# Toward the Elimination of Paper Orders

## Managing the Challenge of Low Frequency Physician Users of Computerized Patient Order Entry (CPOE)

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**Summary**

With the adoption of Computerized Patient Order Entry (CPOE), many physicians – particularly consultants and those who are affiliated with multiple hospital systems – are faced with the challenge of learning to navigate and commit to memory the details of multiple EHRs and CPOE software modules. These physicians may resist CPOE adoption, and their refusal to use CPOE presents a risk to patient safety when paper and electronic orders co-exist, as paper orders generated in an electronic ordering environment can be missed or acted upon after delay, are frequently illegible, and bypass the Clinical Decision Support (CDS) that is part of the evidence-based value of CPOE.

We defined a category of CPOE Low Frequency Users (LFUs) – physicians issuing a total of less than 10 orders per month – and found that 50.4% of all physicians issuing orders in 3 urban/suburban hospitals were LFUs and actively issuing orders across all shifts and days of the week. Data are presented for 2013 on the number of LFUs by month, day of week, shift and facility, over 2.3 million orders issued.

A menu of 6 options to assist LFUs in the use of CPOE, from which hospital leaders could select, was instituted so that paper orders could be increasingly eliminated. The options, along with their cost implications, are described, as is the initial option selected by hospital leaders. In practice, however, a mixed pattern involving several LFU support options emerged. We review data on how the option mix selected may have impacted CPOE adoption and physician use rates at the facilities. The challenge of engaging LFU physicians in CPOE adoption may be common in moderately sized hospitals, and these options can be deployed by other systems in advancing CPOE pervasiveness of use and the eventual elimination of paper orders.

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# 1. Background and Setting

The beneficial impact of computerized patient order entry (CPOE) is well defined in the literature [1–9]. The U.S. federal government has as a result created financial incentives and disincentives to drive CPOE adoption through the Health Information Technology for Economic and Clinical Health (HITECH) Act and the American Recovery and Reinvestment Act [10]. Meaningful use requirements for CPOE have and will presumably continue to increase minimum facility use rates in the future. In addition, other healthcare leadership organizations, such as the IOM, JCAHO and The Leapfrog Group have endorsed and recommended CPOE as a tool to prevent healthcare related errors and to improve the quality of care [11–14].

CHRISTUS Health is a non-profit multi-state system of more than 350 services and 60 hospitals with over 9000 physicians. CPOE was first implemented in 2012 within a complex market environment where competitor hospitals had not yet implemented, creating a safe harbor for physicians seeking to avoid CPOE adoption. The Santa Rosa region of CHRISTUS Health, located in greater San Antonio, Texas is comprised of 3 adult general hospital facilities and 1 Children's hospital. CHRISTUS Santa Rosa-New Braunfels is licensed for 142 beds and usually operates with 100 occupied beds. CHRISTUS Santa Rosa-Westover Hills has a bed capacity of 150 beds which is typically exceeded. CHRISTUS Santa Rosa-Medical Center is licensed for 178 beds and has an average daily census of 74 (increasing to 110 during winter months). CHRISTUS Santa Rosa-Children's Hospital of San Antonio has 180 beds with an average daily census of 100 occupied beds.

The Santa Rosa region has 2417 credentialed physicians and 263 mid-level allied health professionals. The 3 adult facilities are community hospitals, and while not academic medical centers, have residency affiliations and 260 residents who train and rotate through the facilities annually across a number of specialties (about 50 residents are present in the region at any one time).

All physicians and nurses were trained before the CPOE go-live in their facility, using either small group in-person classes or individual, on demand web-based training. After go-live, mandatory training was instituted for all new hire nurses and newly affiliated physicians as part of their orientation process, and was largely self-completed online. Pre-go-live training classes required 1–2 hours for completion, depending on class size, which was limited to no greater than 10 individuals. The online training was internally formulated with end user input and review, and allowed individuals to stop and resume training where they left off over multiple sessions. Clinicians were not allowed by policy to engage CPOE without completing advance training. In subsequent years, high volume physicians were provided 1–1 training by their facility CI upon request, as available.

At CHRISTUS Health, our physicians achieved 70-75%+ CPOE use rates at most facilities within 12 months of CPOE launch. The 3 adult hospitals in this report achieved 80% facility wide CPOE use rates at 11, 18 and 24 months after launch, respectively. Go-live involved intensive at the elbow support to clinical end users for the first 4–6 weeks, when much of the regional Health Informatics (HI) team provided support to the clinical service line and facility then phasing in. Subsequently, growth in CPOE adoption was accomplished using a single dedicated clinical informaticist in each facility, fully integrated into hospital operations at all levels, lending support to physicians entering orders during weekday day shifts only.

The CIs were directed to focus largely on high volume physicians initially, and to manage their finite time by lending support to yield the greatest overall clinical impact in this manner. Prior to go-live, a stratification analysis was completed to identify physicians in the region who had the highest volume of patients and orders. A colored coded list of stratified physicians was developed with physicians falling into 1 of 3 strata or levels (high, moderate and low order volume). Having the physicians' rank assisted our CPOE support personnel to prioritize the assistance of and customer service to the highest volume physicians. This enabled the facilities to achieve facility wide CPOE use rates in the high 60s and mid-70s in terms of percentage of total orders issued.

As hospitals move toward the elimination of paper orders (90+% CPOE use rates), driving CPOE adoption among physicians who infrequently issue patient orders, and/or who do so at multiple different health systems, is a major challenge. Consultant and other physicians affiliated with multiple hospital systems infrequently generate patient orders at any single facility and are Low Frequency Users (LFUs) of CPOE. With the advent of CPOE, these physicians are required to memorize the navigation of multiple CPOE software modules from different EHR vendors existing at different

hospitals and systems where they may practice. This can be time consuming and onerous, and may cause such physicians to resist CPOE adoption.

In addition, we have observed that the continued use of paper orders in an electronic order environment presents a serious potential risk to patient safety, as these residual paper orders may be missed or delayed as physicians, nurses and others on the multidisciplinary care team focus on CPOE as the primary source of orders. Missed or delayed paper orders during CPOE adoption may cause, or may contribute to the causation of patient safety near misses where a patient could be injured. Many hospitals recognize this heightened risk during the period of transition from paper to electronic orders, and the particular dangers of maintaining an environment where substantial paper and electronic orders co-exist.

CHRISTUS Health did not institute mandatory CPOE use but CPOE is the expected standard of care and best practice within our organizational and provider cultures. While physicians were not paid for CPOE use per se across the entire physician community, several high patient and order volume specialties, such as hospitalists, ED physicians and surgeons, had payment incentives for high CPOE use included in group and shared risk contracts.

Verbal and telephone orders by policy are permitted only when the physician is unable to access an internet enabled computer or mobile device (for example while driving), or when the physician is delivering critical or emergent care of high acuity and is physically unable to enter orders electronically. In addition, shortly after go-live physicians began articulating concerns about electronic order entry required when on call, during periods when they may be trying to sleep. On call physicians stated that working on the brightly lit screen of a computer or tablet alters circadian rhythms, preventing them from getting any sleep, and as such their cumulative fatigue the next day could pose a discrete safety risk to patients. As a result, the Santa Rosa region allowed nurses and mid-levels to enter occasional, incidental orders communicated telephonically by physicians between 11:00 p.m. and 6 a.m. during night call. All admission orders must, however, be entered into CPOE by the physician.

Early in CPOE implementation Health Informatics established recurrent, dedicated informatics meetings at each facility with clinical end users and facility clinical and administrative leaders. In the early CPOE go-live period these meetings were weekly, then as adoption improved became biweekly or monthly (at 2 facilities are now bimonthly). The meetings became an exchange of concerns, issues and ideas on how to improve usability and facilitate physician CPOE adoption, and served as a reporting vehicle to identify and troubleshoot specific individual or specialty CPOE navigational issues and compliance challenges.

Discussions at physician end user meetings focus on a mix of CPOE clinical content (order sets), navigation, and service support (plus end user "tips" to accelerate physician workflow in CPOE). Scheduled at a time when physicians can attend, with a meal provided, significant numbers of high and moderately high CPOE using physicians typically participate (usually 8–18+ at each facility). In addition nurses, pharmacists and other caregivers attend regularly. These "Physicians Clinical Information Technology/CPOE Meetings" are hosted by HI leaders and consistently attended by facility administrative and clinical leaders and members of the regional Information Management team.

A line listing or dashboard of clinical end user reported issues, requests and problems to resolve was generated at the initial and at each subsequent meeting. A CPOE problem list or dashboard was maintained and continually updated. The CPOE Issues Dashboard was distributed at each clinical end user-HI team meeting, and posted online on our HI intranet so that physicians and other clinical end users could monitor issue resolution. This also ensured HI accountability in responding to concerns articulated by clinical end users. These dedicated CPOE meetings help HI identify and drive improvements that we can execute ourselves and, as necessary, forward to our EHR manufacturer for resolution (or for incorporation into a subsequent generation product).

## 2. Methods

We defined LFUs as physicians issuing a total of less than 10 paper and electronic care orders per month, and analyzed when LFU physicians are issuing orders by day of week, by shift and by facility over a year. Our analysis includes all orders issued over calendar 2013 and is stratified by day of

week, by shift and by facility. The hospitals are all general, multidisciplinary centers providing care across most major clinical service lines. These data were extracted from our electronic medical record, MEDITECH Client Server Version 5.66.

We then outline the strategic and operational considerations that were developed for supporting LFU physicians based on the data presented. Six operational options to support LFU physicians in adopting CPOE were identified, presented to facility leaders for consideration, and approved by them and regional clinical leadership for implementation. These options are reviewed from a cost perspective.

The options selected by facility leaders are reviewed along with a rationale for the particular selection or selections. We report on the execution of these options, and how the selection evolved into a mixed strategy across our region and within facilities. Finally, we discuss the impact of our efforts to lend LFUs dedicated CPOE support on CPOE adoption and use rates.

## 2.1 Methods: Options Developed to Support CPOE Adoption among LFU Physicians

Some studies suggest that the current state of EHR technology has heightened overall physician dissatisfaction [15]. Physicians state that patient throughput is declining due to poor EHR usability, time-consuming data entry and, because physicians see fewer patients per day, physician income may decline [15, 16]. According to many physician end users, EHRs are adversely affecting the quality of care because they also interfere with clinical thinking, reduce patient care time, and compete with face-to-face patient interaction [15, 16]. There is need for continued process redesign for existing CPOE systems to reduce unnecessary alerts that may contribute to alert fatigue, and to improve the integration of CPOE systems into physician workflows [17].

As a result, physicians stress that EHR technology – especially user interfaces – must improve across all EHR vendors [15]. Indeed, the American Medical Association recently issued a report detailing priorities for EHR vendors to improve EHR usability [17]. It is important to note as well reports in the literature which demonstrate that negative pre-launch and early perceptions of and attitudes toward CPOE decline after a year of implementation, and further, that as time goes on low percentages of providers wish to revert to paper orders [18]. This appears to align generationally with younger providers more accepting of CPOE [18].

It may be some years before the EHR industry evolves its products to a performance level where they no longer represent significant physician dissatisfiers. Many hospitals (including ours) are working with EHR vendors to improve specific aspects of CPOE usability and navigational ease. Many of these improvements have been modest and incremental, and during the interim period until EHRs better meet physicians' functional needs, a nationwide medical scribe industry has emerged to provide relief to physicians. The rise of this industry – and the deployment of scribes who are non-clinicians (often college students) by physicians preferring not to utilize current EHR products – has generated concerns and new challenges [19].

At CHRISTUS Health the physician must always be present for CPOE assistance with navigation and order completion in order to interpret and respond to all decision support alerts within our MEDITECH CPOE software. Our deployment of CPOE support staff is intended to assist physicians in completing order entry themselves, never to substitute for the physician entering with any individual without formal clinical training. Exceptions to this policy are not permitted.

We recognized that a single or monolithic approach to supporting LFU physicians would not be effective given the variation in clinical workflow and CPOE support demand across our facilities, and perhaps even within a single facility across service lines. As a result, we developed a menu of LFU CPOE support options for the administrative and clinical leadership of the facility to select from according to the often unique characteristics of their facility and the service lines within it. The LFU support options are presented in ▶ Table 1.

Each facility leadership team can select the LFU support option best suited for their facility (or service lines) according to available resources, demand and workflow. LFU physicians can proactively make appointments in advance with the facility clinical informaticist for assistance, otherwise availability of support is on a first come, first serve basis. The Health Informatics associate offers to

set up favorite order sets and orders for providers, and shows how to set up their own favorites in the future as suited to their workflow (in order to reduce time navigating in search of specific clinical actions). These support options are not regarded as permanent investments by our facilities, because as the ease of CPOE use increases over time with EHR evolution, and as LFU physicians observe CPOE navigation repeatedly, a significant percentage may become independent users.

# 3. Results

## 3.1 Large Presence of Low Frequency Physician Users

In order for facility leaders to make informed decisions regarding which LFU support option to engage, and to rationalize investment in a particular option or set of options, we needed to gather and analyze data on how many LFUs were among our physician CPOE end users. In addition, facility leaders suspected that there would be considerable variation in when LFU physicians were in the hospital and active in order entry by shift, so we stratified our overall facility analysis by shift and day of week.

▶Table 2 shows the presence of LFU physicians across the region by facility and shift for calendar year 2013. The numbers in each cell within parentheses represent the number of LFU physicians by shift (in the numerator) out of the total number of providers generating orders during that particular shift (in the denominator). We calculated the percentage of physicians who were LFUs out of all physicians issuing orders over the 2013 calendar year. Over 2.3 million total orders were generated by all physicians in the subset of pharmacy, laboratory and radiology orders analyzed. Just over half of all physicians issuing orders over 2013 in these 3 hospitals were LFUs and the other half were moderate to high frequency CPOE users.

There was no operational or meaningful variation by month, day of the week (including weekends) or shift. LFUs were active 24/7. For the full year, the percent of LFUs generating orders for Westover Hills Hospital was 48.6%, for Medical Center was 51.2%, and for New Braunfels Hospital was 51.7%. Across all three facilities for the year, 50.4% of all physicians issuing orders, a slight majority, were low frequency users issuing less than 10 orders per month.

These findings exceeded our expectations for the presence of LFUs in our hospitals, and while their total volume of orders issued is not large, their percentage representation within our overall total physician community is substantial. These physicians may be consultants, proceduralists, subspecialists, and physicians providing call coverage within a physician group practice where some members are high/medium frequency CPOE users in our regional system but the on call physician is not. These physicians as a group are critical members of our care delivery team, and integral to our ability to offer the breadth and depth of clinical services needed to best serve our patient population.

## 3.2 LFU Support in Practice – A Mixed Approach

When the facility leadership teams at these three hospitals were polled for their choice of an LFU CPOE support option, there was surprising unanimity in their selection of the fifth option above, use of dedicated CPOE support staff across service lines to assist LFU physicians with order entry (with physicians interpreting all decision support). While the lower cost of a rotating cadre of college students was appealing, it was recognized that having consistency in the specific team of individuals supporting physicians had value because LFU physicians would be more comfortable utilizing a small group of support staff who were consistently present, rather than engage a larger, high turnover group that using college students would likely entail. In order to observe for an impact and to moderate and then titrate up the investment in dedicated LFU CPOE support staff, it was decided to focus the additional support initially on evening shifts. The evening shift was first selected because during this shift the facility Clinical Informaticist, who works the day shift, is not present at the facility to lend LFU physicians support as needed (when not otherwise occupied), and we believed the evening shift had more physician order activity than the night shift. Our objective was to ensure more continuous in-person LFU support availability, and so resources were added to a shift where only super users or a live support telephone call line were available.

However, what followed in practice ended up being a mixed option implementation in each hospital, rather than a single option. Part of this was due to other elements introduced to the facilities over time, such as clinical staffing changes. For example during the same period, as more dedicated CPOE support was provided to LFUs during evening shifts across all three facilities, two of the three facilities recruited a new hospitalist group to provide 85%+ of all hospitalist services. These hospitalists determined that they would deploy a nocturnist in each hospital. The nocturnists in turn completed the order entry requirements for many on call and consultant physicians who are LFUs.

During the early CPOE implementation period in each hospital, we trained and leveraged super users – typically nurses and unit clerks working on a particular service line – to assist physician end users with order entry. Initially the super users targeted, much as the Health Informatics team did, physicians with the highest total order volume and frequency. However, as CPOE adoption progressed among the high and moderate order frequency physicians, and as facility CPOE use rates exceeded the 75%+ level, these super users re-focused their support efforts on LFU physicians. Super users became key support resources for LFUs in an emerging mixed pattern of support that also included nocturnists and dedicated CPOE support staff as described above.

## 3.3 Impact of LFU Support on CPOE Use Rates

The impact of this added LFU support on facility level CPOE use rates, and on the region as a whole, may have been substantial. During this period the 3-hospital Santa Rosa total regional CPOE use rate rose from 74–82% to 80-86% month over month, with a regional average of 84.3% for the first half of fiscal 2015. During the second half of fiscal 2015, facility use rates have ranged from 84% to 90%. Each individual hospital experienced a 4–7% net increase in month over month total CPOE use rates. However, we are unable to attribute this increase in regional and facility CPOE use rates unequivocally or solely to the new LFU support tactics deployed, as other factors independent of LFU adoption as described above may have been at play. However, the concurrence is compelling and we have seen CPOE use rates of individual LFU physicians rise as well.

## 4. Discussion

The objective of CPOE implementation on a national (and individual hospital) basis has been to drive the scientific evidence base into clinical care delivery, and to reduce variation in clinical practice not supported by evidence through electronic order entry and the clinical decision support enabled within CPOE. Thus it is envisioned that one day, hospitals will operate as almost entirely paper free environments.

In the interim the co-existence of paper orders with electronic order entry through CPOE presents a significant safety risk to patients, where paper orders used in an otherwise largely electronic environment may be missed or delayed in execution, are frequently illegible, and bypass the decision support that is part of the evidence-based value of CPOE. Indeed, our experience during the transition from paper to electronic order entry validates this: in two patient safety near misses since CPOE went live in our region, the use of paper orders was identified as a secondary (but not primary) contributing factor in subsequent investigational root cause analyses.

In many facilities, including ours, it is extremely difficult to monitor whether paper orders and order sets utilized by individual physicians are the ones that have been through our intensive evidence-based multidisciplinary peer review and approval process. While it may be possible to identify or designate approved, evidence-based paper orders with a brand or other mark, this would require nurses to monitor and effectively police the use of appropriate paper orders, clearly a poor use of nursing skills and resource, if it were even possible.

Thus use of paper orders not only eliminates the decision support and safety measures built into CPOE software, but introduces risk that the paper orders being utilized are other than those approved through rigorous application of the evidence base. During EHR or CPOE downtimes, for example, the paper orders used in our system are identical to those that live within CPOE electronically, and are made available on each unit and service line until the computer based system or downtime solution is back up.

Our initial expectation going in to this effort was that our facility leaders would select a single option from the menu of options developed. During our planning meetings, we sought to ascertain a single selection from the menu, in order to limit resource expenditure but also because it was thought from our prior CPOE customer service experience that our physicians would prefer a single support method and a few CPOE support personnel in their facility with whom they could establish an ongoing relationship.

Yet, as noted, we ended up with a combined or mixed set of strategies or options from the LFU support menu developed. This was not intentional per se – while we welcomed new resources to support LFU physicians, there was no specific effort to engineer multiple LFU support options in any particular facility or the region as a whole. For other facilities seeking to engage LFUs, we recommend that local facility physician culture, and facility leadership preference be considered in determining which LFU support option – or options – should be employed.

These variables may vary considerably from facility to facility, with significant differentiation in operational factors, varying practice patterns and support resource availability shaping a specific facility's strategy. Clearly, hospitals which employ their physicians can dictate that they use CPOE for all orders or be at risk for their jobs. However, we suspect that hospitals and systems such as ours, which employ few physicians, may also have high presence of LFUs. Further, we do not have reason to suspect that our physicians' CPOE adoption pattern, physician CPOE resistance and compliance, or our CPOE interface and architecture vary so greatly from other facilities as to produce an endemic and unique presence of LFUs only in our facilities.

For our three community hospitals, the key contributors to LFU engagement and CPOE use rate improvement were the availability of a nocturnist to provide night coverage for a substantial portion of LFU order entry, the deployment of additional dedicated CPOE support personnel to assist LFUs, and the evolving shift of super user focus from high and moderate frequency users to LFUs over time as the former needed less support after the first year of implementation. Other facilities may wish to consider one or more of these as strategies in their own context to engage or increase LFU physician CPOE use.

# 5. Conclusions: Toward the Near Complete Elimination of Paper Orders

From our data, it appears likely that CPOE adoption rates – and the challenges of adoption – may be at least partially driven by the large presence of LFU physicians at many facilities. We suspect that this is the case at many hospitals across the nation. Other hospitals may have a similar experience with CPOE adoption as CHRISTUS: achieving 70–80% facility use rates by focusing during the first 1–2 years on physicians who issue orders with high/moderate frequency and volume, on specialties who generate the large majority of orders (for example hospitalists and emergency department physicians). However, driving facility total use rates higher to the 90–95%+ level – where they will best enhance patient safety and improve clinical outcomes – remains a major challenge in the national adoption of CPOE. We are unable to attribute our observed increase in regional and facility CPOE use rates to LFU support due to the presence of other potential confounders that may have acted independently to increase CPOE adoption during the year evaluated. Perhaps future studies of LFU physicians can exert greater control and enable attribution to CPOE support interventions engaged.

Given the substantial presence of LFU physicians likely at many hospitals adopting CPOE across the nation, consideration should be given to lending these physicians transient focused and dedicated support with order entry to accelerate the elimination of paper orders (and associated risks to patient safety). Whether or not our facility rates were actually increased by supporting LFUs is ultimately secondary, in our view, to recognizing the magnitude of the LFU physician workforce in our facilities, and the imperative to ensure that they are using CPOE and using it correctly in the interest of our patients. Just one missed, delayed or illegible paper order can harm a patient. It seems unlikely that the use of paper orders can be effectively eliminated from hospitals if LFU physician end

users are as prevalent elsewhere as in our setting, and if they are not engaged rigorously to use CPOE.

At CHRISTUS Health, an effort was made to avoid a single, monolithic approach to supporting LFUs, and appears thus far to have contributed to improved facility, regional and individual CPOE use rates. These facilities pursued a mix of strategies, drawing upon more than one option to support LFU physicians in each facility (and sometimes within a service line or unit).

Ultimately, such LFU support efforts need to be obviated by greatly increased EHR and CPOE usability. While deploying dedicated support for LFU physicians may be of value in CPOE adoption, it remains nonetheless imperative for EHR vendors to improve CPOE user interfaces, ease and speed of navigation, and to render CPOE use so intuitive and efficient that any physician – even LFUs – can learn and commit to memory any particular (or multiple) EHR CPOE modules.

## Conflict of Interest
The authors have no conflicts of interest in the completion of this applied research and report.

## Human Subject Protections
No human subjects were engaged in the completion of this work, and no identified personal health information was used in the analyses reported.

Table 1  Facility Options to Support Low Frequency User (LFU) Physicians

| LFU Physician Support Option | Option Resource Cost |
|---|---|
| Identified hospitalists or other physicians in the facility enter orders on behalf of LFU physicians, interpreting all clinical decision support and conferring with the latter. | High |
| Mid-level practitioner enters orders on behalf of LFU physicians, with the latter interpreting appropriate clinical decision support alerts. | Moderate |
| Trained nurse super user enters orders at the elbow of the LFU physician, with physicians interpreting all clinical decision support alerts. | Moderate if staff is hired for additional shift work beyond their regular clinical shifts; low if super user support is integrated with existing nurse or unit clerk shift work. |
| Unit clerk trained as a super user assists LFU physicians on that service, with physicians interpreting all decision support alerts. | Low; but not all service lines maintain unit clerks 24/7. |
| Dedicated facility based CPOE support staff assists LFU physicians (and only LFUs) across service lines, with physicians interpreting all clinical decision alerts. | Low |
| Rotating cadre of college students trained as CPOE super users assist LFU physicians, with physician interpreting all clinical decision support. | Low; but administrative effort to maintain and schedule students may be substantial. |

Table 2  LFU Physician Presence in CHRISTUS Hospitals, Santa Rosa Region, 2013

| % (Number)* of LFU Physicians | | | | |
|---|---|---|---|---|
| Facility | Day Shift (7am–3pm) | Evening Shift (3pm–11pm) | Night Shift (11pm–7am) | Total |
| CHRISTUS Westover Hills | 54.7% (1137/2080) | 45.8% (749/1637) | 40.0% (378/945) | 48.6% (2264/4662) |
| CHRISTUS Medical Center | 53.6% (1086/2025) | 48.7% (855/1757) | 50.9% (525/1032) | 51.2% (2466/4814) |
| CHRISTUS New Braunfels | 57.9% (1014/1750) | 49.4% (586/1187) | 35.4% (179/506) | 51.7% (1779/3443) |
| Santa Rosa Region (Average) | 55.3% (3237/5855) | 47.8% (2190/4581) | 43.6% (1082/2483) | 50.4% (6509/12919) |
| | | | 2013 Total Orders Issued | 2,317,433 |

*Number of LFU physicians over all physicians issuing orders during that shift.

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