Analysis of Certain Healthcare Data

Health and Human Services Commission
Department of State Health Services
Employees Retirement System of Texas
Texas Department of Criminal Justice
Teacher Retirement System

To the Legislative Budget Board and the Office of the Governor

As Required by Article IX Rider, Section 10.06

2018-19 General Appropriations Act

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Contents

INTRODUCTION

Senate Bill 1, Article IX, Section 10.06, 85th Legislature, Regular Session, 2017 requires the Health and Human Services Commission (HHSC) to coordinate with the Department of State Health Services (DSHS), the Employees Retirement System of Texas (ERS), the Texas Department of Criminal Justice (TDCJ), and the Teacher Retirement System (TRS) to develop recommendations and a comprehensive plan for an integrated healthcare information system that can be used to compare data related to the healthcare systems funded by appropriations made to these agencies.

The integrated system should allow the state to collect and analyze data on utilization, cost, reimbursement rates, and quality in order to identify improvements for efficiency and quality that can be implemented within each healthcare system. When developing recommendations and a comprehensive plan, the agencies were asked to consider differences in population, acuity, and other necessary factors between systems, potential for expansion of existing healthcare data integration initiatives, the use of existing health claims data sources, and the collection of new inpatient and outpatient claims data. The report evaluates and compares three potential options for meeting the goals of the rider.

EXECUTIVE SUMMARY

HHSC, ERS, TDCJ, and TRS face similar cost drivers and use similar cost containment strategies with their healthcare programs, but they also face distinct challenges based on who they serve, how they are funded, and how they deliver care. Still, providing quality care while controlling costs is a shared goal of all four agencies, and the agencies agree that an integrated system for sharing data could be helpful when collaborating on strategies for improving quality.

The five agencies identified in the rider formed a workgroup that met frequently to collaborate and explore opportunities for building an integrated healthcare information system to compare utilization, costs, reimbursement rates, and quality in each healthcare program.

The workgroup explored three options:

Standardized program reports done by each health program. HHSC, ERS, TRS and TDCJ could each develop and generate their own standardized reports on an agreed-upon schedule, based on shared assumptions. While this option could be achieved within existing resources, it has some drawbacks, most notably that the agencies have different capacities for generating compatible data sets, and the data would not be age or risk adjusted. The reports would initially be paper-based. The agencies do not currently have a shared visualization tool with sufficient security to protect health information and to display the shared results. This is the only option for agencies to compare data using existing resources. Estimated implementation time would be 3-4 months.

Analysis conducted by a Texas academic institution. Another option is for each agency to enter into a memorandum of understanding (MOU) with the Center for Healthcare Data at the University of Texas Health Science Center at Houston (UT Data Center). The UT Data Center has

established an interagency collaborative contract with HHSC to receive and analyze Medicaid data for approved projects, and also holds Medicare and private sector market data. All together the UT Data Center's relationships with HHSC, CMS and commercial entities gives it access to up to 91 percent of the Texas market's claims data. ERS tested the UT Data Center strategy with three years of its own data as a proof of concept for the study. Reporting included demographics, utilization, spending, and quality measures, tailored for the program against a customized age- and risk-adjusted Texas benchmark. Data was displayed in interactive dashboards to make it easier to visualize data outliers. The agencies believe this option could be implemented in 6-8 months.

Analysis conducted by Texas Medicaid's data analysis vendor. The agencies could also use a vendor like HHSC uses for its External Quality Review Organization (EQRO), currently the Institute for Child Health Policy (ICHP) at the University of Florida. Since 2002, ICHP has worked with HHSC to evaluate and monitor Medicaid managed care activities, including by computing and reporting, performance metrics of Medicaid Managed Care Organizations (MCOs). ICHP provides interactive dashboards for comparing utilization, spending and quality measures for the MCOs. It was not designed to report on non-Medicaid programs and does not hold Texas private market claims data, so it could not immediately provide customized Texas benchmarking for all state fund healthcare programs. State contracting requirements prohibit ERS, TRS and TDCJ from adding on to the existing HHSC contract with ICHP. Therefore, this solution – like any solution that involves contracting with a vendor - would require a coordinated procurement, Request for Proposal (RFP) and additional funding. Estimated time to implement would likely be up to two years.

The most important lesson learned from the project is that sophisticated and consistent reporting methods must adjust for demographic and health acuity differences among populations. Attempting to make valid comparisons among programs without this capability will not produce the reliable information or insight that is needed to inform decision makers.

Meaningful data comparisons were achieved in the pilot with the UT Data Center because of the expertise of a third-party able to analyze and compare healthcare data against expected benchmarks. The State should expect to spend approximately $5 million per year for an integrated healthcare information system project of this magnitude and intensity.

While having quality data is a crucial part of understanding the challenges we face, ultimately, it is how data are used to inform policy that matters. Standardized comparative data can illuminate the underlying forces that drive costs, provide greater insight into state-funded program performance and best practices, and create leverage for holding vendors, consumers, and providers accountable for health outcomes.

The agencies agree that a data analytics tool could be a valuable addition to the informal collaboration that exists among health plans. This data-driven approach could provide insight on reporting indicators of health and health delivery performance among systems. The effort is not without challenges,

however, and would require resources dedicated to the effort. We look forward to legislative direction and guidance on the findings of this report and next steps for the workgroup.

HEALTH PLAN BACKGROUND

Program Similarities and Differences

Differences among the program populations and structure limit the usefulness of some shared data. Some of the major features of the programs, such as funding sources, the size and demographics of the populations, and the benefits offered added complexity to the exercise of comparing data. Some key features of HHSC Medicaid, ERS health program, TRS health program, and TDCJ Correctional Managed Care are outlined in the Table1. For more detailed background information on the health programs, see Appendix A.

Table 1 Compares Basic Features of the Four Workgroup Agencies Healthcare Programs

	HHSC	ERS	TRS	TDCJ
Sources of Funding	State and federal funds	GR, GR-Dedicated funds; Employer surcharge of 1% payroll; Employees pay 50% of dependent contribution.	TRS-ActiveCare: The State pays $75 month. School districts pay at least $150 month. Employees pay the remainder. TRS-Care: The State contributes 1.25 percent, districts contribute 0.75, and active employees contribute 0.65 percent of active employee payroll. Retirees contributed a fixed monthly premium.	GR, GR-Dedicated funds
Funding in millions (FY 2017)	$42,612 Million	$3,385.5 million	$3,484.1 million (TRS-ActiveCare: $2,131.6 million; TRS-Care:$1,352.6 million)	$601.9 million
Population served	Primarily women and children with limited income and resources	State and higher education employees (except for the University of Texas and Texas A&M University systems), retirees and their dependents	Employees and their dependents of participating public education entities; retirees and their dependents of participating entities (school districts, open enrollment charter schools, education service centers or other educational districts)	Incarcerated offenders, primarily men between ages 20 and 64
Number of participants	4,039,590	534,053	760,744 (TRS-ActiveCare: 492,317; TRS-Care: 268,427)	145,409
Average age	21 years old	44 years old	TRS-ActiveCare: 34 years TRS-Care: 68 years	39 years old
Gender breakdown	54% women 46% men	54% women 46% men	TRS-ActiveCare: 63% women / 37% men TRS-Care: 66% women / 34% men	8% women 92% men
Participant cost sharing	Minimal	Yes	Yes	Minimal

NOTE: Data points are from a point in time in FY 2017 that is commonly used by the reporting agency, it is either end of most recently available quarter or end of fiscal year.

Regardless of these differences, the programs still share a number of things in common. The most significant thing all programs have in common is that they all receive state funding.

ERS and TRS are probably the most similar in terms of their populations, the way they contract for services, and the fact that they both require participants to pay premium contributions and out-of-

pocket costs. Both programs provide coverage to active employees, retirees and dependents, meaning their populations include all age groups. ERS and TRS also cover out-of-state participants.

ERS and TRS both have boards of trustees that design the benefits and contract for third-party administrator (TPA) and pharmacy benefit manager (PBM) services. Their TPAs and PBMs contract for a provider network, negotiate provider discounts, adjudicate claims, and engage in a variety of cost containment activities. ERS and TRS reimburse providers on a fee-for-service basis, and a variety of value-based contracting or pay-for-performance arrangements.

The large majority of ERS and TRS active participants are enrolled in self-funded plans, while retirees have the option of enrolling in a Medicare Advantage plan. Some ERS and TRS participants pay monthly premium contributions, as well as pay for a portion of their care through copays, coinsurance and deductibles. Due primarily to differences in available funding, TRS participant premiums and cost sharing are generally higher than ERS participant cost sharing.

HHSC and TDCJ have some common features but are unique in the way they deliver care. HHSC and TDCJ are required to provide care to anyone who meets certain eligibility requirements, therefore the number of people in their care is largely out of the agencies' control. The population Medicaid services is primarily women, children, people age 65 and older, and individuals with a disability (including intellectual and developmental disabilities, physical disabilities, and severe mental illness). TDCJ population is nearly all men, however, individuals in both populations typically have fewer resources and may not have had consistent access to quality healthcare.

Cost Drivers

The agencies share many of the same cost drivers including special demographic challenges; an increase in high-risk high-cost chronic conditions and increased utilization and price inflation in their prescription drug programs. For more specific details about cost drivers in the various programs, see Appendix B.

Demographics

Population demographics influence each program's costs. For HHSC, an increase in enrollment is the primary cause of increasing Medicaid costs. The number of Texans enrolled in Medicaid rose 10 percent from 2012 to 2017. In state fiscal year (SFY) 2015, women and children accounted for the largest percentage of the Medicaid population. Though the aged, blind and disabled population only represent 24 percent of Medicaid clients, the care delivered to this population is the costliest, accounting for 59 percent of the program's expenditures in SFY 2015.

TDCJ receives 70,000 new offenders per year, many of whom have mental illness, chronic conditions and infectious diseases. From SFY 2013-2017, the population of aging offenders increased by 25 percent. About 18,000 TDCJ offenders have the Hepatitis C virus, the leading cause of end-stage liver disease, which requires frequent hospitalizations and emergency room services, and treatment standards for these conditions have become more complex and expensive.

For ERS, changes in the population are due entirely to a growth in retirees, with a 136 percent increase in retirees in the past 20 years, while state employment remains flat. As the population ages, the

prevalence of chronic illness grows. By the time a HealthSelect participant reaches age 50, there is a 1 in 3 chance that they have diabetes.

The TRS population has more women and rural members than typical employer plans. Women in general tend to have higher utilization of healthcare services and higher costs. A higher female population also means more maternity costs, and higher rates of breast cancer. Active employees are also more likely to utilize healthcare services during breaks in the school year, especially during the summer months when school employees are off work.

Chronic disease

For ERS, 12 percent of HealthSelect participants have diabetes, but medical and pharmacy spending on diabetics' accounts for 34 percent of all HealthSelect costs. Spending on the diabetic drug class at ERS has tripled in five years. TRS diabetic participants have higher rates of emergency room visits, more inpatient admissions, longer hospital stays and higher readmission rates than non-diabetic participants. For both the TRS and ERS health plans, maintenance chemotherapy and radiotherapy related to chronic cancer diagnoses had the highest medical spend in FY 2017.

For TDCJ, in addition to chronic HIV and Hepatitis C, diagnosed serious mental illness – such as major depressive disorder, bipolar disorder, schizophrenia and other psychotic disorders– is a growing problem. The share of the prison population with mental illness has risen 40 percent since 2009.

Price inflation in the drug program

Nowhere in healthcare is the impact of price inflation more apparent than in the specialty drug industry. Specialty drugs are just 1 percent of all the prescriptions written for the ERS HealthSelect plan, but they represent 36 percent of total drug costs before rebates. For TRS-Active Care, specialty drugs represent 2 percent of all prescriptions and 42 percent of drug costs before rebates. For ERS, spending on specialty drugs for anti-inflammatory conditions such as rheumatoid arthritis increased 59 percent from FY 2016 to FY 2017. Spending on this drug class increased 25 percent for TRS in the same time period.

For TDCJ, infectious diseases such as HIV and Hepatitis C require costly medications, and while about 1.4 percent of the TDCJ population was HIV positive, antiretroviral drugs for HIV positive offenders represented 37 percent of all of TDCJ's drug spending. Newer and more expensive antipsychotic medications, as well as new therapies for Hepatitis C, are also driving drug costs.

Cost Containment Initiatives

Each program employs strategies to contain rising healthcare costs. All agencies contract with third party administrators or outside vendors to provide healthcare and leverage their purchasing power to negotiate competitive rates for medical services and prescription drugs (e.g., large health insurance carriers with network discounts, pharmacy benefit managers with significant rebates). They also strive to deliver healthcare in the most appropriate setting to manage costs. Telemedicine and value-based healthcare are two strategies that connect patients with the right care at the right time to achieve a better outcome. For more specific details about cost containment initiatives for the various programs, see Appendix C.

Telemedicine

Telemedicine or Telehealth is a healthcare delivery method that all agencies use to deliver high-quality, efficient care in a lower-cost setting. The flexibility of accessing physicians remotely during off hours allows patients to access care before conditions worsen and reduces costs by providing alternatives to emergency rooms and urgent care. TDCJ has used telemedicine with university medical providers since the early 1990s and its use has continued to grow beyond primary care and mental health visits to include after-hours urgent care. In FY 2017, there were 156,040 telehealth encounters compared to 83,740 encounters in FY 2012 – an 86.3 percent increase over that period. The Texas Medicaid program is also experiencing rapid growth in telemedicine, with utilization increasing by 24 percent between FY 2014 and FY 2015 and it will continue to grow with the passage of Senate Bill 1107, Regular Session, 2017 allowing for expanded use across Medicaid.

ERS and some TRS plans waive cost sharing for telemedicine and have lower copays for urgent care to provide cost-effective options and steer participants away from the emergency room when appropriate. ERS implemented virtual visits in FY 2016, allowing 24-hour access to Texas-licensed physicians via mobile device or computer. Beginning in FY 2018, ERS eliminated copays for virtual visits resulting in a large increase in visits in the first four months of the plan year. At the same time, copays for non-network freestanding emergency room visits were raised to $300.

Value-based contracting and plan design

Value-based Payments (VBP) are alternative methods to the traditional fee-for-service payment model used to reimburse health care providers. Historically, health care payments to providers have been based on volume. VBPs are structured to incentivize providers to deliver quality care in the most cost effective manner. VBPs also encourage desired behavior and incentivize healthcare providers to focus on patient-centered goals, such as preventative care and improved patient outcomes at a lower cost.

TRS, ERS, and HHSC are taking steps to promote greater use of VBP arrangements. TRS and ERS have implemented value-based plan designs in recent years. Nearly 40 percent of TRS-ActiveCare participants are in a value-based arrangement. Over 44,000 TRS-ActiveCare participants receive care through an accountable care organization (ACO) where a group of providers coordinates patient care, and in FY 2017, the ACO model saved an estimated $20 million for TRS-ActiveCare. Starting in FY 2018, HHSC will require that a portion of all Medicaid MCO payments to providers be value-based.

More than half of all ERS HealthSelect provider contracts have value-based requirements. Most notably, ERS has focused its value-based purchasing arrangements on its award-winning patient-centered medical home (PCMH) program, which manages care for 1 in 7 HealthSelect participants. Since FY 2011, PCMH practices have saved the plan $79.4 million and have yielded $17.4 million in shared-savings payments to practices in addition to their reimbursements for medical care.

Both ERS and TRS have structured their plans to promote utilization of more effective and less costly care. For example, participants on TRS's high deductible health plans pay $0 for certain generic medications used for chronic conditions. This plan design eliminates financial barriers and encourages participants to take medications that prevent the onset or worsening of chronic health conditions.

TDCJ's agreement with public health institutions, University of Texas Medical Branch and Texas Tech University, allows them to closely manage treatment guidelines and patient care. TDCJ's partners follow national treatment guidelines, and unit healthcare professionals closely monitor each offender's disease management and adherence to drug treatment to reduce unnecessary costs and improve outcomes. This provider arrangement essentially includes the goals VBP seeks to achieve.

WORKGROUP EFFORTS

Individual Agency Reporting

Accurate, timely data analysis and reporting is essential to monitor the effectiveness of healthcare programs and services. Each plan actively analyzes data, monitors trends and investigates and analyzes anomalies in an effort to manage cost and performance.

Current Analytics Resources

Health plans either develop internal analytics tools and expertise or rely on a contractor or vendor for those services. ERS has an in-house actuary and data analytics team that performs claims and rates analysis using an internally-developed business intelligence data warehouse.

ERS uses a wide variety of tools and resources to collect, analyze, visualize and report on healthcare data. A few are listed below.

- Oracle and Teradata SQL Assistant – storing and accessing claims data
- SAS and R – statistical analysis, data analytics, and modeling
- Tableau Server & Tableau Desktop – data visualization and report creation
- Truven – medical episode grouper for predictive modeling
- IBM Cognos Business Intelligence – accessing and querying claims data
- Innovator – HEDIS/quality measure reporting

TRS utilizes IBM Cognos Business Intelligence to maintain and query the claims data warehouse. The claims data is then used to develop rates and benefits, manage and steer utilization, validate vendor and plan performance, conduct trend analyses, identify population health statistics, and to propose and evaluate cost containment solutions. In addition, ERS and TRS use their third-party administrators (TPA), BCBSTX and Aetna respectively, to provide data analysis and actuarial services.

HHSC uses similar tools to extract data, conduct analyses, and visualize the results. One significant difference between ERS and TRS's analytics processes is that in order to evaluate data about a cohort within the Medicaid population, HHSC's staff must match data from several sources for a large volume of data, typically over four million claims/encounters per month.

Claims and Encounters: Texas Medicaid & Healthcare Partnership (TMHP) is the major source of Medicaid fee-for-service claims, managed care encounters, and provider and client information, accessed through databases.

Eligibility: Premiums Payable System (PPS) data, which is collected from the Texas Integrated Eligibility Redesign System (TIERS) databases, and compiled by data management staff at HHSC, provides a summary of all Medicaid-eligible clients each month.

Vendor Drug: The application is a prior authorization processing system that makes a determination for a prior authorization request submitted via the PCRA system, website, or the PA Call Center.

As HHSC is maturing its data analytics program, the agency recognizes challenges it faces with current data infrastructure and analysis processes which include:

- HHS transaction systems were typically built for a single purpose or to support a set of discrete business processes. Most frequently, that purpose was to pay or to document services rendered by HHS program providers. This means that meaningful utilization or population health measures must frequently be constructed from administrative data derived from multiple systems, and then prepared for specific analytic purposes.
- HHS systems are fundamentally not integrated, in that a specific person in one system is often not readily identifiable in another system. This can be the case for both consumers and providers of services with transactions in multiple systems. As a consequence, joining services data from a variety of sources (often to construct a utilization data superset, or a proxy outcome metric) involves a manual approach.
- Operational system data quality across the HHS system portfolio is variable and in most cases, not measured on a recurring basis. As a consequence, ad hoc analytic processes frequently involve a significant degree of data exploration to identify unexpected data defects and non-conforming data.
- Medicaid serves over 4 million clients per month; the volume of related client and provider data contributes to the complexity of performing analytics.

TDCJ uses electronic health records for documenting and monitoring patient care. Offenders are treated in the unit by on staff clinicians, so not all care results in a medical claims (primarily hospital-based services). TDCJ utilizes a custom-built analytical framework to extract clinical data from multiple sources of data and integrate it into a multi-dimensional data warehouse for analysis, reporting, and data visualization. Data pertaining to several health care service categories are extracted:

- Prevention and Disease Management
- Access to Care
- Telehealth Encounters
- Medication Management
- Specialty and Hospital Services

In addition to the custom-built data warehouse and analytical framework, TDCJ uses SQL (a query language) Server Analysis Services to create cubes of data categorized by dimension that are optimized for analytical purposes and visualization. The analytical framework allows patient information to be de-identified and aggregated to provide greater context, insight and knowledge across the organization;

however, it also provides a patient identification drill-down feature for use by providers in the prison units to identify patients who are not meeting goals and require attention.

Standardized Comparison Using Existing Resources

The workgroup discussed strategies for aligning our internal processes and methods to compare our data ourselves. After discussing several health conditions (diabetes, hypertension, childbirth, depression, musculoskeletal disease, cancer, hepatitis C, HIV, multiple sclerosis) that impact utilization and costs across all plans, the workgroup agreed to test our own analytical tools and resources to assess certain factors associated with a group of individuals that we commonly see driving costs.

The workgroup selected diabetics as the test population, because diabetes is a costly chronic condition that occurs in all plans, and it causes serious health complications when poorly managed. It also is often comorbid with other conditions, complicating care management and increasing costs for those individuals and the programs. Diabetes has some discrete diagnosis and treatment codes that allowed the workgroup to identify participants with diabetes, and compare aspects of the cost and quality of their care. This approach also provides an example of an option for comparing data among healthcare systems using the tools and resources on hand.

Over several meetings, the workgroup discussed the available data and the best way to define and query data on utilization, cost, rates and common quality measures. The workgroup agreed to a consistent methodology, and conferred with our partner at the UT Data Center to validate our methodology.

The workgroup identified the number of diabetics in the claims and encounter data and quantified costs and quality measures associated with this population. To compare utilization the workgroup collected the following data in Table 2:

- Total number of diabetics; excluded gestational diabetes
- Prevalence of diabetes -- the percentage of diabetic in the total population
- Diabetics by age band

In comparing the utilization results, all plans have a higher rate of diabetes in older populations. Even though there are a large number of diabetics in Medicaid it is a small percentage of the population, because about 75 percent of Medicaid recipients are under 21 years of age or are pregnant women.

Table 2 Compares FY 2017 Diabetes Utilization Data across the Plans

	HHSC	TDCJ	ERS Active Employees	ERS Non-Medicare Retirees	TRS Active Employees	TRS Non-Medicare retirees
Number of Diabetics	286,601	9,146	24,821	7,466	22,559	10,034
Overall Prevalence	5.2%	6.3%	6.8%	15.1%	5.4%	14.8%
Diabetics by age						
≤18	3%	0.0%	0.9%	0.2%	1%	0%
19-39	11%	15%	12%	0.8%	11%	0%
40-59	29%	59%	60%	41%	60%	23%
60+	57%	26%	27%	58%	28%	77%

To compare costs and rates the workgroup collected the following cost data reported in Table 3:

- Medical and Pharmacy Allowed Charges -- the cost to the state for services based on the amount paid after discounts, including member cost sharing such as deductibles, copays, and coinsurance.
- The average annual cost for a diabetic patient versus a non-diabetic patient

In reviewing the cost results, annual spending per diabetic varied across the plans. In FY 2017, ERS spent on average $20,340 per year on an active employee with diabetes and TRS spent $17,892 for the same group. HHSC spent $16,532 a year to care for diabetics.

TDCJ's delivery care system made it unfeasible to precisely quantify all costs associated with diabetics. The cost of outpatient and pharmacy services totaled $1,003 annual spending per diabetic, which excludes acute care and lab work delivered on site at the prison unit by health care staff. These services are documented in the patient's electric health record, but no claims are generated for these services.

Table 3 Compares FY 2017 Cost Data for Diabetes Patients across the Plans

	HHSC	TDCJ	ERS Active Employees	ERS Non-Medicare Retirees	TRS Active Employees	TRS Non-Medicare retirees
Total spending	$4,232,881,219	$7,754,591	$504,861,312	$162,816,737	$403,617,341	$264,709,860
Medical	$ 3,507,647,161	$7,544,836	$359,974,623	$115,103,180	$285,243,042	$186,140,088
Pharmacy	$ 725,234,058	$209,755	$144,886,689	$47,713,557	$118,374,300	$78,569,772
Annual spending per diabetic	$16,532	see text	$20,340	$21,808	$17,892	$26,381
Annual spending per non-diabetic	$3,861	$4,112	$5,848	$8,572	$4,699	$13,887

To compare quality of care the workgroup collected the following data in Table 4:

- Drug adherence ratio -- medication possession rate percentage of diabetics with one or more A1C blood tests
- Percentage of diabetics with two A1C tests within in the year
- Percentage of diabetics with a nephropathy screening
- Percentage of diabetics with eye exam in the year

The workgroup used "HEDIS-like" measures instead of meeting strict Healthcare Effectiveness Data and Information Set (HEDIS) guidelines. This method was simpler, but still sound and supportable while providing very similar information. HHSC and TDCJ are unable to calculate drug adherence. At both HHSC and TDCJ there is most often no cost for medication, therefore, the workgroups methodology would have made it appeared that HHSC and TDCJ had 100 percent drug adherence, when the real number is likely lower. At TDCJ, the clinical data is maintained in the health record and not easily reported in this manner.

HHSC monitors quality measure six months after the close of the fiscal year to allow time for claims and encounters to clear for the previous year, therefore, the most current quality data available is for FY 2016. HHSC would require clinical data from providers to be able to monitor quality outcomes in real time.

Table 4 Compares FY 2017 Four Common Diabetes Quality Outcomes Plans Monitor

	HHSC 2016	TDCJ	ERS Active Employees	ERS Non-Medicare Retirees	TRS Active Employees	TRS Non-Medicare retirees
Drug adherence ratio	-	-	40%	47%	39%	49%
Two A1C tests within the year	85%	68%	59%	62%	68%	68%
Percentage of diabetics with a nephropathy screening	90%	89%	54%	56%	54%	56%
Percentage of diabetics with eye exam	44%	24%	38%	47%	28%	39%

Lessons Learned

Although the group was ultimately able to agree to a methodology to compare the impact of a common cost driver, the results are inconclusive because the data is not risk adjusted or benchmarked in a manner that would allow us to make an "apples-to-apples" comparison. Coming to agreement on an exact methodology took several weeks and multiple conference calls among agency data experts to negotiate shared assumptions, check quality, adjust the queries, and rerun results. The exercise was beneficial because we learned about similarities in our programs, but it was also challenging because each system uses different methods and resources to generate their data. Without a single entity with the technology, expertise in health care delivery, and experience in synthesizing and analyzing data, we cannot be certain that the methods used across the four agencies are consistent.

HHSC had to combine data from several sources to answer these questions about diabetics in their population which took over two weeks to query, quality check, and adjust. TDCJ relies on clinics in the prison to treat acute care, and tracks acute care medical visits in an electronic health record. This approach creates a challenge for recognizing total costs by patient compared to a traditional claims-based methodology used by the other programs to assess costs. ERS generated its diabetes data internally using its business intelligence data warehouse, while TRS used the analytical tools and expertise of its third party administrator to gather data for ad hoc queries. The two regularly compare data and information because their programs are the most similar.

The exercise reaffirmed that the ideal solution would require a single entity to combine our data, consider the data set as a whole, age and risk adjust against an expected benchmark for each system, apply consistent analytic and informatics processes and tools, and draw valid comparisons and conclusions. Even so, it may not be a reasonable expectation that the systems be compared head to head on certain factors, as there is no reliable way to normalize the differences between ERS and HHSC, or between HHSC and TDCJ. Ideally the hosting entity would have a broad enough data set to be able to

create an age- and risk-adjusted expected benchmark for each healthcare program based on its own unique characteristics. For example, ERS and TRS would be compared against other employer-based plans. And HHSC and TDCJ would each have their own expected benchmark.

Texas Academic Institution Pilot

Experts from the UTHealth School of Public Health, Center for Healthcare Data (UT Data Center) in Houston, Texas consulted with the workgroup, completed a pilot assessment of HealthSelect claims data with ERS, and offered their expertise on data collection and analysis as the workgroup developed its recommendations. The UT Data Center indicated its interest in providing services to the State of Texas to meet the directives of SB 1, Article IX, Section 10.06, 2017 (See Appendix D).

The UT Data Center holds healthcare claims data for up to 91 percent of the Texas population, which allows for aggregated claims analysis and comparison to expected benchmarks for most types of health plans. Data assets include:

- Texas Medicaid medical and pharmacy claims data for over 4 million members. In 2013, HHSC provided the UT Data Center with three years of data to conduct claims based analytics projects approved by and in collaboration with HHSC. HHSC re-established a similar agreement with UT in 2017 and is currently identifying high value projects to pursue as part of this four-year Interagency Cooperation Contract;
- Commercial data. Blue Cross Blue Shield provided the UT Data Center with all of its claims data for Texas since 2008, updated annually, comprising one-third of Texas commercial insurance claims;
- A current, representative sample of Medicare claims ("5 percent sample"); and
- National claims datasets purchased from private payers such as Truven and Optum.

The UT Data Center has been accepted as a Qualified Clinical Data Registry for its work with electronic medical records and clinical data, and has also received certification from the Centers for Medicare and Medicaid Services (CMS) as a Qualified Entity (QE), one of only 12 data centers in the nation that meet rigorous CMS requirements for data analysis and data protection. As part of the QE designation, the Data Center will soon become a repository for annual Texas Medicare claims data that can be used in conjunction with other data assets.

At the UT Data Center, data are securely stored and processed in a manner compliant with the Health Insurance Portability and Accountability Act (HIPAA). If approved by the data's owner, data are made available for approved research studies designed to enhance and expand the body of knowledge regarding utilization of healthcare services, quality, costs, payment systems, and policy reform.

The UT Data Center agreed to conduct a pilot with ERS at no cost to the agency, as a proof of concept to perform healthcare claims analysis and custom benchmarking for the ERS HealthSelect plan.

The parties entered into a Memorandum of Understanding (MOU) which outlined roles and responsibilities of ERS and the Center in the pilot, and specified:

- Secure and confidential transmission, handling, use, and storage of the data

- Scope of work – retrieve three years of medical and pharmacy claims data from ERS
- Analysis - rates of specific health conditions, cost and quality of services, and other key metrics

Additionally, non-disclosure agreements were negotiated between the UT Data Center and the HealthSelect third-party administrator and pharmacy benefit manager to allow the use of proprietary data for the purposes of this study. ERS transmitted three years of enrollment, eligibility and medical and pharmacy claims data to the UT Data Center, which analyzed the data, built a series of custom dashboards, and presented the results to ERS and the workgroup. The analysis included:

- Comparing cost, reimbursement rates, utilization, risk, and quality of care;
- Age and risk adjusting the data to normalize it and allow for appropriate comparison;
- Evaluating performance compared to an expected benchmark, comprised of other self-funded preferred provider organizations and point of service plans in Texas;
- Computing select quality measures, such as the HEDIS; and
- Identifying outliers and highlighting other areas of interest in the data.

As part of its analyses, the UT Data Center built interactive data visualization dashboards to display the results using ERS data. The visualizations provided age- and risk-adjusted, benchmarked comparisons against expected rates in the Texas marketplace, and allowed ERS to drill down to see more about why certain rates were higher or lower than expected.

Figure 1 Example ERS Data Visualization Provided by UT Data Center

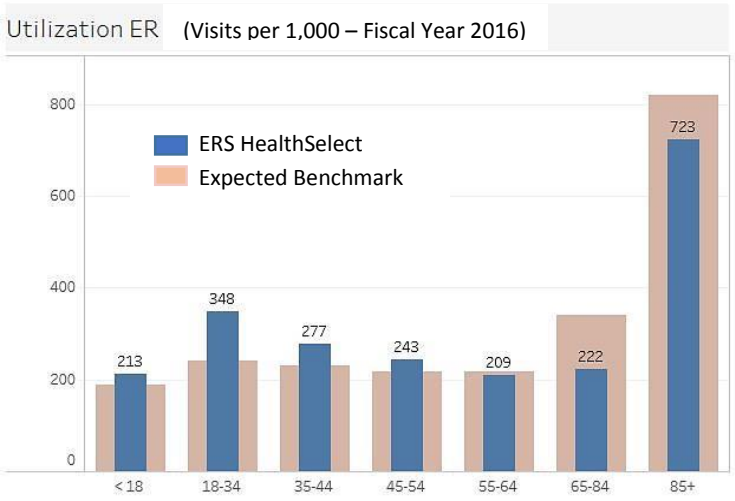


Figure 1 provides an example of the type of benchmarking dashboard generated by UT Data Center. This dashboard compares emergency room usage in the ERS HealthSelect plan to that of an expected market benchmark, which is the aggregate experience of self-funded employer-based PPO plans in Texas. ERS has not validated the HealthSelect data against its own business intelligence data warehouse.

Lessons Learned

After completing the pilot, the Data Center identified lessons learned that would be applied to any future partnership with workgroup member agencies.

While the UT Data Center can age- and risk-adjust its benchmark analyses, there were some factors they did not adjust for. For example, one potential drawback from ERS's and TRS's perspectives, is that there were no adjustments in the pilot to the benchmark for differences in the actuarial value of various plans. In other words, most state employees choose a point-of-service plan with copays and coinsurance, but no major deductibles. Many teachers are enrolled in preferred provider organizations with relatively high deductibles. With the Data Center's benchmarking, there may not be a way to adjust for the various cost-sharing strategies of the benchmark plans. Because member behavior is also affected by cost sharing, not adjusting for actuarial value could also affect comparisons of how members utilize healthcare services.

Benefits of Pilot with UT Data Center

The UT Data Center's experience and expertise in the use of healthcare claims data and electronic medical record data for analyses that impact treatment, policy, and payment systems make them a good partner for future work. The UT Data Center would risk- and age-adjust claims data for the agencies, while providing customized benchmarks most appropriate for each health plan. They would also build an interactive dashboard environment where agency staff and policy makers (with the appropriate security clearance) could easily explore demographic, claims utilization, and quality measures for any of the plans. This information could be viewed by region, by disease, or other parameters. The UT Data Center also has the ability to provide recommendations for areas to focus on when considering future policy or plan design changes.

The workgroup consulted with agency legal staff on options for contacting with UT for future services. According to state law, the use of a sole source contract award or intergovernmental agreement may be deemed in the best interests of the state in certain circumstances. Sole Source procurements are allowed when a product or service is only available for purchase through the specific identified vendor. UT may qualify because of several factors:

1. Texas academic institution that operates as a public entity
2. A repository that aggregates healthcare claims data from several sources covering healthcare utilization for over 91 percent of the Texas population
3. CMS Qualified Entity, one of only a few data centers in the nation with this credential

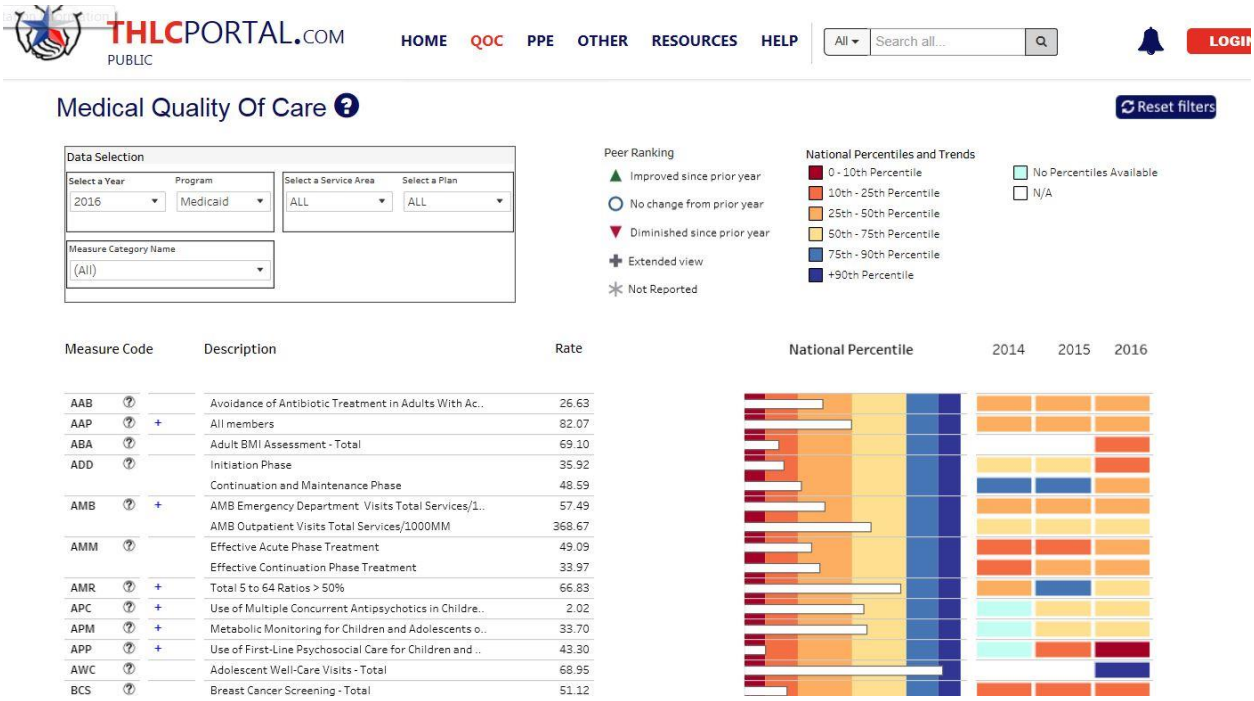
The workgroup could establish an intergovernmental agreement or MOU to procure these services in the future. Interagency agreements can typically be executed in three to six months, compared to an estimated time of up to two years for a formal RFP and contracting process involving four agencies.

Work with Vendors

HHSC contracts with the University of Florida ICHP to serve as the Medicaid/CHIP External Quality Review Organization (EQRO). The EQRO monitors and reports on Medicaid performance; validates information, data, and procedures to determine the extent to which they are accurate, reliable, free from bias, and in accordance with standards for data collection and analysis; and tracks quality and healthcare outcome data and makes it available on a public portal in an easy to review format as shown in Figure 2.

Many of the tasks performed by an EQRO appear similar to the demands posed by the project described by the rider. Like UT Data Center, ICHP has demonstrated significant capabilities to perform healthcare analytics and has a history of successful work and collaboration with the State's Medicaid program.

Figure 2 Example ICHP Data Visualization for Medicaid



Expanding ICHP's current role in Texas to include multiagency analytic would require a procurement and expanded knowledge and experiences with non-Medicaid health programs in Texas. Also, ICHP has not previously held data or worked in the context of the Texas commercial insurance marketplace. These limitations could slow the development of customized benchmarks for various programs and agencies outside of Texas Medicaid. State contracting requirements would prohibit ERS, TRS and TDCJ from being added to the HHSC contract, therefore, this solution – like any solution that involves contracting with a vendor - would require a coordinated, multi-year RFP process.

There are multiple vendors who would likely be interested in providing analytical services to the state agency workgroup. Private sector options, like the ICHP option, would require the agencies to coordinate on a joint RFP. Large scale procurements at HHSC and ERS typically take more than a year. A coordinated effort among four agencies could take up to two years.

Cost of an Integrated Healthcare Information System

Based on the UT Data Center pilot and HHSC's work with ICHP, the workgroup estimates the cost of an integrated healthcare information system for four agencies with approximately 5 million health plan participants to be about $5 million per year or $1 per individual insured per year. The cost includes

start-up and ongoing costs for collecting and analyzing healthcare data, and providing visualizations of the results.

DSHS Data and Their Role In Future Work

DSHS participated in the workgroup, but the workgroup's focus on data comparison for cost, quality and outcomes limited the need for greater DSHS involvement in the pilot and initial work.

DSHS would be a necessary partner in the future because it collects and maintains multiple datasets on various public health topics including:

- Texas Health Care Information Collection hospital discharge data
- County-level birth and death data
- Behavioral Risk Factor Surveillance System data on health-related risk behaviors, chronic health conditions, and use of preventive services
- Texas Youth Risk Surveillance System data
- Health Registry data including Infectious Disease data, Texas Cancer Registry information; Trauma injury information

DSHS data could enhance the understanding of quality and expected outcomes as well as allowing for additional risk adjustment and benchmarking.

DSHS data often includes protected health information and agency has a rigorous review process for determining when certain data may be shared. The entity that manages the integrated data system for the workgroup and DSHS would work with the other workgroup agencies to facilitate appropriate sharing of information through the relevant process.

CONCLUSION

This project resulted in stronger relationships among the programs and helped the workgroup identify similarities in their cost drivers, and a number of fundamental differences. The effort catalyzed significant collaboration among the agencies that administer the state's major publicly funded healthcare programs. Work group members now have a better understanding of both the potential and the challenges involved with analyzing and comparing data across agencies.

Each health plan has a different population with different legal requirements, design and services; and therefore, different approaches to addressing costs. One important difference is that HHSC Medicaid and TDCJ Correctional Managed Health Care have limited cost sharing with clients, therefore, those programs unable to use financial incentives to impact utilization. Private coverage like ERS and TRS may leverage cost-sharing like premiums, deductibles and co-payments to modify behavior. All the health plans use utilization and care management programs to help avoid costs.

Regardless of their differences, all the programs share a desire to reduce costs and improve quality. A companion rider to this project, Article IX, Section 10.07, requires HHSC, ERS, and TRS to meet regularly to share ideas and identify opportunities to collaborate on quality based initiatives. To that end, the

three are currently developing a Charter to formalize the goals, strategies, and operational details of how this group will function.

The participating agencies agree that there is value in building a data-driven approach to reporting on indicators of health and health delivery performance among systems, and look forward to legislative guidance on the findings of this report. The agencies will build on this initial progress; however, legislative guidance on the scope, approach, and resources available, based on findings in this report, will provide additional momentum for this effort.

APPENDIX A: Health Plan Background

Texas Employees Group Benefits Program Background

Health Plan Overview and Service Delivery Model

Authority

ERS has managed the Texas Employees Group Benefits Program (GBP), which provides health insurance benefits for employees and retirees for the state since 1976 (Texas Insurance Code, Ch.1551). The State Legislature determines eligibility for the program, sets appropriations, and establishes the contribution strategy. The ERS Board of Trustees designs and contracts for the insurance options offered under the Texas Employees Group Benefits Program (GBP) umbrella.

Plans offered

HealthSelect of Texas^{SM} – a self-funded, point-of-service insurance plan – is the basic coverage offered to employees since 1992. ERS also offers a self-funded high-deductible health plan with health savings account, several fully insured regional HMOs and two fully insured Medicare Advantage plans. ERS also offers self-funded prescription drug coverage for employees and retirees.

Population and Funding

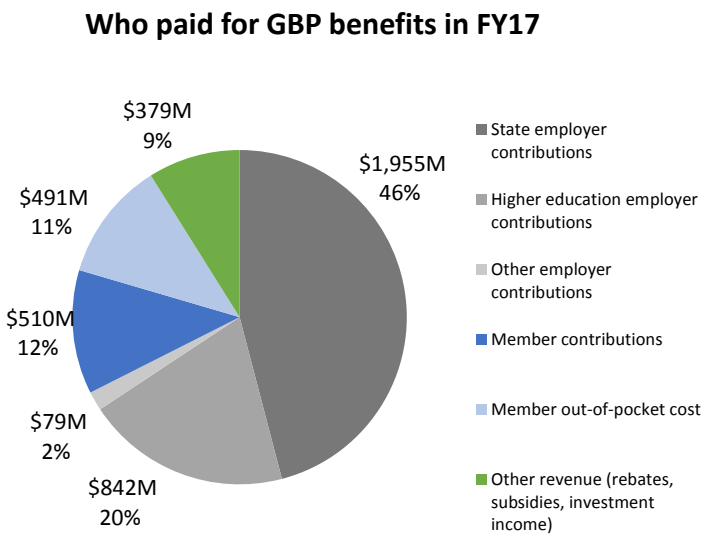
The GBP covers more than 534,000 participants, including state and public higher education employees, retirees and eligible dependents (except for the University of Texas and Texas A&M University systems). The plan also covers elected state officials, state, district and appeals court judges, parole officers, and employees of the Texas County and District Retirement System, the Texas Municipal Retirement System, and the Windham School.

Year	Total Population Served	Average Age of Total Population	Funding (all funds)	Average Cost per person per year
FY 2015	523,372	43.4	$2,882.8M	$5,508.06
FY 2016	532,620	43.6	$3,133.6M	$5,883.39
FY 2017	534,053	43.9	$3,385.5M	$6,339.24

ERS Population by Age Group: SFY 2017		
Age	**Number**	**Percent**
18 and under	92,598	17.3%
19-39 years	128,954	24.2%
40-59 years	152,861	28.6%
60 and over	159,640	29.9%
Total	534,053	100%

Method of Finance

The State Legislature appropriates funding for the program every two years on a "pay as you go" basis, based on projected cost increases and assumptions about growth in the state workforce.



Participating entities contribute 1% of payroll for health insurance cost, in addition to monthly contributions for the employees and retirees associated with their entity. Frequently, dollars are taken from the plan's contingency fund to replace state appropriations. ERS also collects drug rebates and refunds and earns interest on the GBP trust fund.

Cost sharing

Monthly contributions or premiums. Members pay 0% of the monthly member-only premium and 50% of the dependent premium - $200 to $600 per month - depending upon their plan choice and whether they add a child, spouse, or family. Tobacco users pay $30 a month extra for their coverage, up to $90 per family. Members also have cost sharing (copays, deductibles, and coinsurance) for the health care services they use.

The State pays 100% of the monthly premium for member-only coverage ($500 to $600 a month), and 50% for dependent coverage ($900 to $1,200 a month). The state also deposits $45 a month into the health savings account of individuals who enroll in the high-deductible plan, or $90 a month into the accounts of those with dependent coverage.

Fee for service or capitated rate

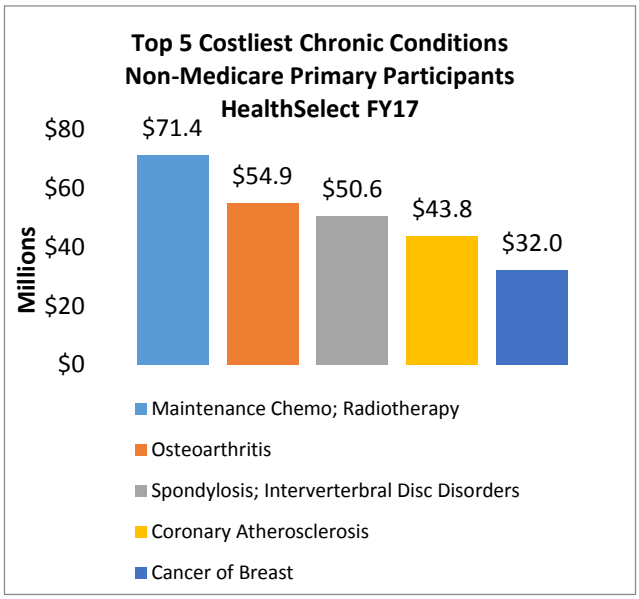
HealthSelect providers are paid on a fee-for-service basis; however, more than half of all contracts are value-based arrangements, which reward providers for cost or quality. For example, physician performance-based contracts include efficiency measures, such as writing a certain percent of appropriate generic prescriptions, or referring to in-network labs. Hospital performance-based contracts may hinge reimbursement on reducing avoidable admissions, or on meeting expected "length-of-stay" targets for hospital visits.

Most prevalent conditions and cost drivers

For the purposes of this report, ERS claims analysis includes only participants in self-funded plans who are not enrolled in Medicare. This is a smaller subsection of the general population reported in the overview section.

ERS claims demographics, Medicare-primary participants excluded

Demographic	ERS
Total population	440,296
Average age	37
Gender	55% female - 45% male



Teacher Retirement System Benefits Program Background

Authority

Since 1986, TRS-Care has provided health care coverage to eligible retirees of participating entities (i.e., school districts, open enrollment charter schools, regional education service centers, or other educational districts) who retire under TRS and their eligible dependents (Texas Insurance Code, Title 8, Subtitle H, Chapter 1575 and Texas Administrative Code, Title 34, Part 3, Chapter 41). TRS-ActiveCare, which began operations on September 1, 2002, provides health care coverage to employees and their dependents of participating public education entities (Texas Insurance Code, Title 8, Subtitle H, Chapter 1579 and the Texas Administrative Code, Title 34, Part 3, Chapter 41). The State Legislature determines eligibility for both TRS-Care and TRS-ActiveCare programs, sets appropriations, and establishes the contribution strategy. The TRS Board of Trustees designs the plan benefits and contracts for the administrative services for plans offered under TRS-Care and TRS-ActiveCare.

Plans offered

TRS-Care

During FY 2016 and FY 2017, participants who were not eligible to enroll in Medicare had three self-funded TRS-Care plan options with different premiums and benefit levels that provided medical and prescription drug coverage—TRS-Care 1, TRS-Care 2, or TRS-Care 3. Once participants became eligible for Medicare, they had the option to enroll in two fully insured TRS-Care Medicare Advantage plans (level 2 or 3) along with a self-funded Medicare prescription drug plan.

TRS-ActiveCare

TRS-ActiveCare offers a choice of three plan options: 1) TRS-ActiveCare 1-HD, a high deductible health plan (HDHP) that is HSA compliant; 2) TRS-ActiveCare 2, a preferred provider organization (PPO) plan; and 3) TRS-ActiveCare Select, an EPO plan with in-network benefits only. The network of providers available with the TRS-ActiveCare Select plan is based upon the geographic area of residence. In FY2016 and FY2017, there were four accountable care organizations for the Austin, Dallas/Fort Worth, Houston and San Antonio areas; and one Select Open Access option for the remainder of the state of Texas. Also, alternative coverage under health maintenance organizations (HMOs) is available in certain service areas of Texas to eligible TRS-ActiveCare participants.

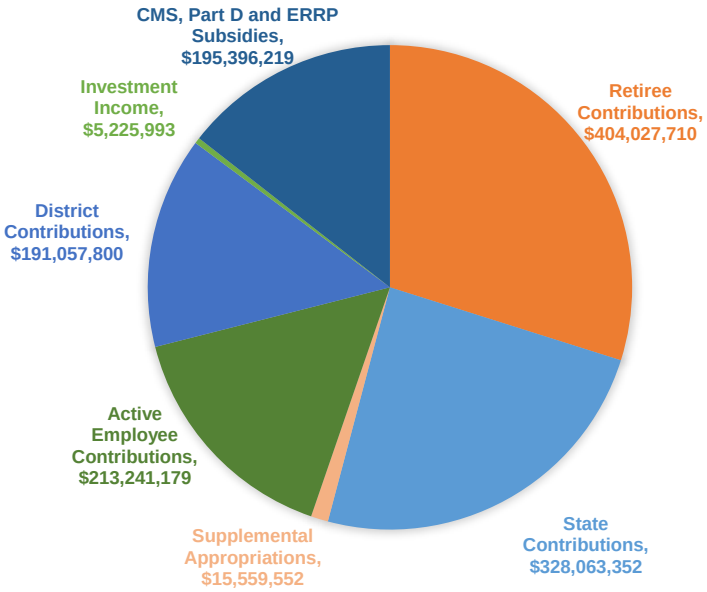
How is funding set?

TRS-ActiveCare plans are self-funded while TRS-Care includes both fully-insured and self-funded plans. The funding sources and proportion each source contributes to revenue differs by program.

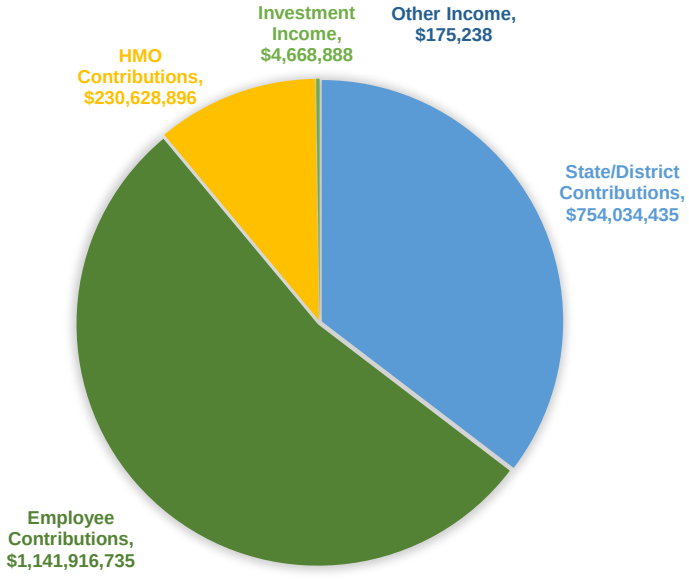
TRS-Care's Health Benefits Trust Fund received state contributions from general revenue equal to one percent of the salaries of all active public education employees in FY2016 and FY2017. Local school districts and active employees also contribute 0.55% and 0.65% of active employee payroll respectively. In addition to state, district and active employee contributions, retirees contributed a fixed monthly premium based on plan level, Medicare status, years of service and family size. TRS-Care funding has become inadequate as health care costs continue to rise at a rate higher than contributions. In state fiscal years 2013, 2014, 2015, and 2017, the state made supplemental appropriations to fund TRS-Care benefits. Facing unsustainable cost increases for TRS-Care, the Texas Legislature and TRS Board of Trustees made significant changes to TRS-Care benefits and premiums that took effect Jan. 1, 2018. TRS-ActiveCare is funded by state, district and employee contributions.

For TRS-ActiveCare, the state is statutorily required to contribute $75 per month or $900 per state fiscal year

TRS-CARE FUNDING SOURCES, FY 2017



TRS-ACTIVECARE FUNDING SOURCES, FY 2017



for each employee of participating school districts, charter schools, regional education service centers and educational districts. The state's contribution is delivered through school funding formulas and paid in monthly installments. School districts contribute a minimum of $150 per employee per month or $1,800 per employee each state fiscal year and many contribute additional amounts towards premiums. TRS also receives drug rebates for TRS-Care and TRS-ActiveCare.

Do members pay a monthly contribution or premium? In FY 2017, TRS-Care premiums varied by plan, years of service, Medicare status, and coverage tier. TRS-ActiveCare premiums varied by plan and by coverage tier.

Monthly premiums for TRS-ActiveCare.

FY 2017 TRS-ActiveCare Premiums	Before Minimum State and District Contribution of $225			After Minimum State and District Contribution of $225		
Plan	**TRS-ActiveCare 1-HD**	**TRS-ActiveCare Select**	**TRS-ActiveCare 2**	**TRS-ActiveCare 1-HD**	**TRS-ActiveCare Select**	**TRS-ActiveCare 2**
Employee Only	$341	$473	$614	$116	$248	$389
Employee & Spouse	$914	$1,122	$1,478	$689	$897	$1,253
Employee & Children	$615	$762	$992	$390	$537	$767
Employee & Family	$1,231	$1,331	$1,521	$1,006	$1,106	$1,296

Monthly Premiums for TRS-Care.
For FY 2017, premiums for the TRS-Care for the non-Medicare population were as follows.

FY 2017 TRS-Care Premiums (All participants without Medicare)	TRS-Care 1	TRS-Care 2			TRS-Care 3		
	Years of Service						
	All YOS	**<20**	**20-29**	**30+**	**<20**	**20-29**	**30+**
Retiree Only	$0	$210	$200	$190	$310	$295	$280
Retiree & Spouse	$140	$450	$430	$410	$665	$635	$605
Retiree & Children	$28	$272	$262	$252	$392	$377	$362
Retire & Family	$168	$512	$492	$472	$747	$717	$687

Population by age and gender.
As of Aug. 31, 2017, TRS-Care and TRS-ActiveCare covered 760,744 participants. The data presented in the following chart focuses on a subset of the overall population, specifically participants in self-funded plans who are not enrolled in Medicare or fully-insured HMOs.

FY 2017 Demographics for self-insured plans (Medicare-primary and HMO participants excluded)

Demographic	TRS-ActiveCare	TRS-Care
Overview		
Total population (average for FY 2017)	442,392	77,987
Average age	34.3	54.9
Age bands		
01-18	105,700	2,596
19-39	146,511	7,319
40-59	157,662	23,895
60+	32,519	44,177
Gender	62.6% female 37.4% male	66.1% female 33.9% male
Relationship type		
Employee	63.4%	N/A
Retiree	N/A	70.8%
Spouse Dependent	5.3%	16.6%
Child Dependent	31.3%	12.6%

Acuity and risk adjustment strategies.

State, district, active employee and participant contributions are combined into a fund from which self-funded claims, fully-insured premiums and administrative costs are paid. The TRS-Care and TRS-ActiveCare funds are managed separately. Retirees and their eligible dependents are rated together in a single risk pool separately from active employees and their families. Premiums for each plan are established at the same statewide premium rates that do not vary by geographic area. As a percentage of gross costs, premiums for employee-only coverage and retiree-only coverage receive greater subsidization from the state and local districts than premiums for tiers that cover family members.

Health and Human Services Commission Medicaid Background

Medicaid is a joint federal and state program that helps with medical costs for some people with limited income and resources. Texas Health and Human Services Commission manages the Medicaid program. Medicaid is an entitlement program, which means the federal government does not, and a state cannot, limit the number of eligible people who can enroll, and Medicaid must pay for any services covered under the program.

The Children's Health Insurance Program (CHIP) provides primary and preventive health care to low-income, uninsured children up to age 19 with household incomes up to 201 percent of the FPL who do not qualify for Medicaid, and to unborn children with household incomes up to 202 percent of the FPL. CHIP covers children in families who have too much income to qualify for Medicaid, but cannot afford to buy private insurance.

CHIP recipients are enrolled in managed care while Medicaid recipients are either enrolled in "traditional" Medicaid fee-for-service or enrolled in one of twenty managed care organizations. On

average in SFY 2017 there were 425,082 clients enrolled in CHIP and 4,067,380 clients enrolled in Medicaid. Of the Medicaid clients, 3,721,646 members or 93 percent were enrolled managed care and 345,734 clients or 7 percent enrolled in fee-for-service (FFS). Overall, Medicaid enrollment levels have remain fairly consistent over the last several years.

Within Medicaid, members were enrolled in these managed care programs.

Program	FY 2017 Average Monthly Enrollment
STAR Medicaid's State of Texas Access Reform (STAR) program provides primary, acute care, behavioral health care, and pharmacy services for low-income families, children, pregnant women, as well as some former foster care youth	2,986,241
STAR Health STAR Health is a medical care delivery system for children in state conservatorship. These children are a high-risk population with greater medical and behavioral health care needs than most children in Medicaid and their changing circumstances make continuity of care an ongoing challenge.	32,091
STAR+PLUS The Medicaid STAR+PLUS program provides both acute care services and Long Term Services and Support by integrating primary care, behavioral health care, pharmacy services, and LTSS for individuals who are age 65 or older or adults who have a disability. LTSS includes services such as attendant care and day activity and health services.	527,331
Dual Demonstration The Dual Eligible Integrated Care Demonstration Project is a fully integrated managed care model for individuals age 21 or older who are dually eligible for Medicare and Medicaid and required to receive Medicaid services through the STAR+PLUS program. The demonstration operates in six large counties	39,950
STAR Kids* The STAR Kids program provides acute and LTSS benefits to children and young adults with disabilities. LTSS includes private duty nursing and personal care services. (avg. monthly over 11/2016 - 8/2017)	163,240

**STAR Kids began November 2016, since the figure provided is an average over 10 months of FY17 the totals in this table will not sum to the FY17 managed care average monthly figure provided in the narrative above.*

In February of odd-numbered years, HHSC publishes the Pink Book, Texas Medicaid and CHIP in Perspective, which provides an overview of the Medicaid and the Children's Health Insurance Program, and has extensive information about programs and services. It can be found on the HHSC website.

Texas Department of Criminal Correctional Managed Care Background

The Correctional Managed Health Care program is a partnership between the Texas Department of Criminal, the University of Texas Medical Branch, and Texas Tech University Health Sciences Center, and is operated under the guidance and direction of the state's Correctional Managed Health Care Committee, a nine-member committee consisting of one representative each from TDCJ, UTMB and TTUHSC, and six governor appointees made up of two public members, two representatives from other state medical schools, and two mental health professionals. The primary purpose of the partnership is to ensure that TDCJ incarcerated offenders have constitutionally required access to health care while containing costs and leveraging the use of the state's medical schools. This correctional health care system represents a unique collaboration between the state's criminal justice agency and two of its leading health sciences centers, with each entity having specific functional roles and responsibilities designed to maximize strengths and contribute to the overall mission of the program.

Service Delivery Model

TDCJ contracts with the UTMB and the TTUHSC for comprehensive health care services that include medical, dental, nursing, pharmacy, hospital and mental health services for TDCJ incarcerated offenders.

- Onsite services include sick call, chronic care, infirmary care, medical record management, medication administration, health education/training and related ancillary services.
- Offsite services include emergency care, hospitalization, specialty physician consults, diagnostic procedures, surgeries, and emergency medical transportation.
- Pharmacy services include medications, as prescribed by authorized providers and pharmaceutical management.

Population and Funding

UTMB provides about 80 percent and TTUHSC about 20 percent of all health care services for the state's incarcerated population. As of August 31, 2017, there were 145,409 incarcerated offenders within TDCJ. Of that number, 12,180 (8.4 percent) are women. Ninety seven percent of the TDCJ population are between 20-64 years of age.

Since incarcerated offenders reside at TDCJ facilities, the type and time of medical care they receive can be influenced and restricted more than the medical care of the other populations in this study. However, while the total population number is somewhat stable, TDCJ receives and discharges nearly 70,000 offenders annually. The electronic health record allow for the seamless transfer of medical information as the patient moves within the system. The universities employ the primary and subspecialty providers and have developed a very robust set of utilization review guidelines and alternative treatment plans to facilitate the best clinical outcomes and resource utilization.

TDCJ Correctional Managed Health Care is funded largely by general revenue appropriations. TDCJ receives a very small portion of funding through other revenue streams, such as annual $100 offender health care fees, pursuant to Section 501.063, Texas Government Code. (Note that UTMB and TTUHSC employee health insurance benefits are primarily funded through TRS and not included in the amounts below.)

Funding Source	2017 expended (in mil)	2018 Budgeted (in mil)	2019 Budgeted (in mil)
GR	$599.6	$550.5	$562.6
Other Revenue	$ 2.3	$ 2.0	$ 2.0
All Funds	$601.9	$552.5	$564.6

Fiscal Year	Annual Average Population	Average Age of Population	CMHC Funding (all funds, in mil)	Average Annual Cost per person
FY 2015	149,186	38.5	$527.2	$3,534.05
FY 2016	147,590	38.8	$591.2	$4,005.44
FY 2017	146,372	39.1	$601.9	$4,111.83

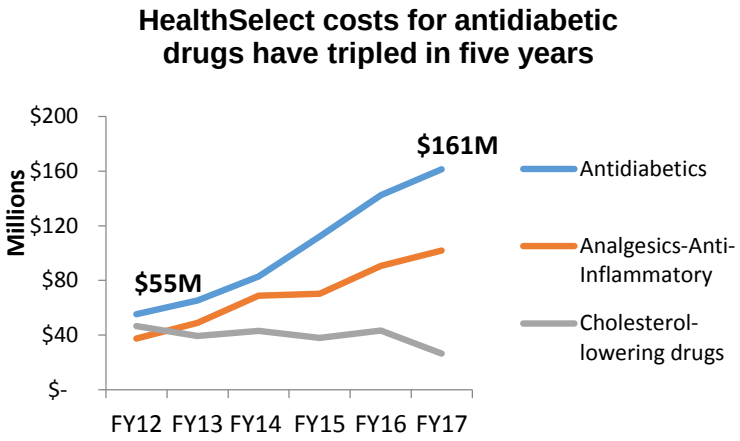
TDCJ Population by Age Group, as of August 31, 2017		
Age	**Number**	**Percent**
18 and under	357	0.2%
19-39 years	81,990	56.4%
40-59 years	54,109	37.2%
60 and over	8,953	6.2%
Total as of Aug 31, 2017	**145,409**	**100.0%**

APPENDIX B: Cost Drivers

ERS Cost Drivers

Some cost drivers for the HealthSelect program include increased utilization, price inflation in the drug program, and an increase in high-risk high-cost chronic conditions such as diabetes.

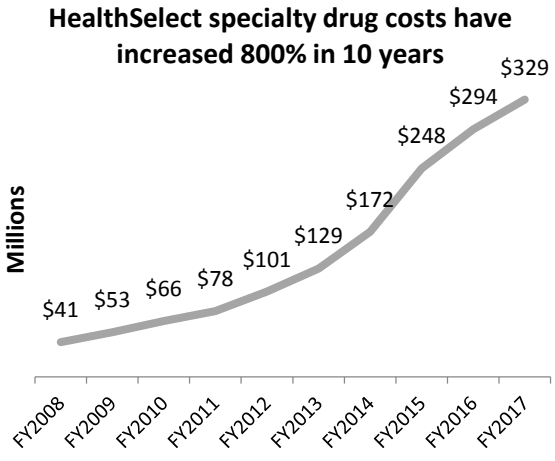
Increased utilization. Nationally, as with HealthSelect, there is a high concentration of health care spending among a small percentage of the population. According to the National Institute on Healthcare Management, 5% of the U.S. population is responsible for 50% of spending.[1] This spending pattern is pronounced in the HealthSelect drug program, where 10% of the participants are responsible for 83% of the cost.



Chronic health conditions such as diabetes. Twelve percent of HealthSelect participants have diabetes but medical and pharmacy spending on diabetics represents 34% of all HealthSelect costs. The antidiabetic therapeutic class is the fastest growing class of medications prescribed to HealthSelect participants.

Price inflation in the drug program. Nowhere in health care is the impact of price inflation more apparent than in the specialty drug industry. Specialty drugs are just 1% of all the prescriptions written for HealthSelect, but they represent 36% of the plan's drug costs.

HealthSelect Spending on the Top 3 Categories of Specialty Drugs (FY16-FY17)		
	FY16	FY17
Anti-inflammatories	$87.3M	$139.1M
Anti-neoplastics	$42.5M	$67.4M
Antivirals	$50.4M	$61.5M
Total for Top 3	$180.2M	$268.0M
% of Total Drug Spend	17.1%	25.7%



[1] National Institute on Health Care Management, "Healthcare's 1%: The Extreme Concentration of Healthcare Spending," November, 2014.

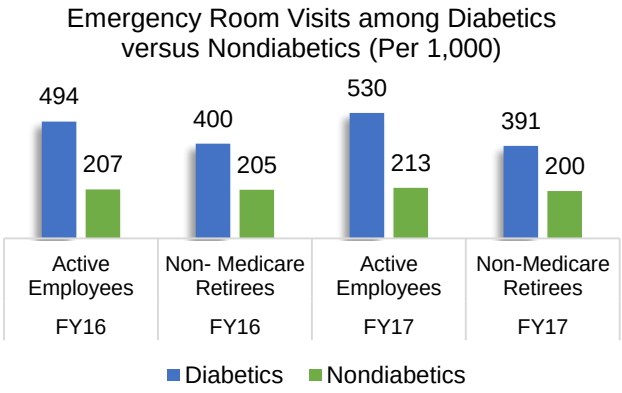
TRS Cost Drivers

Cost drivers

Cost drivers affecting other state health benefit plans also drive health care costs in TRS' health plans. These include increased utilization, the impact of chronic conditions, and increases in drug costs.

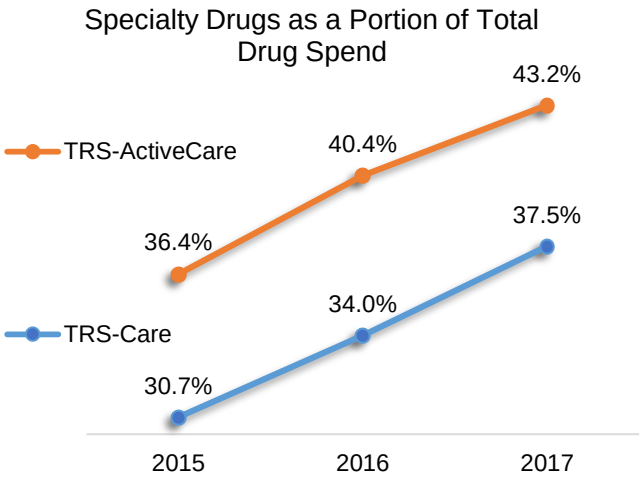
Utilization and the Impact of Chronic Conditions

Like other plans, a small portion of TRS' plan participants account for a disproportionate amount of health care spending. Participants with chronic diseases such as diabetes have a much higher rate of emergency room visits than the non-diabetic population, more inpatient admissions, longer hospital stays and higher readmission rates for example.



Inflation and Increased Utilization of Specialty Medications

Price inflation among a small set of specialty medications has an outsized effect on health care costs. TRS-ActiveCare participants who used a specialty medication made up 2% of all TRS-ActiveCare enrollees, but their specialty drugs accounted for 43% of total covered drug costs before rebates.



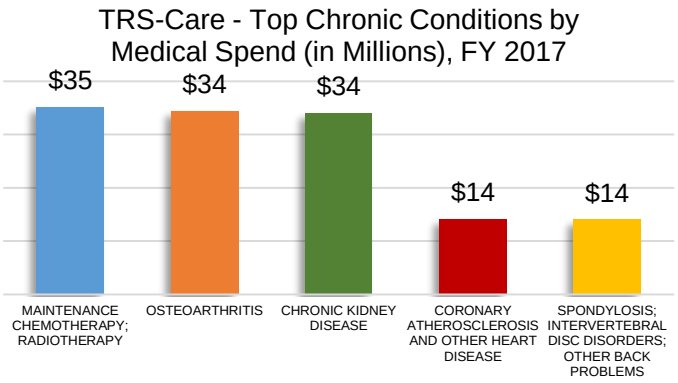
For both TRS-Care and TRS-ActiveCare, the most expensive therapeutic class of specialty drugs in FY 2017 was analgesic/anti-inflammatory medications. That class accounted for 28% of spending on specialty drugs in TRS-ActiveCare and 29% in TRS-Care.

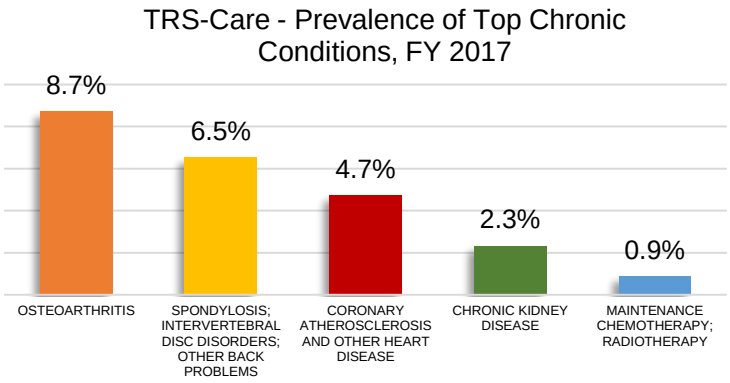
Within that single class, two drugs that treat rheumatoid arthritis—Humira and Enbrel—account for the majority of the increase in costs. In TRS-ActiveCare, the amount spent on these two drugs totaled $30.5 million in FY 2015, increased to $37.3 million in FY 2016 and to $47.4 million in FY 2017, a nearly 25% increase in costs each year though the number of prescriptions for these medications only increased 3% and 6% during those same years.

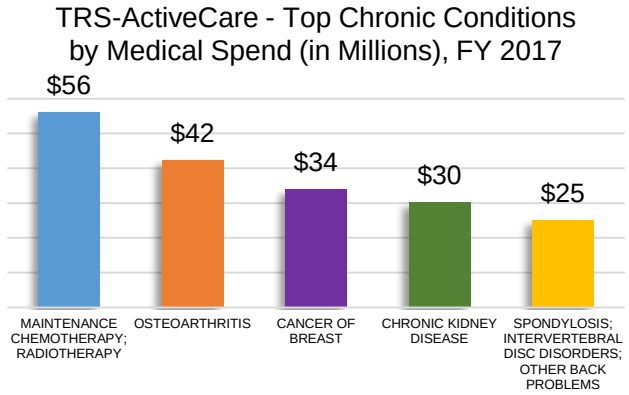
Spend for Top 3 Specialty Medications	TRS-Care		TRS-ActiveCare	
	2016	**2017**	**2016**	**2017**
Analgesics/Anti-inflammatory	$23.0 M	$27.4 M	$46.9 M	$58.0 M
Psychotherapeutic and Neurological Agents	$14.8 M	$15.9 M	$29.8 M	$30.4 M
Antineoplastics (Cancer)	$13.4 M	$13.5 M	$18.4 M	$20.3 M
Total for Top 3	$51.2M	$56.8M	$95.1M	$108.7M
As a Percent of Total Drug Spend	21.0%	23.2%	21.2%	22.9%

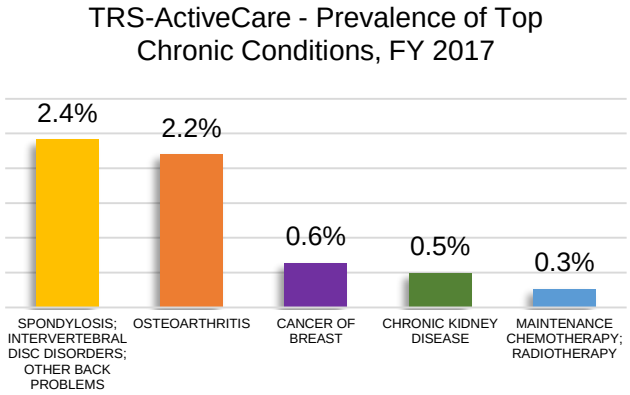
Highest cost and most prevalent chronic conditions[2]

For the TRS health plans in FY 2017, maintenance chemotherapy and radiotherapy related to cancer has the highest medical spend for both TRS-Care and TRS-ActiveCare. Shown below are the top 5 categories of chronic conditions by the total medical spend, which reflects what TRS pays and what participants pay out of their pocket for care, and prevalence.









[2] TRS uses the Health Care Cost and Utilization Project's (HCUP) Clinical Classification Software to determine the chronic condition category (single level). TRS uses HCUP's Chronic Condition Indicator (CCI) to categorize diagnosis codes into one of two categories: chronic or not chronic. Only claims that were flagged as chronic roll up into the costs and prevalence shown.

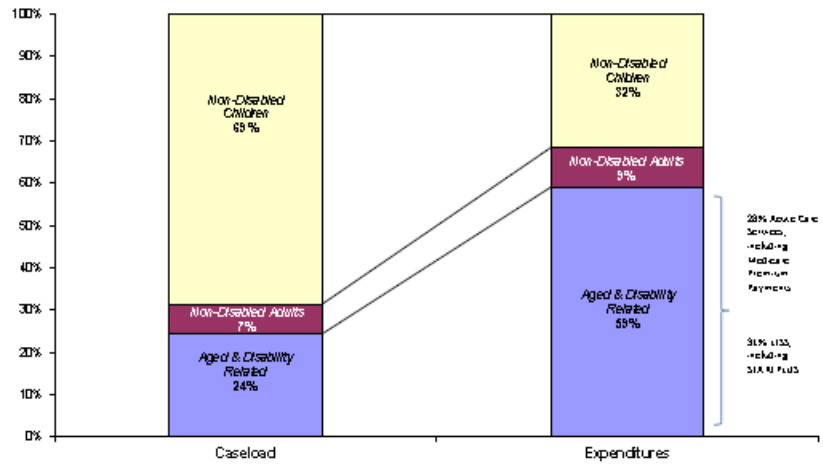
HHSC Cost Drivers

Cost drivers and Funding

An increase in enrollment is the primary cause of increasing Medicaid costs. The number of Texans enrolled in Medicaid rose 10 percent from 2012 to 2017.

Although the aged, blind and disabled population only represent 24 percent of Texas' clients, the care delivered to this population is the costliest, accounting for 59 percent of the program's expenditures in state fiscal year 2015.

In state fiscal year 2015, women and children accounted for the largest percentage of the Medicaid population. Based on the total number of unduplicated clients receiving Medicaid in state fiscal year 2015, 55 percent of the Medicaid population was female, and 78 percent was under age 21. While non-disabled children make up the majority (69 percent) of all Medicaid clients, they account for a relatively small portion (32 percent) of Texas Medicaid program spending on direct health services. By contrast, people who are elderly, blind, or have a disability represent 24 percent of clients but account for 59 percent of estimated expenditures.



TDCJ Cost Drivers

The number of offenders with mental illness, chronic conditions and infectious diseases continues to grow, and treatment standards for these conditions have become more complex and expensive.

- TDCJ receives nearly 70,000 new offenders annually which require medical assessments and the development of health care treatment plans.
- Offenders over the age of 55 years have increased at a faster rate than the overall TDCJ population. From state fiscal year 2013 to 2017, the population of aging offenders increased by 24.5 percent. Older offenders make up 12.1 percent of the TDCJ population but account for 43.6 percent of hospital and specialty service costs.
- Approximately 1,900 TDCJ offenders had some degree of kidney failure. An average 232 of those offenders required dialysis at a total cost of $5.7 million or $24,568 per patient. The dialysis medications cost an additional $2.3 million.
- Approximately 18,000 TDCJ offenders have the Hepatitis C virus (HCV), the leading cause of end-stage liver disease, which requires frequent hospitalizations and emergency room services. In

state fiscal year 2017, an average of 49 HCV-positive offenders received antiviral treatment each month at an annual cost of $6.9 million, or 13.5 percent of all pharmaceutical expenditures.

- Infectious diseases such as HIV and HCV require costly medications and procedures. In state fiscal year 2017, about 1.4 percent of the TDCJ population was HIV positive. Antiretroviral drugs for HIV positive offenders cost the state $19.2 million in state fiscal year 2017, representing 37.3 percent of all of TDCJ's pharmaceutical purchases.
- In state fiscal year 2017, 12,932 TDCJ offenders were diagnosed with a serious mental illness. The share of the prison population with mental illness has risen 39.6 percent since 2009. Serious mental illnesses include major depressive disorder, bipolar disorder, schizophrenia or other psychotic disorders. In state fiscal year 2017, TDCJ spent $3.4 million on psychotropic drugs.
- Approximately 48,000 offenders had hypertension and 3,500 had coronary artery disease (CAD) in SFY 2017; as a result, the state spent more than $1.2 million on drugs to treat these conditions.

The top TDCJ pharmaceutical expenditures for state fiscal year 2017 are listed below. Antiretrovirals, used in the treatment of HIV, are the single largest pharmaceutical cost driver. They represented 37.3 percent of the total drug budget or $19.2 million in state fiscal year 2017. In state fiscal year 2017, 87,337 prescriptions were filled. Approximately 1,900 HIV patients are on drug therapy, so 1.4 percent of the patient population accounted for the largest portion (37.3 percent) of drug expenses. Psychotropic medications account for 6.5 percent of total drug costs, while medications for Hepatitis C and dialysis account for 13.5 percent and 4.4 percent of total drug costs respectively. Antineoplastic account for 3.5 percent of total drug costs.

TDCJ Pharmaceutical Cost Drivers

Mental Illness	Continued increase in drug use and costs are expected due to: • Increases in the number of mentally ill offenders started on therapy and the number of offenders requiring more than one type of psychotropic medication • Use of newer and more expensive antipsychotic medications for the treatment of schizophrenia and other mental health disorders especially those with novel drug delivery systems for antipsychotics (e.g., long-acting injectable antipsychotics) • Increasing cost of generic psychotropics • Aripiprazole generic is now available and chlorpromazine was removed from the formulary, helping to minimize the cost impact

Diabetes	Continued increase in drug use and costs are expected due to: • Aging prison population and rising obesity rates • New therapies (e.g., long acting insulin, sodium/glucose cotransporter (SGLT-2) inhibitors, dipeptidyl peptidase (DPP-4) inhibitors, and Glucagon-like peptide (GLP-1) agonists) • Introduction of biosimilar insulin glargine (Basaglar®) may result in a decrease in costs compared to Lantus®
HIV	Overall, drug costs are expected to increase due to: • New therapies including combination products • Changing prescribing patterns resulting in an increase in use of the integrase inhibitors compared to less expensive agents such as protease inhibitors and non-nucloside reverse trascriptase inhibitors
Hepatitis C	Increase in drug use and costs are expected due to: • Increase in the number of newly diagnosed patients resulting from expanded screening guidelines • New more expensive therapeutic options • A steady stream of new drug approvals is expected over the next several years and the health care system will be challenged to keep up with the latest recommendations for therapy

APPENDIX C: Cost Containment Initiatives

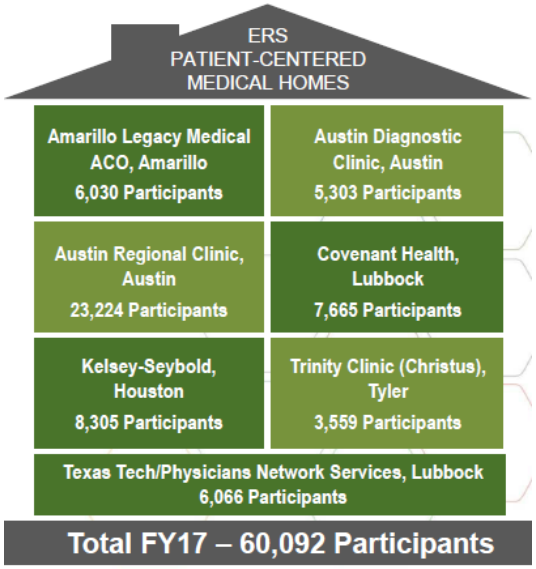
ERS Cost Containment Efforts

ERS Patient-Centered Medical Homes

ERS continues to expand the use of value-based contracting arrangements that reward quality and cost savings, such as its award-winning patient-centered medical home (PCMH) program, which now manages the care of 1 in 7 HealthSelect participants.

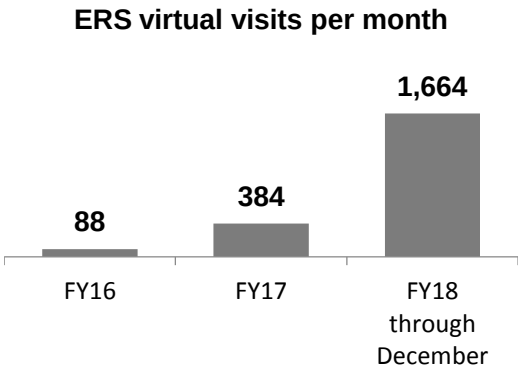
Despite having a higher risk score (being more unhealthy) than the average HealthSelect participant, PCMH participants have 18% fewer emergency room visits, and are more engaged in their health care.

Since FY11, PCMH practices have saved the plan $79.4 million, and the practices have received $17.4 million in shared-savings payments, in addition to their contracted reimbursements for medical care.



Value-based incentive plan design: Virtual Visits.

In an effort to steer participants away from the urgent care clinic and emergency room after hours, ERS started offering virtual visits to participants in FY16, which provide 24-hour access to Texas-licensed physicians directly through a mobile device or computer. On September 1, 2017, ERS reduced the copay for a virtual visit to $0, resulting in a large increase in visits in the first four months of FY18. At the same time, copays for freestanding emergency room visits were raised to $300.



Utilization Management

Utilization or disease management avoids costs through clinical programs for high-risk patients. Utilization management ensures that high-risk patients get care in the most cost-effective setting. For example, redirecting transplant surgeries to Centers of Excellence - high performing facilities that treat complex medical conditions with higher success rates, fewer complications, faster recoveries and lower costs - saved the plan $21 million in FY17.

TRS Cost Containment Efforts

TRS employs various strategies to contain rising health care costs. Together, these interventions and approaches aim to deliver high-quality, efficient care at competitive costs and allow TRS to make the most of the funds available for participant health benefits.

Cost/unit strategies

TRS leverages purchasing power of large companies in the market to negotiate competitive rates for medical services and prescription drugs (e.g., large health insurance carrier with network discounts, pharmacy benefit managers with significant rebates).

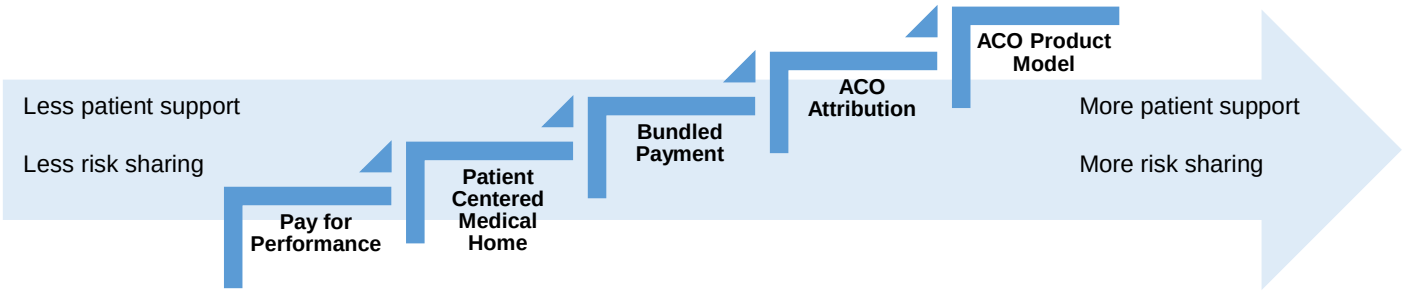
Utilization strategies

Utilization management strategies help TRS ensure it pays for care that is medically necessary. Examples include requiring participants to get prior authorization before undergoing certain procedures as well as step therapy and substitution of a therapeutically equivalent generic drug for a brand-name drug.

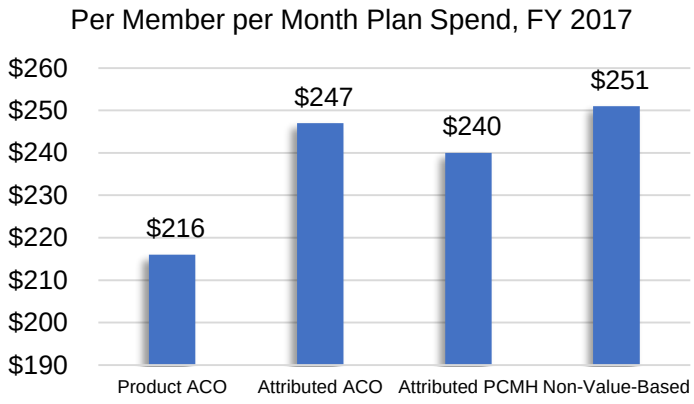
TRS also encourages consumerism through plan designs that create incentives for desired behaviors. For example, TRS plans have a lower co-pay for urgent care than for the emergency room to steer participants to preferred places of services. Certain generic medications are available at no cost share to participants in TRS' high deductible health plans to eliminate any financial barriers that may exists for patients, which can prevent the onset or worsening of health conditions. All TRS plans have no-cost preventive care, and TRS' vendors all have comprehensive disease management programs that assist participants manage complex and/or chronic conditions and achieve health goals.

Value-based Contracts

TRS has invested in value-based purchasing arrangements in recent years, most heavily in the TRS-ActiveCare program where investments made in population health will yield the greatest returns as many active employees eventually become retirees covered by TRS-Care.



The accountable care organization (ACO) product model is the most effective model for both improving quality and achieving savings or value. Nearly 40% of participants and more than 16,000 providers are in a value-based arrangement. Over 44,000 TRS-ActiveCare participants are in the ACO product model. For TRS in 2017, TRS estimates approximately $20 million in savings for those in this model.



TDCJ Cost Containment Efforts

- **340(B) Pricing** – The federal 340(B) Drug Pricing Program enables certain types of hospitals and specialty clinics for underserved people to purchase drugs at discounted prices. Because UTMB qualifies as a 340(B)-eligible health care organization, they are able to purchase pharmaceuticals at 340(B) prices and recognize the costs savings associated with these discounted rates versus Wholesale Acquisition Costs (WAC) or Group Purchasing Organizations (GPOs). In FY 2017, $94.4 million in pharmaceutical costs were avoided utilizing UTMB's ability to acquire medications through this program.

- **Drug Reclamation** – Medications prescribed by UTMB are processed through a centralized pharmacy. By packaging medications in blister cards, pharmacy staff are able to reclaim unused medications for use by other offender patients. This significantly reduces wasted medications and reduces cost by about $10.8 million annually.

- **Utilization of In-House Dialysis Services** – The UTMB dialysis center, operating in the Estelle and Young correctional facilities, is one of the largest dialysis centers in the state, serving approximately 220 offender patients. Operating 24 hours a day, six days a week, the ongoing use of this center in lieu of a vendor results in cost avoidance of about $24.2 million annually.

- **Regionalized Medical Hub Facilities** – UTMB utilizes specifically targeted correctional facilities that have 24/7 medical services as screening units to determine whether a trip to the local emergency room is warranted or if the situation could be handled onsite. The creation of medical hubs has resulted in a significant decrease in the number of offender patients transferred off-site to free-world hospitals. Currently, these hub facilities are able to treat and return approximately 70% of the patients back to the unit of assignment, avoiding nearly $8 million annually in additional costs.

APPENDIX D: Rider Section 10.06. Analysis of Certain Healthcare Data

(a) Out of funds appropriated elsewhere in this Act, the Health and Human Services Commission shall coordinate with the Department of State Health Services, the Employees Retirement System of Texas, the Texas Department of Criminal Justice, and the Teacher Retirement System to develop recommendations and a comprehensive plan for an integrated health care information system that can be used to compare data related to the healthcare systems funded by appropriations made to these agencies. The integrated system should allow the state to collect and analyze data on utilization, cost, reimbursement rates, and quality in order to identify improvements for efficiency and quality that can be implemented within each healthcare system. In the development of recommendations and comprehensive plan, the agencies shall consider differences in population, acuity, and other necessary factors between systems, potential for expansion of existing healthcare data integration initiatives, the use of existing health claims data sources, and the collection of new inpatient and outpatient claims data.

(b) The agencies shall meet at least bi-monthly to develop these recommendations and shall consult with the Department of Information Resources and the Legislative Budget Board. The agencies shall submit a report to the Legislative Budget Board and the Governor no later than May 1, 2018 that includes the cost of the recommendations and comprehensive plan as well as any necessary statutory changes and potential impacts to data governance planning at each agency.