Utah Department of
**Health & Human**
Services

**Identifying Potential Overuse of Non-Evidence-Based Health Care in Utah**

**A Report for the Utah Health Data Committee**

Pursuant to U.C.A. § 26-33a-117

Updated October 2022

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# About the Health Care Statistics Program

The Health Care Statistics (HCS) program, formerly known as the Office of Health Care Statistics (OHCS), implements the goals and directions of the Health Data Committee (HDC) and requirements outlined in U.C.A. § 26-33a. The office collects, analyzes, and disseminates health care data. These data help people understand cost, quality, access, and value in our healthcare system and allow users to identify opportunities for *improvement.*

The data sets under the purview of the program include:
- **Consumer Assessment of Healthcare Providers and Systems (CAHPS)**—Annual customer satisfaction surveys relating to health plan performance.
- **Healthcare Effectiveness Data and Information Set (HEDIS)**—Annual quality measures relating to health plan performance.
- **Healthcare Facility Data (HFD)**—A collection of information about all inpatient, emergency room, and outpatient surgery/diagnostic procedures performed in the state.
- **All Payer Claims Data (APCD)**—A collection of data about health care paid for by third parties, including insurers, plan administrators, and dental and pharmacy benefits plans.

## About the Utah Health Data Committee

The HDC was created by Utah Code 26-33a.[1] Members are appointed by the governor, confirmed by the Senate, and represent various perspectives from industry and the community-public health, purchasers, providers, payers, and patients. By law, members are required to have experience with health data.

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[1] Utah Health Data Authority Act https://le.utah.gov/xcode/Title26/Chapter33A/26-33a.html

## HDC Mission Statement (Adopted 1994, Amended 2020)

The mission of the HDC is to support health improvement initiatives through the collection, analysis, and public release of healthcare information. Through public-private collaboration, the HDC actively participates in the planning, development, implementation, and maintenance of a statewide health data reporting system, which provides accurate and independently validated information regarding healthcare in the state of Utah. The HDC implements policies to transform data into objective baseline, trend, and performance measurement information, which is made available while preserving patient privacy and confidentiality.

## Contact Information

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# Acknowledgements

# Executive Summary

## Overview

*In 2020, H.B. 195 - Identifying wasteful healthcare spending, which enacted UCA §26-33a-117 -Identifying potential overuse of non-evidence-based health care was passed. The law requires the Department to contract with a nationally-recognized health waste calculator, to use the calculator to analyze data in the state All Payer Claims Database and flag entries the calculator identifies as potential overuse of non-evidence-based care. Additionally, the Department, or a contractor, is required to:*

- Analyze the data, review scientific literature about medical services that are best practice and literature about eliminating duplication in healthcare

- Solicit input from Utah healthcare providers, health systems, insurers and other stakeholders regarding:
    - Duplicative health care quality initiatives and instances of non-alignment in metrics used to measure health care quality required by different health systems, and
    - Methods to avoid overuse of non-evidence-based health care;

- Present the results of the analysis, research and input obtained to the Utah Health Data Committee.

Subsequently, upon the Department's presentation to the committee, the committee is expected to make recommendations for action and opportunities for improvement based on the results, recommendations on methods to bring into alignment the various health care quality metrics different entities across the state use, and identify priority issues and recommendations for inclusion in an annual report. Lastly, the Department is tasked with compiling a report, and submitting it to the committee for approval, ahead of submission to the Health and Human Services Interim Committee, on or prior to November 1st of each year.

## Methodology

The version of the Milliman Health Waste Calculator (HWC) used for this analysis (7.0) contains 48 measures for evaluating wasteful health care services in medical claims data.

These measures address services related to diagnostic testing, screening tests, disease approach, preoperative evaluation, routine follow up monitoring and common treatments (such as prescription drugs), which under certain circumstances, may be unnecessary. The tool is informed by various well known sources, including the Choosing Wisely initiative of the American Board of Internal Medicine, the U.S. Preventive Services Task Force, the American Medical Associations' Physician Consortium for Performance Improvement, the United Kingdom's National Institute for Health and Care Excellence, several medical specialty society guidelines and numerous evidence-based research papers. The HWC classifies a service as either *necessary*, *likely to be wasteful*, or *wasteful.*

> ***Necessary***: Confirms that data suggests appropriate services were administered by the healthcare provider
>
> ***Likely to be wasteful***: Indicates the need to question the appropriateness of services rendered
>
> ***Wasteful***: Flags a cause for concern, as the service probably should not have occurred

Additionally, the HWC has two main methods for flagging health waste services. The *case rate* method counts costs from all lines of a particular claim ID where at least one claim line was identified as wasteful. In other words, if one individual procedure is flagged as "wasteful," all other claim lines and their respective procedures are flagged "wasteful." The *claim line* method counts costs from only the claim line where the line has been identified as "wasteful."

For the purposes of this analysis, as was the case for last year's report, the *claim line* method was used. This maximized our ability to get closer to a "true" health waste dollar value, maintaining a conservative estimate, and results which may be more actionable. Moreover, only claims flagged "wasteful" were used, to achieve this aim.

Following receipt and analysis of the data provided to HCS by Milliman, HCS prepared a presentation which discussed the law, expectations from the Health Data Committee and HCS, a review of the data, and a few facilitative questions regarding duplicative health care quality initiatives, instances of non-alignment in measures used, and methods to avoid overuse of non-evidence based health care. Aside from disseminating findings, the purpose of these presentations was to collect feedback from various stakeholder groups.

The groups presented to were:

- Utah Health Data Committee
- Utah Transparency Advisory Group
- Utah Insurance Department/Utah Health Insurance Association
- Medicaid ACOs 6|18 Work Group
- Utah Payers Advisory Subcommittee
- Comagine Health Utah Community Board
- Utah Medical Association Council of Trustees
- Utah Medical Association Board of Directors
- Utah Hospital Association leadership
- Comagine Health Partnership for Value

## *Findings*

The analysis illustrated below mostly represents an update to the figures depicted on the November 2021 report. Within that report, the Utah Health Data Committee provided a number of recommendations regarding actions for opportunities for improvement based on the results, recommendations on methods to bring into alignment the various health care quality metrics different entities in the state use, and priority issues and recommendations for inclusion in subsequent reports. The analysis acknowledges recommendations deemed feasible for HCS to pursue, given our role and resources within the State of Utah.

In addition to the total raw dollars flagged as "wasteful," an important consideration when comparing results year to year is the population used in the analysis. The Utah APCD population changed some during this time frame due to the COVID pandemic, increasing population, and changes in payers submissions. Below is a graph that shows the population growth by line of business (LOB). Please note that a person may be counted more than one if they have multiple types of insurance, changed age group, or geographic categories.

Utah APCD population
2019-2021 by Line of Business
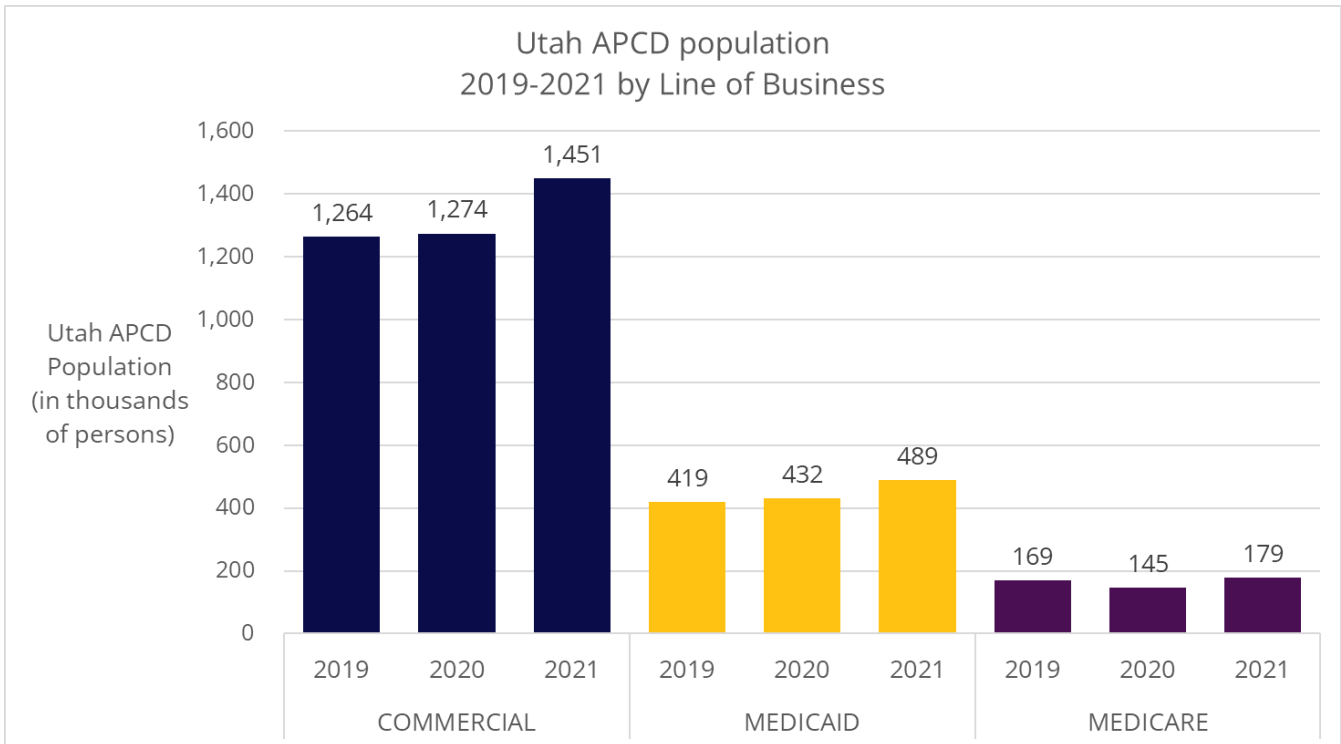
The Utah APCD Medicaid population had the highest percent increase during this timeframe. Medicaid added roughly 74,500 persons or 17% from 2019 to 2021; while the commercial market added 187,000 persons or 15% and Medicare added 10,000 or 6%. Medicaid's increase was driven largely by new members enrolling; while the commercial increase was due to adding commercial payers' data into the analysis.

The following graphs below show the top 5 measures by total dollars flagged as "wasteful." The aqua bars and y-axis on the left indicate the total amount providers were paid by insurance companies between 2019 -2021 (total allowed amount.)  The yellow dots and y-axis on the right indicate the average cost per service. Please note that due to eligibility changes even if there are more claims and dollars flagged as "wasteful," the number of wasteful services or dollars per member may have gone down.

Figure 1: Top 5 Measures flagged as "wasteful" in the State of Utah, using 2019-2021 All Payer Claims Database; Commercial, Medicare, and Medicaid



| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Two or more antipsychotic medications | | | Opiates in acute disabling low back pain | | | Annual Resting EKGs | | | Preoperative Baseline Laboratory Studies | | | Routine general health checks | | |
| 20,192 | 21,867 | 24,471 | 74,628 | 77,635 | 75,991 | 77,051 | 73,644 | 91,943 | 62,121 | 57,291 | 65,267 | 14,460 | 12,127 | 14,580 |

The figure above illustrates Commercial, Medicaid, and Medicare claims submitted by the All Payer Claims Database (APCD). The top three services flagged as "wasteful" from 2019-2021 are two or more antipsychotic medications, opiates in acute disabling low back pain, and annual resting EKGs. The claims for two or more antipsychotic medications grew from 20,192 (2019) to 24,471 (2021). The health waste amount also grew from just above $5 million (2019) to about $6.5 million (2021). The total cost flagged as "wasteful'' for the opioid measure has gone down slightly from 2019 to 2021 and the number of claims has remained fairly constant despite the increase in eligibility. The number of claims for annual resting EKGs did increase by 14,892 claims but the average cost per service has stayed below $100.

Figure 2: Top 5 categories flagged as "wasteful" in the State of Utah, using 2019-2021 All Payer Claims Database; Commercial



Top 5 Health Waste Categories
2019-2021 Utah **Commercial**

| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Annual Resting EKGs | | | Opiates in acute disabling low back pain | | | Routine general health checks | | | Preoperative Baseline Laboratory Studies | | | Headache Image | | |
| 65,989 | 61,389 | 76,997 | 36,268 | 32,517 | 29,018 | 14,042 | 11,680 | 14,062 | 42,068 | 37,318 | 43,139 | 2,078 | 1,623 | 1,118 |

The top three services flagged by the health waste calculator for commercial payers are annual resting EKGs, opiates in acute disabling low back pain and routine general health checks. Similar to the all payers graph (figure 1) the number of claims for the annual resting EKGs has increased from 65,989 (2019) to 76,997 (2021). The claims for opiates in acute disabling low back pain has also decreased from 2019 to 2021 and the total amount has decreased from above $2.5 million to $2 million. This can be considered to be an improvement for health waste for this service.

Figure 3: Top 5 categories flagged as "wasteful" in the State of Utah, using 2019-2021 All Payer Claims Database; Medicaid FFS/ACO

## Top 5 Health Waste Categories
### 2019-2021 Utah **Medicaid**



| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Two or more antipsychotic medications | | | Opiates in acute disabling low back pain | | | Pediatric Head Computed Tomography Scans | | | CT Scans for Abdominal Pain in Children | | | Preoperative Baseline Laboratory Studies | | |
| 12,539 | 14,666 | 16,996 | 18,493 | 17,847 | 20,967 | 1,439 | 1,195 | 1,459 | 526 | 514 | 642 | 6,276 | 6,305 | 7,053 |

The top three services flagged for Medicaid are two or more antipsychotic medications, opiates in acute disabling low back pain and pediatric head computed tomography scans. When interpreting these results please note that Medicaid eligibility increased by 17% during this time frame, however this doesn't take into account the shifting needs of the population. The claims for the antipsychotic medications have increased from 12,539 (2019) to 16,996 (2021). The allowed amount for this measure has increased from above $2.5 million to about $3.5 million. The number of opiate claims for acute disabling low back pain has increased from 18,493 (2019) to 20,967 (2021) and the cost has increased from $598,000 to $783,000. The pediatric head CT scans measure has not changed much since 2019. These findings only reflect claims payment data and did not include a review of medical records. There are a variety of clinical complexities and clinically appropriate reasons why some individuals may be on multiple antipsychotics concurrently, and this analysis is not able to assess these circumstances.
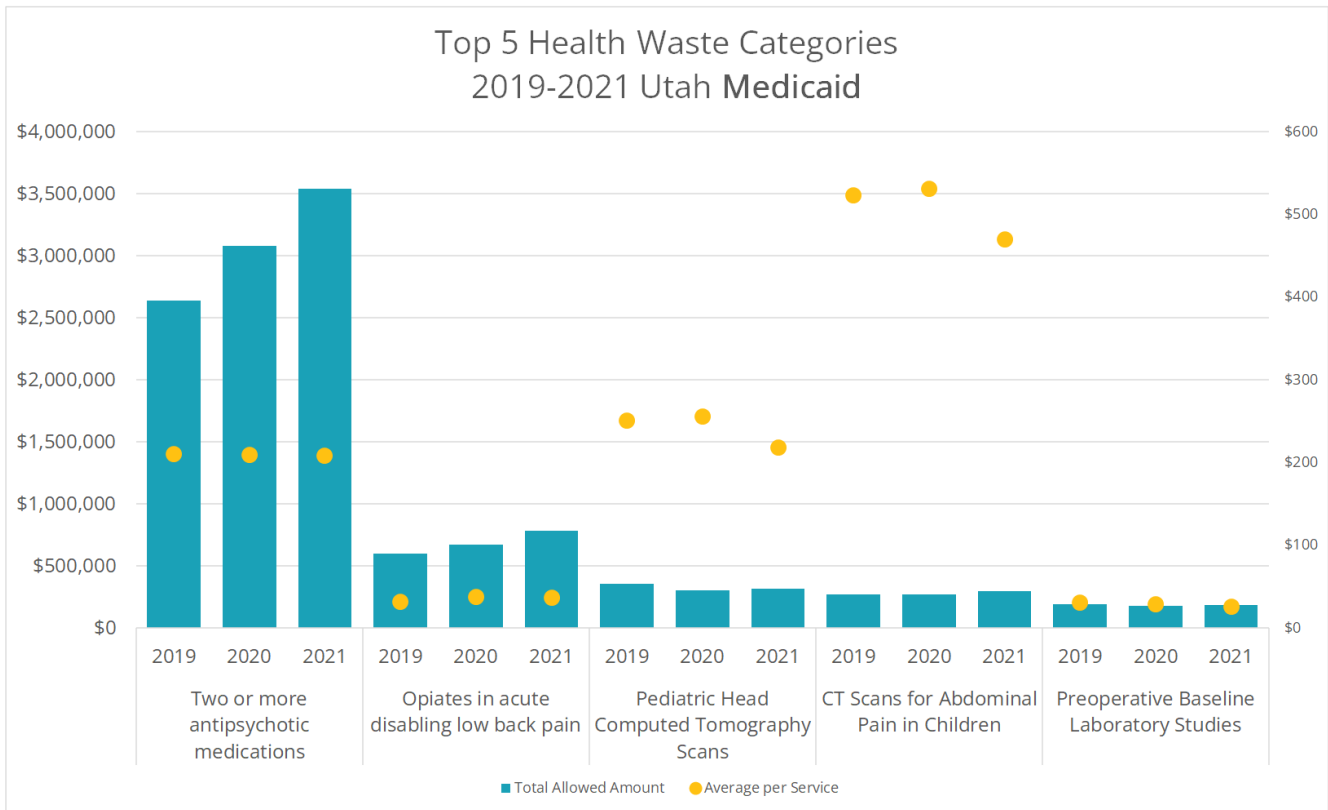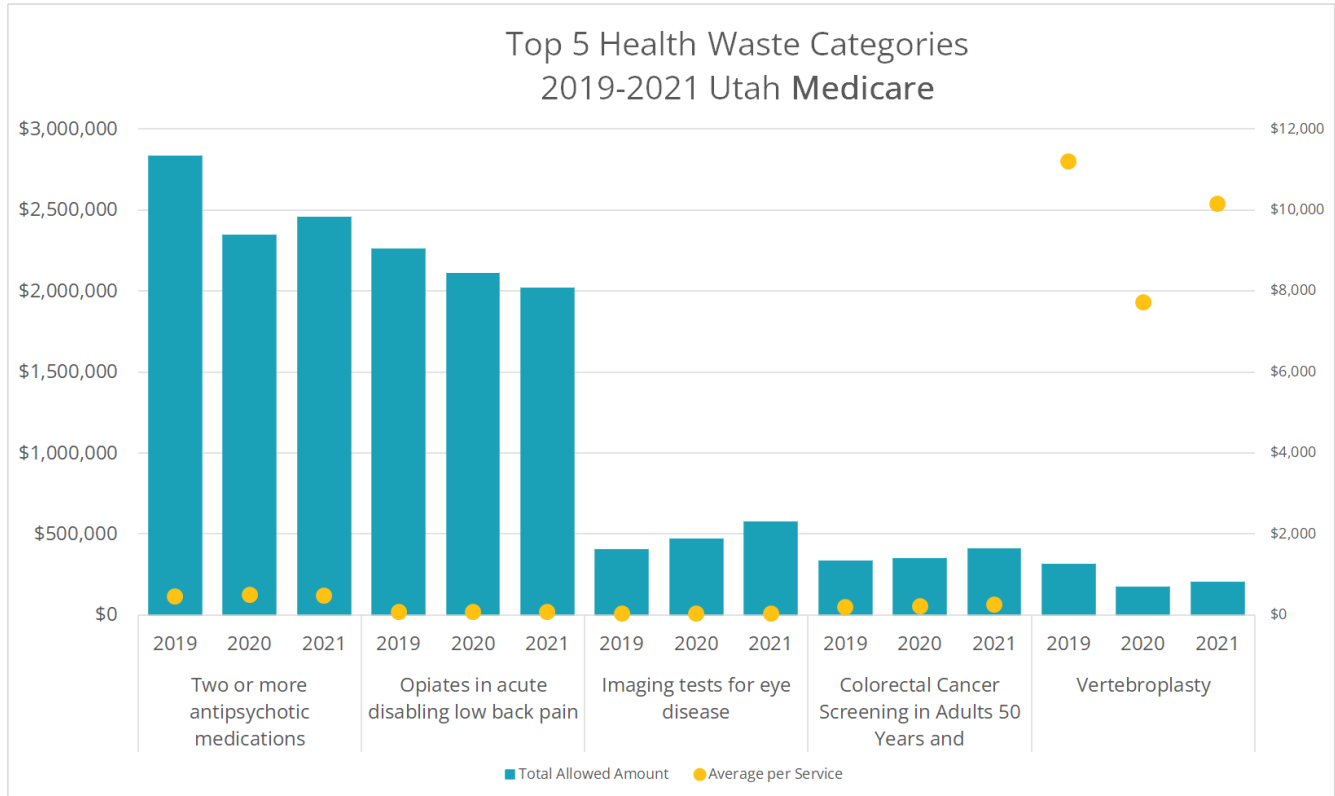
Figure 4: Top 5 categories flagged as "wasteful" in the State of Utah using 2019-2021, All Payer Claims Database; Medicare



Top 5 Health Waste Categories
2019-2021 Utah **Medicare**

| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Two or more antipsychotic medications | | | Opiates in acute disabling low back pain | | | Imaging tests for eye disease | | | Colorectal Cancer Screening in Adults 50 Years and | | | Vertebroplasty | | |
| 6,137 | 4,786 | 5,094 | 28,737 | 27,271 | 26,006 | 10,861 | 13,075 | 15,929 | 1,626 | 1,581 | 1,595 | 28 | 23 | 20 |

Analyzing the top five categories for Medicare, the top three are two or more antipsychotic medications, opiates in acute disabling low back pain and imaging tests for eye diseases. The antipsychotic medications and opiates for low back pain have decreased in claims and so has the total allowed amount for both categories. The imaging tests for eye disease, however, have increased in claims from 10,861 (2019) to 15,929 (2021).

Figure 5: Top 5 categories flagged as "wasteful" in the state of Utah, using 2019-2021, All Payer Claims Database. Pediatric population, ages 0-18, Commercial and Medicare only.



Top 5 Health Waste Categories
2019-2021 Utah **Pediatric**

| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| CT Scans for Abdominal Pain in Children | | | Pediatric Head Computed Tomography Scans | | | Antibiotics for Acute Upper Respiratory and Ear Infections | | | Preoperative Baseline Laboratory Studies | | | Imaging tests for eye disease | | |
| 621 | 603 | 802 | 1,384 | 1,301 | 1,633 | 13,758 | 5,914 | 6,885 | 1,534 | 1,249 | 1,494 | 757 | 736 | 993 |

The three categories for pediatric patients flagged as "wasteful" are CT scans for abdominal pain in children, pediatric head computed tomography scans and antibiotics for acute upper respiratory and ear infection. The CT scans for abdominal pain and pediatric head scans were also flagged in the previous graph (see figure 3). The CT scans for abdominal pain have a lower claims amount compared to other categories, it is still flagged as wasteful for the total amount and for the average cost per service. Each service for the CT can for abominable pain has stayed around $2,000.

Figure 6: Top 5 categories flagged as "wasteful"  in the state of Utah, using 2019-2021, All Payer Claims Database. Adult population, ages 18-64, Commercial and Medicare only



| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Opiates in acute disabling low back pain | | | Annual Resting EKGs | | | Two or more antipsychotic medications | | | Routine general health checks | | | Preoperative Baseline Laboratory Studies | | |
| 45,727 | 41,417 | 36,415 | 65,450 | 60,831 | 76,197 | 6,807 | 5,814 | 6,097 | 14,114 | 11,820 | 14,146 | 39,098 | 35,040 | 39,846 |

Analyzing the top five health waste categories for adults, the services flagged are opiates in acute disabling low back pain, annual resting EKGs and two or more antipsychotic medications. Like in previous charts above, the opiates for disabling back pain has also decreased for adults. The claims for opiates started at 45,727 (2019) and have decreased to 36,415. The annual resting EKGs on the other hand has not decreased but has rather increased in claims since 2019. The average cost per service for all categories is highest ($450) in two or more antipsychotic medications.
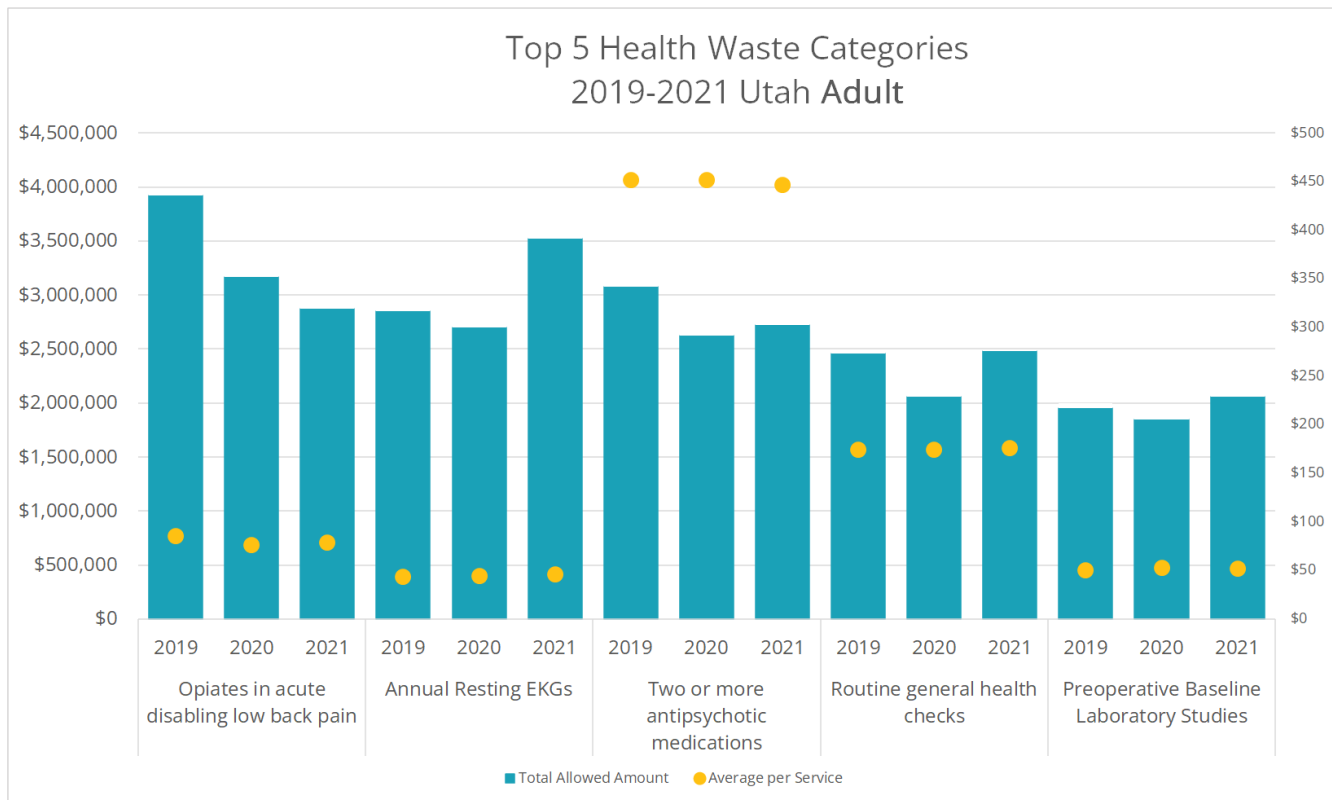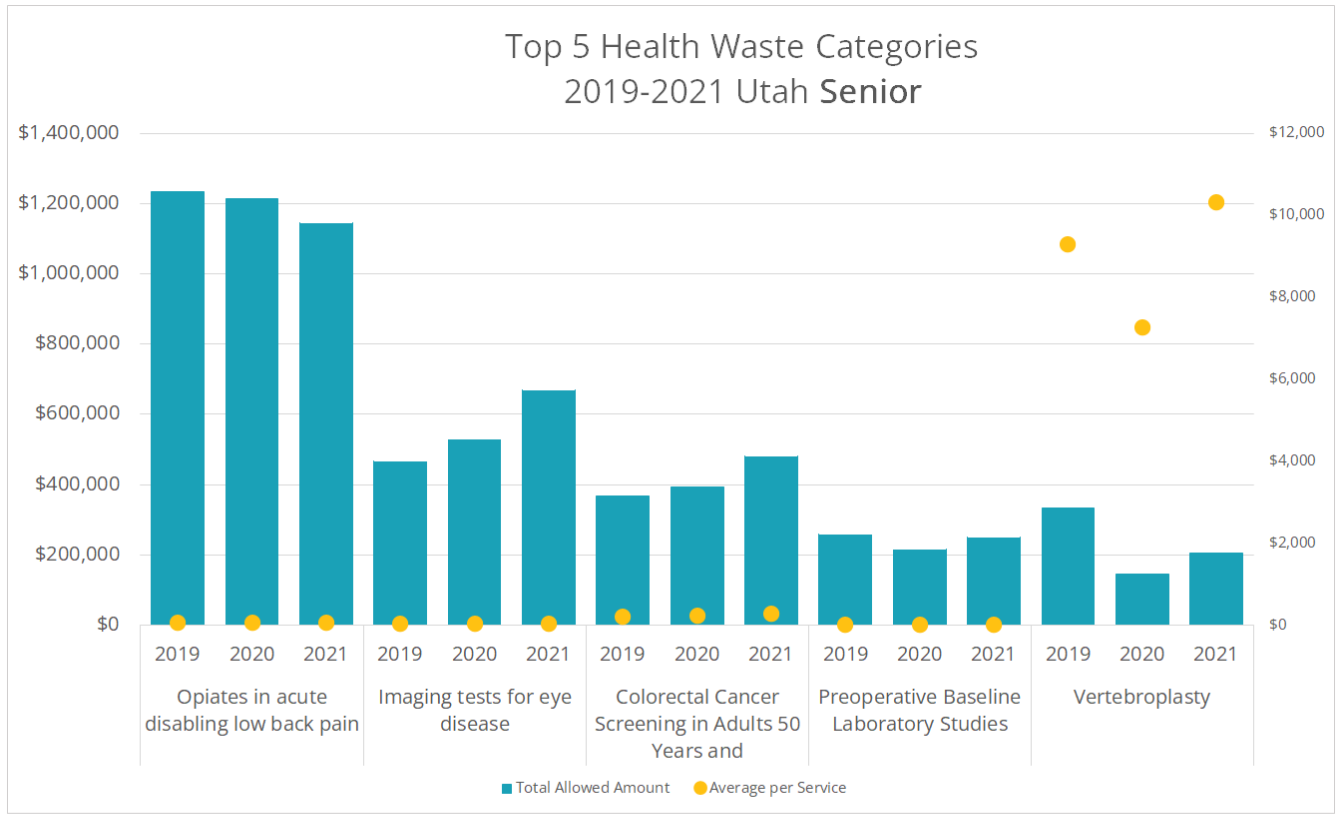
Figure 7: Top 5 categories flagged as "wasteful" in the state of Utah, using 2019-2021, All Payer Claims Database. Senior population, ages 65+, Commercial and Medicare only.



| Total Annual Claims | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Opiates in acute disabling low back pain | | | Imaging tests for eye disease | | | Colorectal Cancer Screening in Adults 50 Years and | | | Preoperative Baseline Laboratory Studies | | | Vertebroplasty | | |
| 19,233 | 18,354 | 18,600 | 11,631 | 13,784 | 17,294 | 1,692 | 1,641 | 1,775 | 15,213 | 14,697 | 16,874 | 36 | 20 | 20 |

The top three for seniors are opiates in acute disabling low back pain, imaging for eye disease and colorectal cancer screening. The highest claim is in opiates for acute back pain 19,233 (2019) but has decreased to 18,600 (2021). While the number of annual claims in the opiates and vertebroplasty categories has decreased, the other three categories have seen an increase. The imaging tests for eye disease had a significant increase from 11,631 (2019) to 17,294 (2021). The highest per service (above $7000) is the vertebroplasty.

The next three tables show the 2021 dollars and service flagged as "wasteful" by line of business and local health district (LHD)[2]. The Summit and Wasatch LHDs were combined due to cell size considerations.

| 2021 Commercial Health flagged as "Wasteful" by Utah Local Health District | Total allowed amount | Average cost | Total number of services |
|---|---:|---:|---:|
| Salt Lake | $6,894,376 | $80 | 86,287 |
| Utah | $4,441,615 | $82 | 53,894 |
| Southwest | $2,826,442 | $137 | 20,561 |
| Davis | $2,277,701 | $81 | 28,112 |
| Weber-Morgan | $1,898,005 | $97 | 19,506 |
| Bear River | $1,614,179 | $119 | 13,513 |
| Central Utah | $981,745 | $139 | 7,044 |
| Summit & Wasatch | $929,563 | $123 | 7,561 |
| TriCounty | $730,041 | $194 | 3,762 |
| Tooele | $717,833 | $133 | 5,392 |
| Southeast | $506,257 | $187 | 2,701 |
| San Juan | $79,227 | $150 | 528 |
| **Grand Total** | **$23,896,984** | **$96** | **248,861** |

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[2] https://ibis.health.utah.gov/ibisph-view/pdf/resource/UtahSmallAreaInfo.pdf

| 2021 Medicaid Health flagged as "Wasteful" by Utah Local Health District | Total allowed amount | Average cost | Total number of services |
|---|---|---|---|
| Salt Lake | $2,884,047 | $105 | 27,541 |
| Utah | $1,023,354 | $78 | 12,419 |
| Southwest | $638,854 | $71 | 7,520 |
| Davis | $493,479 | $85 | 8,070 |
| Weber-Morgan | $481,020 | $72 | 3,494 |
| Bear River | $372,224 | $79 | 2,239 |
| Central Utah | $330,093 | $63 | 2,095 |
| TriCounty | $307,725 | $296 | 575 |
| San Juan | $286,350 | $92 | 3,292 |
| Southeast | $198,543 | $75 | 1,443 |
| Tooele | $154,228 | $97 | 1,229 |
| Summit & Wasatch | $51,429 | $49 | 370 |
| **Grand Total** | **$7,221,345** | **$103** | **70,287** |

| 2021 Medicare flagged as "Wasteful" by Utah Local Health District | Total allowed amount | Average cost | Total number of services |
|---|---:|---:|---:|
| Salt Lake | $2,768,879 | $93 | 29,812 |
| Utah | $942,131 | $78 | 12,043 |
| Southwest | $773,777 | $71 | 10,863 |
| Weber-Morgan | $636,494 | $85 | 7,475 |
| Davis | $582,580 | $72 | 8,133 |
| Bear River | $504,234 | $79 | 6,351 |
| Tooele | $147,367 | $97 | 1,515 |
| TriCounty | $143,011 | $92 | 1,556 |
| Summit & Wasatch | $91,306 | $46 | 1,972 |
| Southeast | $74,997 | $75 | 999 |
| Central Utah | $50,528 | $63 | 796 |
| San Juan | $32,905 | $296 | 111 |
| **Grand Total** | **$6,748,208** | **$83** | **81,626** |

The final table below shows all of the services flagged as "wasteful" in 2021. Please remember the Milliman Health Waste Calculator is a tool to measure "waste" but may not have the complete picture due to the nature of claims data, unreported patient health issues, rebates or other write offs, and incomplete Utah population. The goal of this tool is to provide high level focus areas for possible improvement and a general estimate of potential savings there.

| All measures and totals flagged as "wasteful" in Utah, 2021 | Total allowed amount | Average cost | Total number of services |
|---|---|---|---|
| Two or more antipsychotic medications | $6,525,505 | $398 | 24,484 |
| Opiates in acute disabling low back pain | $4,803,549 | $73 | 75,991 |
| Annual Resting EKGs | $3,876,405 | $42 | 91,943 |
| Preoperative Baseline Laboratory Studies | $2,604,163 | $40 | 65,267 |
| Routine general health checks | $2,535,760 | $174 | 14,580 |
| CT Scans for Abdominal Pain in Children | $2,006,865 | $1,390 | 1,444 |
| Pediatric Head Computed Tomography Scans | $1,820,788 | $589 | 3,092 |
| Imaging tests for eye disease | $1,572,584 | $49 | 32,008 |
| Lower back pain image | $1,433,093 | $236 | 6,085 |
| Headache Image | $1,313,579 | $839 | 1,565 |
| Colorectal Cancer Screening in Adults 50 Years and Older | $950,562 | $380 | 2,502 |
| Cervical Cancer Screening in Women | $853,915 | $58 | 14,730 |
| 25-OH-Vitamin D deficiency | $824,179 | $48 | 17,073 |
| Arthroscopic Lavage and Debridement for Knee OA | $799,667 | $4,143 | 193 |
| Renal Artery Revascularization | $793,405 | $7,556 | 105 |

| | | | |
|---|---|---|---|
| Antibiotics for Acute Upper Respiratory and Ear Infections | $695,931 | $18 | 39,516 |
| Coronary angiography | $660,932 | $12,239 | 54 |
| Repeat CT for kidney stones | $516,322 | $963 | 536 |
| Cardiac Stress Testing | $456,512 | $737 | 619 |
| Vertebroplasty | $375,294 | $15,637 | 24 |
| Syncope Image | $319,188 | $598 | 534 |
| ED CT Scans For Dizziness | $296,040 | $662 | 447 |
| Imaging for uncomplicated acute rhinosinusitis | $275,031 | $415 | 662 |
| Preoperative EKG, Chest X ray and PFT | $263,926 | $79 | 3,347 |
| NSAIDs for hypertension, heart failure or CKD | $169,120 | $25 | 6,730 |
| Electroencephalography (EEG) for headaches. | $167,275 | $841 | 199 |
| CT head/brain for sudden hearing loss. | $109,309 | $384 | 285 |
| Multiple Palliative Radiation Treatments in Bone Metastases | $76,079 | $3,804 | 20 |
| Immunoglobulin G / immunoglobulin E testing | $74,733 | $115 | 652 |
| Antidepressants Monotherapy in Bipolar Disorder | $71,983 | $41 | 1,748 |
| Preop Cardiac Echocardiography or Stress Testing | $66,297 | $552 | 120 |
| Dexa | $64,131 | $145 | 443 |
| Imaging of the carotid arteries for simple syncope | $49,850 | $288 | 173 |

| All measures and totals flagged as "wasteful" in Utah, 2021 | Total allowed amount | Average cost | Total number of services |
|---|---|---|---|
| Cough and cold medicines in children<4 years | $34,056 | $13 | 2,623 |
| Coronary artery calcium scoring for known CAD | $19,390 | $2,424 | 8 |
| Diagnostics chronic urticaria | $12,784 | $77 | 165 |
| MRI for Rheumatoid Arthritis | $8,570 | $952 | 9 |
| Antibiotics for adenoviral conjunctivitis | $2,799 | $15 | 189 |
| Postcoital Test for Infertility | $538 | $49 | 11 |
| Oral antibiotics for uncomplicated acute TTO | $353 | $22 | 16 |
| Voiding Cystourethrogram for Urinary Tract Infection | $292 | $292 | 1 |
| PSA | $198 | $22 | 9 |
| Bleeding Time Testing | $153 | $51 | 3 |
| Sperm Function Testing | $17 | $17 | 1 |
| PFT prior to cardiac surgery | $7 | $7 | 1 |
| **Grand Total** | **$44,758,063** | **$109** | **410,207** |

*Limitations*

While this report is robust and provides numerous insights regarding health waste in the state of Utah, there are several limitations and nuances to be aware of. These limitations are:

- No risk adjustment was conducted on the population. Different populations by line of business, geographic location, demographics, and health needs will utilize the health care system in different ways. This analysis did not take those factors into consideration.
- The COVID pandemic may have impacted member eligibility and the way healthcare was utilized during this period. No analysis was conducted to measure the impact of COVID.
- No pharmacy rebate amounts are available for Commercial and Medicare. Medicaid ACOs opioid pharmacy rebates were assumed to be the same as the Medicaid FFS. These rebates averaged 36% less than reported cost. This 36% rebate was applied to all ACO opioid prescriptions.
- The focus is on claims Milliman flagged "wasteful," which may differ from other assessments of health waste.
- At the epicenter of this analysis is the claim line methodology, in lieu of the case rate method. This results in a lower estimate than other health utilization assessments.
- The APCD only contains claims submitted to the State, and does not include data for all Utahns. At present, the APCD contains claims data for approximately 65-75 percent of the population who had eligibility for at least a portion of the calendar year. As a result, any payments outside the claim system are not reflected in this analysis. For example, cash paying patients, some self-funded plans or those who are uninsured are not captured in the APCD.
- Not all patient diagnoses and health conditions are captured in the APCD. Due to the nature of claim billing, not all health conditions and history are recorded on the claims. For example, a patient may have had chronic back pain for several months, but may have either not sought care, or care was not submitted to the APCD.
- The APCD relies on the accuracy of the data entered and provided to the State. There exists a possibility, for example, for those entering data for services

rendered by providers to make mistakes. These mistakes that are not correctly adjusted, within the sphere of medical billing, would be unknown to the State.

## *Analysis Key Takeaways*

The following list represents some of the major key takeaways from the analysis of the Health Waste Calculator data:

- Of the 48 measures available in the Milliman Health Waste Calculator tool, Utah identified 44 measures with "waste" in Utah. The total health waste dollars across these measures amounted to approximately $30.5 million This represents about 20% of total care spend for the 44 measures (denominator approximately $150M).
- The top three health "waste" measures across the state were:
    - Two or more antipsychotic medications (24,484 claims flagged, approx. $6.5M)
    - Opiates in acute disabling low back pain (74,991 claims flagged, approx. $4.8M)
    - Annual Resting EKGs (91,943 claims flagged, approx. $3.9M)
- Across various observations, including Commercial only, Medicaid only, Medicare only, adult populations and seniors, opiates in acute disabling low back pain are among the top two "waste" measures.
- For the pediatric population non-Medicaid population, the top three notable health "waste" measures were:
    - CT scans for abdominal pain in children (802 claims flagged, approx. $1.7M)
    - Pediatric head CT scans (1,633 claims flagged, approx. $1.5M)
    - Antibiotics for acute upper respiratory ear infections (6,885 claims, approx. $125K)
- The top five local health districts with the most "waste'' were: Salt Lake ($12.5M), Utah ($6.5M), Southwest ($4.25M), Davis ($3.33M), and Weber Morgan ($3M).
    - The average cost per service for all except Southwest was between $82 and $87. Southwest's average was $109.
    - The average cost of the remaining LHD, which were mostly rural, was $128.

# Scientific Literature about Eliminating Duplication in Healthcare

An important financial burden to the healthcare system is the duplication of medical testing. Duplication of medical testing occurs when there is a lack of coordination between two institutions with their own electronic medical record system. Past studies have shown that the lack of accessibility to paper records for the transferred patients has led to duplication of testing. Even with the wide dissemination and use of electronic health records (EHR) in hospitals, the transferred patients still face duplication of testing. One of the main reasons for duplicate testing with EHRs is the presence of incompatible electronic medical record systems between hospitals along with incomplete transfer of electronic medical records between hospitals.

A retrospective study done by Stewart et al. looked at duplicate testing among transferred patients and found that lack of interoperability in the electronic health record is one of the main reasons that lead to duplicate testing (1). The authors suggest that EHRs across systems should be interoperable with the availability of integrated decision support. This study examined patients with congenital heart disease in Boston. The patients were provided treatment for the condition in two Boston hospitals, namely the Massachusetts Children's Hospital Boston and the adult-patient-oriented Brigham and Women's Hospital (BWH). The study found that 20% of cases had at least one duplicate test not clinically indicated and around 32% had a duplication of testing repeated within 12 hours. This study also suggests incomplete record transfer among incompatible electronic medical record systems can lead to potentially costly duplicate testing behaviors. They believe interoperable systems with integrated decision support could assist in minimizing duplication of testing at the time of patient transfers. The two sites are connected by a bridge, have a shared model to care for patients with ACHD, and use separate electronic health record systems. Despite close collaboration and proximity of the sites, there existed evidence of duplication of testing among the sample of 85 patients. According to the researchers, "duplicate testing occurred in 27/85 (32%) patients and was categorized as 'not clinically indicated' in 17/85 (20%) patients… Fifty percent of the patients with duplicative testing had more than one test duplicated".

Studies by Walker, van Walraven, Balas, and other groups have studied the benefits of fully integrated and interoperable electronic health records and found that they are more effective in reducing duplication compared to stand-alone electronic health records (3-5).

A RAND study showed that around 63% of outpatient paper chart pulls in a hospital were duplicate efforts and could  potentially be eliminated with the implementation of integrated information technology (2).

In addition to the incompatibility between the EHRs of different hospitals, physicians who care for patients in the same hospital even end up ordering duplicative tests on patients when they care for them simultaneously. Studies on the assessment of unintentional duplicate orders by clinicians showed that  electronic health records allow teams of clinicians to care for patients simultaneously, but an unintended consequence is the duplicate orders of tests and medications (6).

Without proper visual aids and systems in place to prevent the duplicative ordering of tests, the physicians of different specialties who see patients in the Emergency Room have a higher propensity to ordering duplicate tests (6).

The main purpose of electronic health records (EHRs) is to facilitate communication, provide decision support, and monitor patients (7,8). However, the presence of EHRs may have unintended consequences increasing the likelihood that health care professionals overlook existing orders and duplicate work (9,10).

However, in some cases, physicians may actually request duplicate orders, especially in the case of laboratory values or radiology reports to confirm the diagnosis. It is vital to differentiate the orders that have been voluntarily placed by physicians for the reconfirmation of diagnosis and duplicative orders that have been placed by mistake. Duplicate orders may also be markers of poor communication between clinicians caring for the same patient or even indicate that an order has been placed for the wrong patient (11).

Some strategies to reduce duplicate orders include additional training for users, downstream workflow mitigation such as screening by pharmacy, laboratory, or radiology departments, or interruptive alerts (12). However, interruptive alerts can also disrupt processes, which may lead to more errors (12-16).

Passive decision support in the form of highlighting and visual aids is more effective in reducing duplicate ordering of tests when compared to interruptive alerts in the electronic health records (6).

Another important method of reducing healthcare duplication is  exchanging patient information across hospitals through Health Information Exchanges. Health Information Exchanges allow healthcare providers to share patient records electronically and are potentially useful in reducing healthcare costs and unnecessary care in the emergency departments (17).

A study done in the states of California and Florida that were early adopters of Health Information Exchanges showed that the use of repeat CT scans, chest X-rays, and ultrasound scans were significantly lower when patients had both their emergency visits at two unaffiliated hospitals that took part in a health information exchange. The study showed patients were 59% less likely to have redundant CT scans, 44% less likely to get a duplicate ultrasound, and 67% less likely to have a repeated chest X-ray when both their emergency visits were at hospitals that shared information across a health information exchange (17).

Although Health Information Exchanges are an important way to exchange information and health systems, more research is needed to determine their effect on actual patient care and  on their potential to reduce healthcare costs.

Another way of improving data sharing among hospitals comes through the horizontal integration of the hospital industry that has been gaining momentum in the US. When the integration of hospitals or health systems occurs, electronic exchange of patient information is usually highlighted as consolidation benefits (18). Horizontal consolidation is the process of hospitals merging and acquiring similar provider organizations (18).

A study by Holmgren and Ford done at the Harvard Business School on assessing the impact of health system organizational structure on hospital electronic data sharing showed that interoperability engagement varied greatly across hospitals across different health systems. Health care facilities with more centralized health systems are more likely to be interoperable. Hospitals in one system type featuring centralized insurance product development but diverse service offerings across member organizations had significantly higher odds of being engaged in interoperable data sharing in the multivariable regression results (18). The study showed the incentives to share data varied greatly

across organizational strategies and structures, and there is always heterogeneity in health system interoperability. The study also showed that horizontal integration in the hospital industry may not actually bring significant gains in interoperability unless consolidation takes a specific business alignment form (18). This gives us important insight that horizontal consolidation of hospitals may not be the one solution to improving health information exchanges between hospitals to improve care coordination and reduce duplication. Also, with consolidation there is always the possibility of reduced market competition which leads to higher prices which may work against the mild benefits in cost savings in avoiding duplication obtained by the better data sharing availability (19).

A study by Hripcsak et al. evaluated the impact of Health Information Exchanges to see if they are useful in reducing duplicate work and leading to high quality and efficient care (20). The study showed that all a superficial view may suggest that Health Information Exchanges are effective in improving healthcare quality and efficiency, however a deeper and rigorous evaluation of the effect on quality may be needed and unintended consequences must be closely monitored (20).

In addition, when information is shared across hospitals, there is the possibility of sharing clinical documents that have duplicate or even conflicting information. So, care must be taken to ensure the validity and correctness of the clinical information before they are shared across hospitals or through Health Information Exchanges (21). To reduce information overload, a system to automatically consolidate information across multiple clinical summary documents developed by the HIE network could be used (21).

Health Level Seven (HL7) is an international standards development organization that creates standards for exchanging clinical and administrative data among healthcare information systems (22-24). The CMS HER Incentive Program rules adopted the HL7 as the sole standard for exchanging summary care records (25). The study provided the benefits of the novel HIE network tool to prevent de-duplication and consolidation of continuity of care documents and improve interoperability among information systems (21).

## Scientific Literature Review of Other States' Use of Health Waste Information

Washington state's Washington Health Alliance used the Milliman Health Waste Calculator to identify the healthcare waste and low-value healthcare services. In Washington, 47 common treatment approaches were overused and 45% of the health care services were determined to be low value (likely wasteful or wasteful). Approximately 1.3 million individuals received one of these 47 services; among these individuals, almost one-half (47.9%) received a low-value service. Of the 47 treatments and services analyzed, 93% of overuse was attributed to just 11 common tests, procedures and treatments (26).

Thirty-six percent of spending on the health care services examined went to low value treatments and procedures that amounted to an estimated $282 million in wasteful spending (26). The measurement year used for the results in this report include services delivered between July 2015 and June 2016. Although the report explicitly identifies the various categories of waste using the Milliman Health Waste Calculator in Washington state and declared the call for action to address to implement changes to reduce healthcare waste, no information on the steps taken to reduce the healthcare waste using the results of the report was identified neither in the report nor in the currently available literature.

Another tool for health waste measurement was the Colorado Department of Public Health and Environment (CDPHE) sponsored NDPP Economic Assessment Tool with funding from the Centers for Disease Control and Prevention (CDC). The purpose of this tool is to provide self-insured employers and other stakeholders in Colorado the ability to assess the economic implications of offering the National Diabetes Prevention Program (NDPP) as an employee benefit. The tool was developed by researchers from the University of Colorado School of Medicine under contract with the Colorado Business Group on Health (27).

Another tool is the Lost Lives and Dollars Calculator. Using Leapfrog's groundbreaking Lives and Dollars Lost risk calculator, employers and purchasers can: 1) Estimate the number of avoidable deaths among their covered lives; 2) Identify the hidden surcharge paid for each inpatient admission due to hospital acquired complications; and 3) Calculate how much of their total health care spending goes to medical mistakes (27). Specifically, the Lost Lives and Dollars Lost Calculator helps

estimate the dollar wasted. For example, for some employers, the dollars lost to medical errors can represent up to 30% of their overall health care spending. By shifting employees to "A" hospitals through improved benefits plan design, employers can decrease these hidden surcharges and protect their employees and dependents from harm (27).  This is another tool used by states such as Colorado to identify and reduce healthcare waste (27).

Another analysis was done in 2014 in Virginia using the All Payer Claims Database. Forty-four low-value health services were identified. Virginia All Payer Claims Database showed $586 million in unnecessary costs (28). Among these low-value services, those that were low and very low cost ($538 or less per service) were delivered far more frequently than services that were high and very high cost ($539 or more). Low- and very-low-cost low-value services (those costing less than $539 per service) were administered more than thirteen times more frequently than costlier low-value services. The combined costs of the former group were nearly twice those of the latter (65 percent versus 35 percent) (28). To quantify the low-value care, Virginia also used the Milliman MedInsight Health Waste Calculator (28). 2.1% of the total statewide costs in Virginia were identified as unnecessary (28). The study recommended that changing any physician practice pattern (including the delivery of routine and low-cost services) is notoriously difficult, even a modest decrease in the use of low- and very-low cost low-value services could lead to savings (28).

Another white paper report studied the utilization and spending on Low-Value Medical Care across four states in the US namely Colorado, Connecticut, Utah, and Wisconsin (29). The APCDs of the different states had access to an exclusive or limited number of datasets such as Commercial Claims data, Medicaid data, Medicare FFS data and Medicare Advantage data (29). Colorado had access to all four data, while Connecticut's APCD had access to only Commercial and Medicare Advantage data; Utah's APCD had access to Commercial, Medicaid, and Medicare Advantage data and finally Wisconsin had access to the same three datasets as that of Utah (29).

The spending on Low Valued Care (LVC) for commercial plans for 2019 showed that among the four states, waste as a proportion of total health spending was highest in Utah (2.66%), followed by Wisconsin (2.36%), Colorado (2.10%) and Connecticut (1.93%) (29). Patient spending on LVC was 79.57% in Utah, 84.89% in Connecticut, and 79.30% in Colorado (29). Total spending on Top 10 LVC services was highest in Wisconsin (81%),

followed by Connecticut (78%), Utah (77%), and Colorado (75%) (29). Commercial plan spending on services with a waste index greater than 80% was measured. Among the four states that paid for services with a waste index >80%, it was highest in Wisconsin with 53%, followed by Utah (51%), Connecticut (45%), and Colorado (40%) (29).

People in commercial plans paid between 15.11% and 20.7% on the 48 LVC services in these three states, totaling $94.4M in spending. In Colorado and Utah, specifically, patients paid out-of-pocket for one-fifth of the total waste spending in commercial markets. For high-volume services, patients paid a similar portion – 15.95% - 21.77% of commercial spending on these services in their states (29).

Another assessment of low value care in Colorado was done by the Center for Improving Value in Healthcare (CIVHC). They created an Affordability Dashboard which provided a high-level analysis of several key cost drivers and insights into potential ways to improve the affordability of healthcare in Colorado. CIVHC engaged with Milliman MedInsight to use the Colorado All Payers Claims Database (CO APCD) to measure low value care (30). CIVHC not only published the Low Value Care in Colorado report in March 2020, but also continues to update the Low Value Care analysis on its Affordability Dashboard that is available for the public to view (30). The interactive report analyzed claims from 2017 to 2020 and these findings can help consumers, providers, and payers identify opportunities to reduce low value care (30). CIVHC's analysis found that in 2020, Coloradans received over one million unnecessary and potentially harmful low value care services resulting in $134 million in excess cost for Coloradans and health insurance companies. Compared to 2019, the number of low value care services and total spending decreased, yet the percent spending that was identified as low value care, of the services evaluated, increased by 9% (30). Across all payers, the top 10 services by spending accounted for 77% of the state's total low value care spending. In 2020 there were: over 1 Million Low Value Care services resulting in $134M in spending or 11% of total spending for potentially low value care services was categorized as low value care. Results show the average cost for a low value care service is $130. However, the top service by spend, peripheral catheters in late stage kidney disease patients, costs over $14,000 per incidence and has a high risk of actually harming patients (30).

Similarly, the state of Oregon also used the Milliman Health Waste Calculator to identify healthcare waste and low value healthcare (31). 40% of evaluated services were found to be low value (3,796,638 services). $529,767,584 was spent on low-value care. An average

of 804,328 distinct individuals received at least one low-value service in each of the three years. The top 15 most utilized services accounted for 97% of all low-value services identified, affecting 2.9 million people, with $293,561,410 spent (31).

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