its mission as a Christian ministry of healing

- Baylor Health Care System originated with the formation in 1903 of the Texas Baptist Memorial Sanitarium
- Baylor Health Care System and Baylor University Medical Center were incorporated, and the System was formally established in 1981
- Founded as a Christian ministry of healing, Baylor Health Care System exists to serve all people through exemplary health care, education, research and community service.



Joint ventured with our surgeons and United Surgical Partners International to extend outpatient surgical services

➤ 7 Short Stay Surgical Hospitals

- Baylor Medical Center at Frisco (67 Beds)
- North Central Surgical Hospital (34 Beds)
- Baylor Medical Center at Trophy Club (20 Beds)
- Baylor Surgical Hospital at Fort Worth (18 Beds)
- Baylor Medical Center at Uptown (14 Beds)
- Irving Coppel Surgical Hospital (12 Beds)
- Baylor Orthopedic and Spine Hospital at Arlington (24 Beds)



➤ 26 Ambulatory Surgery Centers (“ASCs”)

* *Baylor controlled and consolidated joint venture partnership*

Partnered with a best-in-class provider, Select's Kessler Institute of Rehabilitation, to extend our presence in the value chain and deliver services in the patients' neighborhood



Facilities' overview

- 4 inpatient facilities
- 31 outpatient facilities
- 3 inpatient rehabilitation units
- 8 inpatient acute therapy units

Three years ago BHCS partnered with oncology leaders to found a clinically-driven onco-informatics platform, med fusion

What is it?

- Professional enterprise created to **address the emergence of molecular diagnostics and precision medicine**; the convergence of clinical practice and clinical trials
 - **Leverages the market strength of its founders**, US Oncology, McKesson Specialty Health, Texas Oncology, BHCS, and Pathologists BioMedical Labs
-

What is the value proposition?

- Provide access for its customers/partners to the technologies and professionals to **optimize the utilization of Clinical Laboratory and Pathology in support of best care and precision medicine**
 - Evidence based diagnostic pathways
 - Clinical Trials- surrogate for clinical leadership
 - Information/Knowledge
-

Has this been successful?

- Grown from \$20MM to \$61MM company in three years
- Hemepath- starting point; standardizing diagnostic pathways for hematologic diseases based on best practices; integrated reports

3

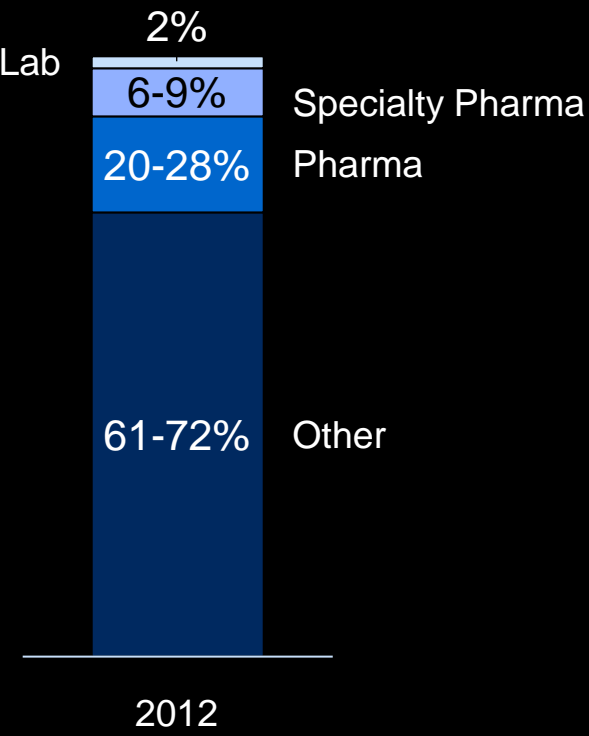


Actions taken to counter new market forces



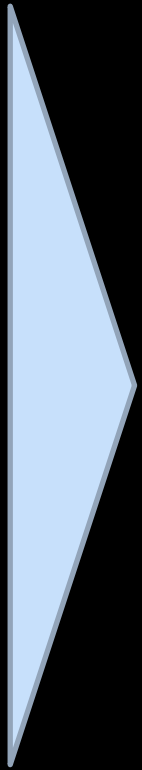
Real value for payors in managing lab services is as a lever to reduce rapidly growing specialty pharmaceuticals spend

Distribution of total cost of health care
Typical commercial payor



3 years' expected CAGR¹

Lab	6%
Specialty Pharma	10-30%
Pharma	-10%
Other	6%

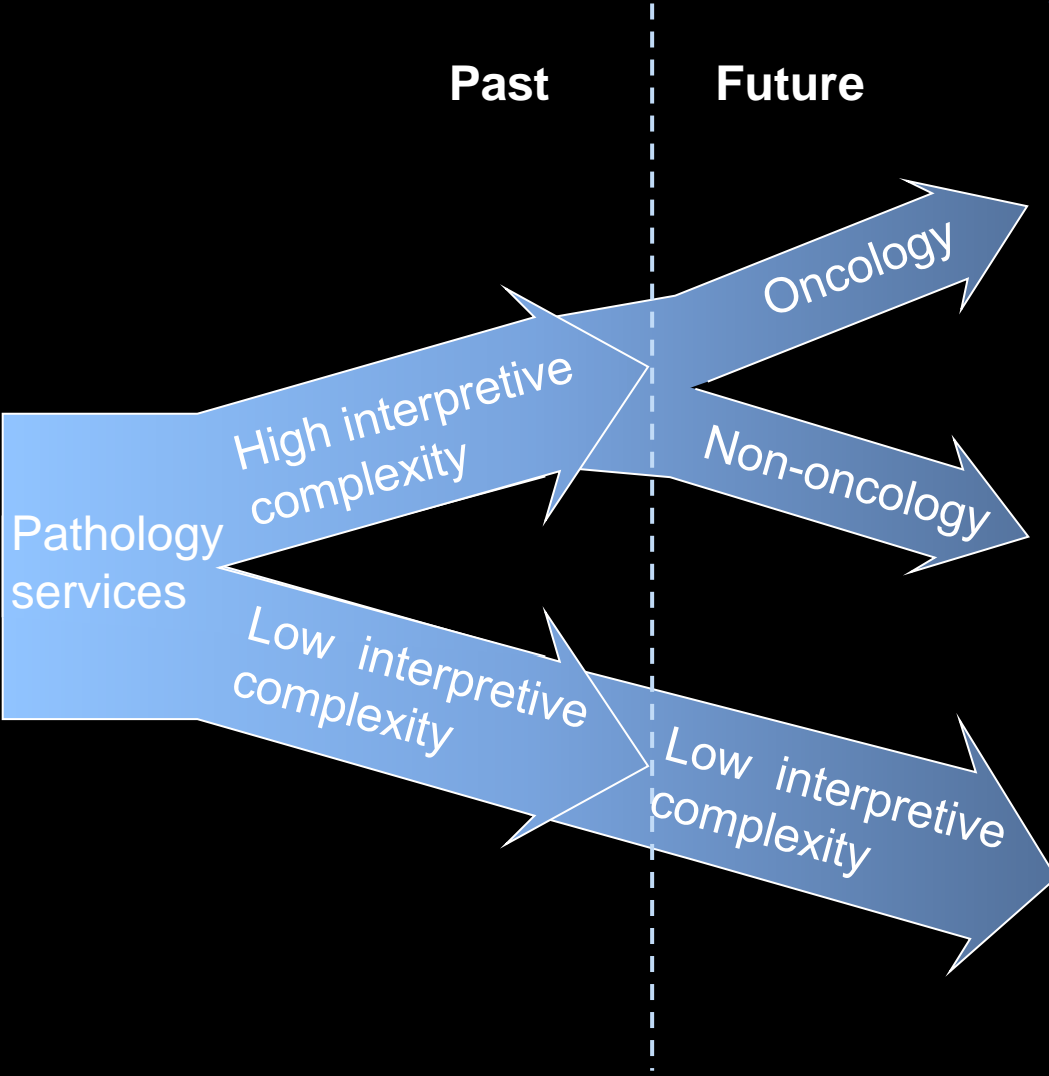


- Far larger and faster growing spend categories than lab
- Payors would need to **summons unprecedented political will** to directly reduce specialty pharma (i.e., anti-neoplastics) by either denying coverage, narrowing treatment channels, or prescribing latitude
- High complexity oncologic testing has the potential to **objectively prevent ineffective treatments** and bend the cost curve while improving therapeutic responses

¹ Compound Annual Growth Rate

SOURCE: Data to left from McKinsey and Company as a disguised client example, interpretation to right by Ernest Franklin

Market will trifurcate to establish oncology-driven testing with a different basis of competition



Basis of competition

Oncology

- Offer proprietary testing
- Integrate into oncologists' decision process with useful IT to be a distinctive differentiator
- Show ability to prevent ineffective use of high-cost specialty pharma treatments

Non-oncology

- Provide test selection and interpretation advice to a larger swath of physicians (e.g., hospitalists)

Low interpretive complexity

- Standardization to drive higher quality and lower cost
- ACO-foundational element with common IP and OP reference ranges

Power in the oncology testing channel comes from strong clinical partners

BHCS's and med fusion's tactics

Core beliefs

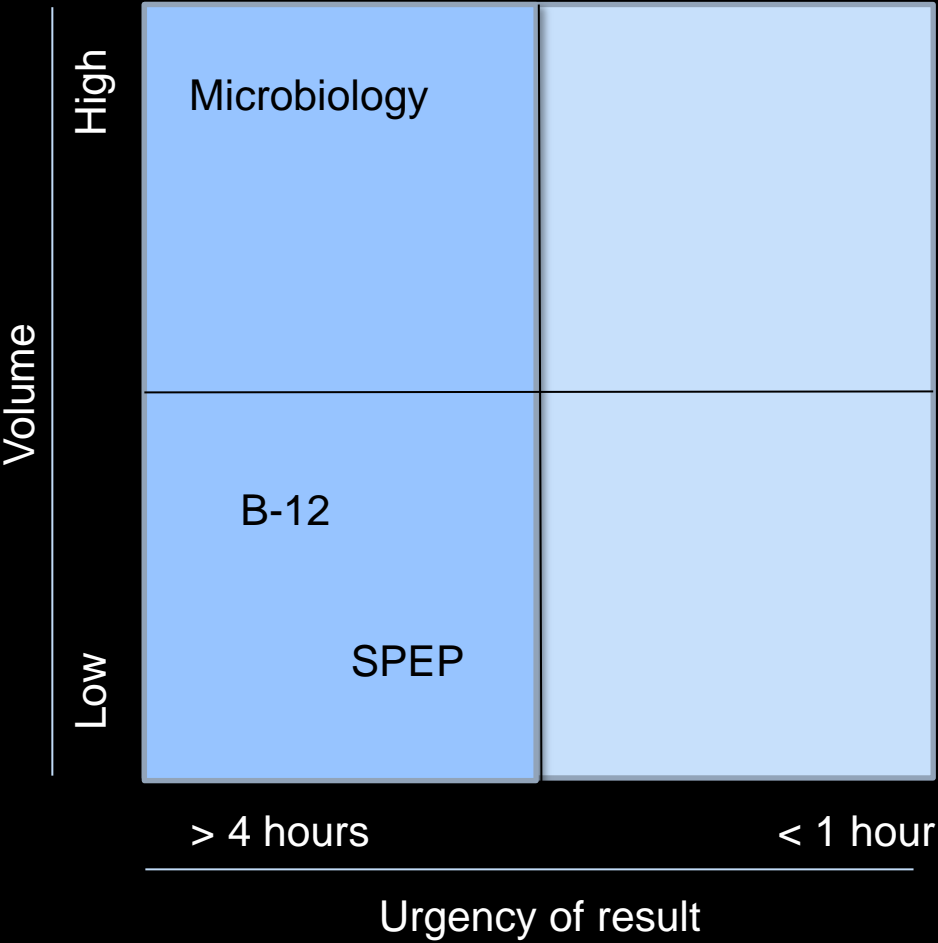
Align with partners with significant market presence that can influence the treatment of many patients

Serve them with an integrated report that increases the rapidity and accuracy of clinical decisions

Close the loop by deliver results plus value-adding decision support service

- Partner with US Oncology/McKesson and Texas Oncology, who collectively have **26% of USA's oncology market share** for patients
 - Partner with BHCS, who has the 3rd largest cancer center in Texas and 26th largest in US, by volume
-
- **Interface with partners' EHR** for seamless, updated reporting
 - "Hyper-invest" in IT organization like this is a \$500MM company while it is a \$50MM company to over-deliver on differentiated reports for the oncologists
-
- Develop report integrating AP, flow, molecular, and cytopathology plus results-targeted literature citations and open trials
 - **Link results to USON/TXO proprietary protocols to reduction in ineffective treatments for gain sharing with payors or ACOs in avoided costs**

Consolidation of non-oncology high interpretive complexity testing creates value at both the future and past labs of service



Opportunity for rollup of left side

- Presents a significant opportunity to consolidate \$21MM of \$66MM spend
- Creates value by:
 - Capturing **economies of scale** in reagent, QC, and testing platform costs
 - Capturing **economies of skill** with increasing tech familiarity with heretofore infrequently performed tests
 - Capturing **economies of scope** by standardizing testing in IP and OP environments
- Removal of 1/3 of volume allows larger labs to “clean sheet” their cost structure

Standardize testing procedures to increase quality and meet cost needs of the low interpretive test complexity channel

Establish system-standard processes and lock in standard work

Enablers of standardization

- **Identical analyzers** in chemistry, hematology, blood bank, and coagulation
- **Standard reference ranges**, critical values, and alert values
- Harmonize and create **system policy library** to reduce policies by 62% (from 617 to 234)
- Implement lean in **hematology to reduce TAT by 42%, costs by \$368K, and hold performance for 8 months**

Focus quality measures on proven quality drivers and rework prevention

- Implement phlebotomy-nurse co-draw model at largest hospital to **decrease errors by 76-90% while decreasing phlebotomy costs by \$720K**
- Decrease **blood culture contamination rate** from 3% to 2.1%, hold for 8 months
- Increase **blood culture fill volume adequacy** from 63% to 83% in 3 months, hold for 8 months
- Decrease **urine culture contamination rate** from 18% to 3.1% in 3 months, hold for 8 months

