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Implementation of an Opioid Guideline Impacts on Opioid Prescriptions, Adverse Outcomes, and an Association with a State Opioid-Related Fatalities

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Objective: The aim of this study was to determine the efficacy of an evidence-based opioid guidelines-based program implemented at the largest worker's compensation insurer in Utah. **Methods:** All new claims, including surgeries, were included. Pre- and post-intervention comparisons included percentage of claims treated with an opioid, provision of a second opioid prescription, opioid use above 50 mg morphine equivalent dose (MED), opioid use more than 90 mg MED, and opioid use over 90 days. **Results:** There were significant ($P < 0.001$) reductions in all primary outcomes, with a reduction in MEDs in the 18 months after implementation totaling 65,502 mg. **Conclusion:** This program significantly reduced the usage of opioids among acute claims. The year of program implementation, Utah experienced a 19.8% reduction in opioid-related fatalities, which may be partly related to the reduction in MEDs. Regardless, this study suggests that the implementation of an evidence-based guideline is impactful and feasible.

Keywords: guidelines, opioid, worker's compensation, outcomes, health care, occupation, work

In the US, opioid-related overdose deaths have surpassed those from motor vehicle accidents.[1,2] More than 115 people in the US die each day from overdosing on opioids.[3] Estimates of the total ''economic burden'' of prescription opioid misuse in the US is $78.5 billion a year, including health care costs, lost productivity, addiction treatment, and criminal justice involvement.[4] Utah holds the rank of seventh in the US for drug poisoning deaths, with an average of 23 individuals dying from prescription drug overdoses a month. In spite of this, nearly one-third of all Utah adults had been prescribed an opioid pain medication in 2014.[5] Many decedents in Utah (57%) were also found to have had a prior worker's compensation injury, which raised concerns that worker's compensation may be one of the more important entry points for people who ultimately become addicted to opioids.[6]

The literature demonstrates that the clinical efficacy of opioids is suboptimal and adverse effects are frequent. Opioids have not been shown to be superior to nonsteroidal anti-inflammatory drugs (NSAIDs) for treatment of acute pain in multiple trials.[7–15] Opioids are associated with worse outcomes, such that preoperative opioid use reduces return to work status by 54% after discectomy.[16] Opioids are also associated with higher medical costs, psychiatric comorbidity, postoperative opioid use, and the development of failed back surgery.[16]

In response to the opioid crisis and the accumulating literature questioning the efficacy of opioids, Workers Compensation Fund Mutual Insurance Company (WCF) implemented a program in Utah based on an opioid guideline. The opioid program's goals were to increase adherence to evidence-based recommendations regarding opioid prescriptions, and ultimately to decrease the adverse effects that may result from improper opioid usage. This study's objective was to analyze and report on the evidence of efficacy of this program on outcome measures.

METHODS

A natural pre-post experimental study design was used to evaluate the impacts of an opioid management program on the universe of a large worker's compensation insurer's acute pain claims over 36 months, including 18 months before and after the intervention date of March 1, 2017. WCF is Utah's largest workers' compensation insurer, covering over 50% of the insured market. WCF is also the insurer of last resort in Utah, meaning that it must cover an employer who is unable to obtain coverage elsewhere, which commonly occurs in more hazardous industries (eg, construction, mining). WCF partnered with the Pharmacy Solutions Division of Mitchell International, LLC to implement this program. Mitchell has databases used to administer pharmaceuticals for each claim. Total claims data are from WCF and prescription data are from the Mitchell database. Accuracy of these data are precise, largely due to direct linkage with financial payments. We estimate more than 99% accurate data capture for this study.

WCF chose the American College of Occupational and Environmental Medicine's (ACOEM) peer-reviewed Opioid Guideline for adoption and implementation in accordance with state statute.[7,17] Both CDC and ACOEM have the same MED dose limits of 50 and 90 mg, but the ACOEM Guideline was chosen in preference to the CDC's Opioid Guideline due, in part, to more actionable details described below.

Opioid Program Protocol

Before initiating the opioid program protocol, the insurer began educating providers and the community to define evidence-based opioid prescribing, set expectations, facilitate implementation,

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Development and implementation of the opioid program at WCF Mutual Insurance Fund.

Camie Schaefer did the editing and writing revision.

Implementation of a guideline-based opioid program led to significant reductions in percentage of claims requiring opioids, filling a second opioid prescription, continuing opioids beyond 90 days, and requiring dosages more than 50 and more than 90 mg MED. This study suggests that the implementation of an evidence-based guideline is impactful and feasible.

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TABLE 1. Decision Logic for Potential Opioids Prescriptions*

Injury Classification	Opioids Recommendation	Recommendation Details
Mild injury (eg, strains, tendinitis, nonspecific pain, mild to moderate low back pain)	Opioids NOT indicated	Primary treatments generally not medication(s). Primary treatments usually are related to physical activity; reduction in exposure especially if high force; passive and active range of motion; heat/cold therapies. Consider physical therapy and/or manipulation for spine pain especially if mild pain problem persists. NSAIDs or acetaminophen should be first medication(s) utilized unless contraindicated. Consider gastric protection in those with high risks. Generally, muscle relaxants also not indicated for mild spine pain; may be indicated for persistent or pain unresponsive to above treatments.
Moderate (eg, severe sprains of moderate or large joints, moderate trauma, moderate to severe low back pain)	Opioids MAY BE indicated	Other treatments are indicated as primary treatments (see above). Muscle relaxant is preferable to opioid, and indicated especially for nocturnal use for treatment of moderately severe spine pain. A short-acting opioid may be indicated. Few days of treatment may be indicated.
Severe (eg, fractures, major trauma, large burns)	Opioids ARE indicated	Other treatments are indicated as primary treatments (see above). Definitive treatment (eg, fracture treatment) is indicated. Muscle relaxant is preferable to opioid, and indicated especially for nocturnal use for treatment of spine pain. Prescribe weaker opioids and the lowest effective dose. Stronger opioids may be considered only if weaker ones are ineffective or not tolerated.

*Adapted from California, Opioids Treatment Guidelines.[18]

reduce clinical or insurer disruptions, and prepare claimants for potential modest delays due to a utilization review. The education was provided by distributing fliers outlining the program to the majority of the clinics and pharmacies that had historically provided the first point of contact care for workplace injuries. In addition, a separate flier was provided to claimants at the time of injury to inform them of the new opioid program.

The opioid program required all first-fill opioid prescriptions associated with an acute injury to undergo a utilization review ensuring that the prescription met all of the following ACOEM Opioid Guidelines criteria: (1) a diagnosis based upon objective findings on examination, (2) injury with sufficient severity to warrant opioid use, (3) a prescription that was at or below 50 mg MED, (4) prescriptions with a days-supply of less than 14 days (modified from the guidelines' recommendation of a maximum 7 days, see below), and (5) prescriptions of short-acting opioids only. First fills associated with surgery were automatically authorized as long as the 50 mg MED and 14-day limits were not exceeded; the majority of these were pre-authorized. All second fills, whether from acute injury or post-surgical, were reviewed as part of the protocol.

ACOEM guidelines indicate that ''clinicians should prescribe the lowest effective dose of immediate-release opioids, and should prescribe no greater than needed for the expected duration of pain severe enough to require opioids.'' The guidelines indicate that 3 days or fewer is typically sufficient, with durations longer than 7 days being rarely needed. At program implementation, the insurer's medical department determined that a 14-day limit was a middle ground between current practices, where prescriptions were often written for 30 days, and the recommended ACOEM guidance.

The program also included subsequent review of continued opioids therapy. Criteria for continued opioid therapy included (1) reduced function attributable to pain, (2) presence of a severe disorder warranting opioid treatment, (3) failure/contraindication of other more efficacious treatments, (4) a complete history and physical with lack of contraindications to opioid therapy being documented (ie, sedating medications, substance abuse, prescription database review), and (5) objective improvement of both symptoms and functionality due to the trial of opioid therapy.[7]

The ACOEM table entitled ''Examples of Decision Logic'' was utilized as a tool to establish the types of injury for which opioids may be considered (see Table 1). In order to differentiate between mild and moderate injuries, such as strains and sprains, the Mitchell utilization team called the prescribing physician to obtain pain score and diagnoses and determine if there were objective evidence of appreciable soft tissue injury/disruption, as well as significant limitations of functional ability. Using this decision

TABLE 2. Number of Claims for Acute Pain, With Associated Prescriptions Filled During Each Time Period

	Pre (September 1, 2016–February 28, 2017)	POST (March 1, 2017–August 31, 2018)	Chi-squared/*t* Test
Total number of acute claims	25,945	28,353	
Number (%) of claims with *any* prescription	5,904 (22.8%)	4,855 (17.1%)	Pearson Chi-square = 270.5057 (P) < 0.001
Total number of prescriptions	18,665	12,909	
Average number of prescriptions/acute claim	3.16	2.66	
Number (%) of claims with an opioid prescription	3,061 (11.8%)	1,665 (5.9%)	Pearson Chi-square = 598.6554 (P) < 0.001
Total number of opioid prescriptions for new claims	6,572	2,816	
Average number of opioid prescriptions per claim	2.15	1.69	t = 7.48 (P) < 0.001

$$\text{ROI (\%)} = \frac{\text{Savings/claim} - \text{Cost/claim}}{\text{Cost/claim}} \times 100$$

$$\text{ROI (\%)} = \frac{\$41.61 - \$27.80}{\$27.80} \times 100 = \mathbf{49\%}$$

FIGURE 1. Calculation of Return on Investment.

logic, opioid prescriptions at first visits for minor injuries, such as sprains, strains, and contusions, were not authorized.

If criteria for an opioid trial were met, the MED was less than 50 mg, and the duration was a maximum of 14 days, the fill was authorized. Partial prescriptions were authorized if the claimant met criteria, but the prescription was written for either a MED above 50 mg or a days-supply of longer than 14 days. For claims that were denied, should either the claimant or the provider appeal the decision, the worker or provider was put in contact with the insurer's medical utilization review department for resolution.

To prevent lengthy delays in patient care, 4 hours was set as the maximum time for a decision to be made regarding the appropriateness of the opioid prescription for an acute injury. If a utilization review could not be completed within that timeframe (after hours, weekends, holidays, etc), then a prescription was authorized and the claimant could fill the prescription. However, the prescription was truncated automatically via a Mitchell software protocol to both a dose less than 50 mg MED and a shorter duration. Durations of prescriptions filled in this manner allowed for coverage of the claimant until the next business day when a final determination could be made.

During business hours, experienced registered nurses at the insurer were made available to discuss any questions or rationale for denials from either prescribing clinicians or claimants. If the clinician who prescribed a subsequently denied prescription felt that opioids were warranted, these staff were available to discuss the case and collect additional information that was not available. If the insurer and the prescribing clinician were still in disagreement regarding the appropriateness of the opioid prescription, the call was elevated to a peer-to-peer discussion with one of the insurer's physician reviewers.

Statistical Analyses

This study included all workers with new, acute claims, including first-fill prescriptions for postoperative patients. The sole inclusion criterion was that the claim had a date of injury within the established timeframe; therefore, older and chronic claims were not included. In evaluating opioids utilized for new claims (both acute injury and post-surgical related opioids), the following primary outcomes were analyzed: (1) the percentage of claims with an opioid prescription, (2) total number of fills for claimants who received a first-time opioid prescription, (3) average days-supply of first-fill opioids, (4) percentage of claimants who received a first-time opioid prescription who also received a second opioid prescription, (5) percent of acute claims that continued opioid therapy beyond 90 days, (6) percentage of opioid claims with an MED over 50 mg, and (7) percentage of opioid claims with an MED over 90 mg. Descriptive statistics were calculated. *t* tests and Chi-square tests were used to assess differences in continuous and categorical variables, respectively.

A secondary outcome evaluated was return on investment (ROI). Analyzing changes in prescription cost over time can be challenging. Many factors contribute to fluctuations in cost, including changes in the number of claimants filling prescriptions, the number of prescriptions filled, drug price inflation, changes in pricing structure, and changes in the mix of drugs dispensed during one time period in comparison to another. In determining the ROI of the opioid program, these factors were addressed in the following ways:

(1) To normalize for changes in drug inflation and changes in pricing methods over the course of the study, savings is reported in terms of Average Wholesale Price as reported in Medispan at the end of the study period (September 1, 2018) for all prescriptions both pre-intervention and post-intervention;
(2) To normalize for variance in the number of claims from the pre-intervention population and the post-intervention population, the ROI is presented as a Return on Investment per claim;
(3) To accurately reflect the decrease in prescription cost per claim and the cost of intervention per claim, the number of claims utilized in the calculation includes both claims that received opioid prescriptions and claims that, thorough direct prescriber intervention, did not receive opioid prescriptions.

RESULTS

There were 25,945 new claims in the 18 months leading up to the opioid program implementation on March 1, 2017, and 28,353 claims over the subsequent 18 months, an increase of 9.3% (see Table 2), which is fairly consistent with expectations due to economic growth. After implementation, there were approximately 15 telephone calls per month from health care providers to discuss or appeal a decision, a rate that soon fell to one to two a month. No adverse events were reported among claimants or health care providers. Although nearly half of prescriptions were filled as written (46%), 34% were partially approved (eg, shortened duration to a maximum of 14 days) and 20% were denied. This latter group was mostly composed of cases that did not meet clinical criteria for a trial of opioids. The total number of prescriptions across all claims dropped from 18,665 to 12,909, or 30.8% (see Fig. 1). The number of claims with any type of prescription fell from 5904 to 4855, or from 22.8% of claims to 17.1% of claims for a 24.8% reduction ($P < 0.001$). The number of claims with an opioid prescription fell over the study timeframe from 3061 (11.8%) to 1665 (5.9%), or 50.2% ($P < 0.001$). Overall, there was a reduction of 13,258 opioid pills (56.4% reduction of opioid pills dispensed vs prescribed) postintervention. A random sample of 200 claims provided an estimate of an overall reduction of 65,502 mg in MED after implementation of this program.

Data summarizing the duration of opioid therapy are presented in Table 3. When excluding the denials and partial fills, the number of days-supply prescribed for the first-fill of opioids was 6.1 pre- and 6.2 postintervention. When including denials and partial fills, the average days-supply dropped 7.0% to 5.7 days postintervention ($P < 0.01$). The total number of claims requiring a second opioid fill pre-intervention was 1236 (4.8%) compared with only 528 (1.9%) postintervention, a 60.9% reduction ($P < 0.001$). Finally, 1.6% of acute injury claims filled at least one opioid prescription 90 days after the date of injury pre-intervention compared with 0.6% postintervention, a 63.5% reduction ($P < 0.001$).

Data regarding MED were also assessed (see Table 4). During pre-intervention, 48.6% of claims prescribed opioids had a MED greater than 50 mg than 34.8% postintervention, a 28.3% reduction ($P < 0.001$). During pre-intervention, 33.5% of opioid claims had a MED over 90 mg, while postintervention 25.8% exceeded the upper limit, a reduction of 22.9% ($P < 0.001$). Reasons for exceedances were not formally tracked, but include acute accidents among those with prior opioids use.

TABLE 3. Summary of Acute Claims Data With Regards to Duration of Opioid Prescriptions

	Pre-intervention (September 1, 2016–February 28, 2017)	Postintervention (March 1, 2017–August 31, 2018)	Chi-squared/*t* Test
Days-supply of first fill of opioids (including denials and partial fills)	6.10	5.67	$t = 2.78$ $(P) < 0.01$
Number (%) of claims with a second fill of opioids	1,236 (4.8%)	528 (1.9%)	Pearson Chi-square = 362.9097 $(P) < 0.001$
Acute claims (%) using an opioid beyond 90 days	416 (1.6%)	166 (0.6%)	Pearson Chi-square = 132.3834 (p) < 0.001

TABLE 4. Comparison of Acute Claims With Prescriptions Exceeding the ACOEM/CDC Recommendations for Daily Maximum MED

	Pre-intervention (September 1, 2016–February 28, 2017)	Postintervention (March 1, 2017–August 31, 2018)	Chi-squared
Number (%) of total claims with an MED >50 mg	1,487 (5.7%)	580 (2.0%)	Pearson Chi-square = 502.5872 $(P) < 0.001$
Percent of opioid claims with an MED > 50 mg	48.6%	34.8%	Pearson Chi-square = 82.7833 $(P) < 0.001$
Number (%) of total claims with an MED > 90 mg	1,025 (4.0%)	430 (1.5%)	Pearson Chi-square = 453.8411 $(P) < 0.001$
Percent of opioid claims with an MED > 90 mg	33.5%	25.8%	Pearson Chi-square = 29.6948 $(P) < 0.001$

After program implementation, claims staff were required to provide commentary in free-form text documenting the underlying reason for the opioid prescription. Terms such as ''post- op,'' ''post op,'' ''surgery,'' and ''Sx'' were used for documentation purposes and subsequently used to differentiate acute injury claims from acute post-op claims. Given these processes were only put into operation after the implementation of the program, data are not available to differentiate acute injury from acute post-op claims in the pre-intervention population. Data segregating the postintervention claims into acute injury and acute post-op claims are represented in Table 5.

A summary of the Average Wholesale Price of claims is found in Table 6. The Average Wholesale Price of opioid prescriptions per claim decreased from $106.24 in the pre-intervention population to $64.63 in the postintervention population. This resulted in a cost savings of $41.61 per claim. The cost of clinical intervention in the postintervention population was $27.80 per claim, resulting in a net savings of $13.81 per claim. Ultimately, the program led to a direct ROI of 49%, without accounting for indirect cost savings (see Fig. 1).

DISCUSSION

Implementation of an opioid program based on the ACOEM Opioid Guideline at a large worker's compensation insurer is readily feasible and this program reduced opioid doses, pills dispensed, durations of opioid prescriptions, the proportion exceeding 50 mg MED, the proportion exceeding 90 mg MED, and refills over a period of 18 months postintervention. The number of acute claims with an opioid prescription fell 50.2% and the proportion of acute claims with an opioid prescription fell from 11.8% to 5.9%. The durations of first-fill opioid prescriptions were reduced 7.0%, the proportion refilling the opioid was reduced 60.4%, and the proportion requiring opioids beyond 90 days was also reduced 62.5%. That the proportion refilling the opioid was reduced despite shortening of the duration of an initial opioid prescription suggests that the initial opioid prescriptions may ideally be for still shorter durations. These data also suggest there is not an adverse effect of a shortened duration, and most workers do not experience a need for refills. Overall, the intervention led to a direct reduction of 13,258 (56.4%) opioid pills among the reviewed claims compared with what was prescribed, representing approximately 65,502 mg in MED.

Although pre-intervention data were unavailable to classify opioid usage according to acute injury or acute post-op, postintervention data from postintervention demonstrated that only about 6% of the triaged cases were post-op. As the protocol was set up to pre-authorize post-surgical opioids, the reductions in opioids for acute injury may have been greater than those seen in the postoperative cases.

TABLE 5. Summary of Acute Injury versus Acute Post-Op Claims in the Postintervention Time Period

	Total Acute Claims	Acute Injury Claims	Acute Post-Op Claims
Number of claims	1,462	1,370	92
Total number (%) of any prescription	5,854	5,252 (89.7%)	602 (10.2%)
Total number (%) of opioid prescriptions	2,523	2,237 (88.7%)	286 (11.3%)
Average number of opioid prescriptions per claim	1.7	1.6	3.1

TABLE 6. Program Savings per Claimant as a Function of Average Wholesale Price (AWP) of Opioids per Claim and Cost of Nurse Review per Claimant

	Claim Count	Number of Opioid Prescriptions	AWP Cost of Opioids	AWP Opioid Cost per Claim
Pre-intervention	3,061	6,572	$325,000	$106.24
Postintervention	1,821	2,816	$117,695	$64.63
AWP per claimant savings				$41.61
Total spend on nurse review				$50,625
Spend on nurse review per claimant				$27.80
Program savings per claimant				$13.81

The direct reduction (partial approvals and denials) in opioid prescriptions do not account for the entire reduction of claims with an opioid suggesting that providers' prescribing habits may have been concurrently evolving during this timeframe. During 2017, the state of Utah implemented some policies related to oversight of opioid prescribing and monitoring of opioid use. Legislation included (1) guidelines for the issuance of a prescription for an opiate antagonist along with an opiate prescription, (2) recommendations for health insurers to develop policies to avoid very high-dosage opioids in primary settings and the inadvertent transition of short-term opioids from treatment for an acute injury into long-term opioid dependence, (3) usage of a pre-existing prescription drug monitoring program, and (4) limitation of days' duration of opioids for acute injuries.[18] In 2017, the year this program and these policies were implemented, the state of Utah saw a 19.8% reduction in opioid-related fatalities.[19]

This program's protocols were based on the ACOEM guidelines, with one noteworthy caveat of the duration of the initial prescription. On the basis of common practice, it had been felt that reducing typical first-fill prescriptions from 30 days down to 3, or at most 7 days, would cause excessive distress and pushback from providers. Therefore, a period of 14 days was settled upon as an intermediate stopgap. Months after implementation of the opioid program, the state implemented a new statute that limited opioid prescriptions for acute conditions to 7 days. Despite this legislation, of cases that were triaged, partial approvals remained high (34%), and exceeded denials (20%). These partially approved cases consisted of a claim with an injury severe enough to have met criteria for a trial of opioids, but had an exceedance of either the duration or dosage. That prescriptions reviewed in this program continued to exceed state policy may reflect both lack of awareness of new legislation, and the legislation did not require a pharmacist to verify that prescriptions are in compliance with the 7-day limit.

Due to the increasing awareness of the opioid problem and supportive legislation, a protocol more closely adherent to the ACOEM recommendations would likely be acceptable. Further, a recent Morbidity and Mortality Weekly Report supports that 1 day of opioid use had only a 6% risk of long-term opioid use, while the risk from more than 7 days use was 13.5%,[20] which suggests an ACOEM-adherent protocol would likely better protect patients from unintentional chronic use and other adverse effects.[20] Although this opioid program reduced the number of claims with an opioid prescription lasting beyond 90 days by 26.5%, approximately 10% of initial fill claimants went on to chronic opioid use. In the state of Washington, a utilization management procedure targeted at reducing the likelihood of workers receiving opioids beyond the acute period of pain was implemented leading to significant reductions in the percentage of claims that continued on opioids beyond 6 weeks.[21] A protocol that more strictly follows the ACOEM recommendations regarding initial management, as well as provides a simple tool for utilization teams to determine if a claim meets the ACOEM criteria for opioid therapy beyond the acute phase would likely lead to greater reductions.

Although there were significant reductions in the proportions of prescriptions that exceeded either 50 mg MED (reduced 28.3%) or 90 mg MED (reduced 22.9%), some exceedances continued. Instances of these infrequent higher doses represented a combination of serious injuries and major surgeries involving persons with a history of current opioid use. The ACOEM guidelines recommend use of the lowest effective dose, and these data suggest there may be room for further improvements.

That there were so few phone calls after the initial implementation suggests the ''costs'' of the program in potentially disrupting clinical care were minimal. This program's apparent success in proactively educating providers, as measured by the relative lack of phone calls, likely alleviated potential disruptions.

Interestingly, not only did the numbers of prescribed opioid pills decrease after implementation of this program, but overall claims with any prescription also decreased. Decrease in use of opioids can account for part of the difference between the percentage of claims receiving prescription medication; however, this does not account for the entire difference. Potentially, the increasing emphasis on nonmedication-based treatment of injuries led to utilization of nonprescription medications, therapeutic exercises, and other evidence-based modalities.[22]

These data demonstrate that the opioid program led to a clinically significant reduction in both the duration and dosage of opioids used to treat acute injuries. From a financial perspective, the cost of opioids only contributes 0.3% to overall medical costs when short-acting opioids are utilized.[23] Thus, as demonstrated by the ROI calculations, direct financial benefits from the program were estimated at $13.81 per claim. However, when accounting for all costs, claims that required long- and short-acting opioids have been found to be 9.3 and 2.8 times more expensive than nonopioid claims, respectively.[23] The current program focused on opioids associated with acute cases, as early opioid use is associated with higher medical costs, prolonged disability, higher risk for surgery, and continued opioid use.[24–27] By limiting nonindicated opioid use, claims should avoid progressing along the opioid continuum, thereby leading to potentially significant indirect financial benefits.

CONCLUSION

This opioid guideline-based program reduced the number of acute claims with an opioid prescription by 50.2%, the durations of prescriptions by 7.0%, refills of opioids by 60.4%, and opioid use beyond 90 days by 62.5%. These data suggest that acute pain prescriptions should be for short durations, likely well under 14 days, and closer to 3 to 5 days. The proactive education program conducted in advance of implementation may have resulted in fewer appeals of utilization decisions. This program reduced the overall dispensation of opioid pills for acute pain by 13,258 pills or a 56.4% reduction; this is an approximately 65,502 mg reduction in MED in Utah. In response to Utah being at the forefront of the opioid

epidemic in the US, many initiatives, including this program, were implemented in Utah resulting in the opioid-related fatality rate fell 19.8% in 2017. These data suggest it is reasonable and quite practicable to implement peer-reviewed guidelines and reduce the impacts of the opioid epidemic.

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