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EMF

Low-Value Imaging for ED
Patients with Consumer-Driven Health Plans

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Study Objectives: Consumer driven health plans (CDHPs) - high deductible health plans paired with health savings account or health retirement account - have increased dramatically in the commercial insurance market. A key intent of these insurance products is to reduce low-value care by incentivizing consumers to use health care resources cost-consciously. Simultaneously, the cost of emergency department (ED) care has been a major concern for payors, with a key driver of ED costs being diagnostic imaging. Several imaging tests commonly performed in the ED are considered to be of low-value. The objective of this study was to compare trends in receipt of low-value imaging in the ED among patients with CDHPs versus those with traditional insurance plans.

Methods: We examined ED visits among commercially insured adults from 2008-2015 using the Truven MarketScan® Database. ED visits were classified by patient’s plan type including CDHP or traditional insurance. We examined utilization of 4 low-value imaging tests commonly performed in the ED based on Choosing Wisely recommendations: 1) head computed tomography (HCT) in syncope, 2) HCT in atraumatic headache, 3) lumbar spine imaging for low back pain (x-ray, CT, or magnetic resonance imaging) and 4) CT abdomen/pelvis in renal colic among patients with a history of urinary stone disease. For each cohort, we first identified whether any imaging test was performed. Then, we utilized specific exclusion criteria to determine whether the test was low-value or appropriate based on the presence of risk factors. Rates of low-value imaging were calculated by assessing the number of ED visits in which an imaging test was performed wherein no high-risk exclusion was found. Logistic regression was used to examine trends in any and low-value imaging, adjusting for differences in patient case-mix, and comparing patients with CDHP versus traditional insurance.

Results: From 2008-2015, the proportion of ED visits that had any imaging test performed increased from 41.4% to 64.0% (relative increase 60.0%) across the 4 clinical conditions studied. However, ED visits with imaging tests classified as low-value decreased significantly over the study period from 26.2% to 21.6% (relative decline 17.6%). Low-value imaging declined in all of the clinical cohorts and to a similar degree in both insurance plan groups (Figure). While patients enrolled in a CDHP were just as likely to have any imaging test (low-value or appropriate) performed during their ED visit as patients with traditional insurance (OR 1.00, 95% CI 1.00-1.01), they were significantly less likely to receive a low-value imaging test overall (OR 0.93, 95% CI 0.92-0.94), a HCT for syncope (OR 0.88; 95% CI 0.85-0.91) or headache (OR 0.93; 95% CI 0.92-0.95) or abdominal imaging for renal colic (OR 0.93; CI 0.89-0.96). No significant differences in imaging for low back pain was noted across plan types.

Conclusion: Across 4 common ED clinical presentations, low-value imaging has declined over time in the ED. Patients with CDHPs were slightly but significantly less likely to receive a low-value imaging test in the ED compared to those with traditional insurance, though had similar rates of imaging overall.

Data-Driven Staffing Decision-Making at an
Emergency Department in Response to COVID-19

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Study Objectives: During the COVID-19 pandemic, the incidence of critical patient encounters decreased significantly presumably due to shelter in place orders. With the reopening of the economy and an associated increase in patients presenting to the ED, we fear utilizing staffing models established prior to the advent of COVID-19 will be inadequate to handle both the increasing overall patient volume and workloads necessary to evaluate patients in the COVID-19 era. Our objective was to identify whether length of stay (LOS) and left without being seen (LWBS) rates are sensitive to physician staffing changes when simulating for both previous standard patient volume and the expected volume of patients presenting with COVID-19-like illness (CLI). Our research question sought to identify whether the addition of physicians to CLI care areas, standard care areas, or some hybrid could significantly improve these throughput measures.

Methods: We built a discrete-event simulation model to capture patient, provider, and nurse flow through the ED system and gauge its throughput. We analyzed data of actual standard patient (SP) and CLI patient (CP) encounters to define the model’s input. The model was validated by ensuring its output replicated the data’s statistical features. To assess the impact of CLI on the ED’s throughput, we modified the validated simulation model to capture the capacity and features of both standard evaluation and CLI-dedicated care areas. We identified five different staffing options and compared their performance to our baseline staffing model and performed a statistical analysis under multiple scenarios representing different encounter volumes.

Results: We fit specific probability distributions to represent the interarrival times of 28,454 SP and 1,693 CP encounters. We evaluated the impact of alternative staffing options under 16 different permutations of SP and CP, focusing on improvements in LOS and LWBS rates. Adding one provider floating between standard care spaces led to the highest observed average reduction in LOS for SP, equal to 24.34% or 69 min for discharged patients (LOS: 300 min, 95% CI: 299 - 300, n=100), under a mix of 75% (21,318) of SP and 100% (5,932) of CP (Mix 1), and excess 91% or 88 min for admitted patients (LOS: 547 min, 95% CI: 545 - 548, n=100), under a mix of 100% (29,722) of SP and 100% (5,932) of CP (Mix 2), as well as to the highest observed
average reduction in LWBS rate, equal to 84.57% or 50/week (LWBS: 9.12/week, 95% CI: 8.53 - 9.32, n=100), under Mix 1. Further, adding one provider floating between CLI-dedicated care spaces led to the largest average improvement in LOS for CP, equal to 10.44% or 38 min for discharged patients (LOS: 323 min, 95% CI: 322 - 324, n=100), and 8.11% or 36 min for admitted patients (LOS: 408 min, 95% CI: 407 - 409, n=100), all under Mix 2. These CLI-area improvements were smaller than those achieved by adding one provider floating between standard care spaces, suggesting that the baseline staffing of a single provider per CLI care area provided enough capacity to satisfy the CLI demand.

Conclusion: We assessed the performance of five different staffing options, focusing on LOS and LWBS rates, and found that adding an additional provider floating between standard patient ED care spaces lead to the most robust decrease in LOS for both discharged and admitted patients. Interestingly, the improvements of adding an extra provider to CLI-dedicated ED care spaces had an insignificant impact compared to the baseline staffing model.

186 Resident Views on the Educational Impact of COVID-19 at the Beginning and Two Months Into the Pandemic
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Study Objectives: The COVID-19 pandemic obviously had a significant impact on emergency medicine resident education. Hospital guidelines regarding resident contact with COVID-19 patients, drastic changes in emergency department volume, and social distancing rules regarding resident weekly conferences affected their education. We sought to compare how residents viewed the impact of the COVID-19 pandemic on their education at the beginning of the pandemic ("pre-pandemic") and two months later as the restrictions were being lifted ("post-pandemic").

Methods: All emergency medicine residents at a suburban emergency medicine department in an area severely affected by the COVID-19 pandemic were surveyed during the first week that hospital guidelines were enacted (pre-pandemic) and again two months later as restrictions were being lifted (post-pandemic). Using a 5-point Likert scale, residents were asked if they thought their education would be impacted negatively by COVID-19 (1-not at all, 5-very significantly), if they thought holding conference virtually would be less effective (1-they are the same, 5-I won't learn a thing), and if they were afraid to go to work because of COVID-19 (1-not at all, 5-terrified). They were also asked if they should be allowed to see patients with COVID-19 (yes/no). Differences between pre-pandemic and post-pandemic evaluations and 95% confidence intervals were calculated.

Results: All 25 emergency medicine residents participated in the survey: nine PGY-1s, eight PGY-2s and eight PGY-3s. 52% of residents are males. There was no difference between the way residents viewed the impact of COVID-19 on their overall education pre- and post-pandemic (2.8 vs. 2.5, Difference -0.3, CI: -0.9, 0.3, p=NS). Residents’ view of the effectiveness of holding conference virtually pre-pandemic vs. post-pandemic did not change significantly but approached significance (2.3 vs. 1.8, Difference -0.5, CI: -1.1, 0.8, p=0.07) suggesting that residents might have a more positive view of virtual didactics after the pandemic. There was also no difference in how afraid residents were to go to work (2.0 vs. 1.7, Difference -0.3, CI: -0.9, 0.3, p=NS). Pre-pandemic, 40% of residents thought they should be able to evaluate and treat COVID-19 patients compared to 100% post-pandemic (Difference 60%, p<0.001).

Conclusion: At the start of the pandemic, residents expected that their education would be moderately affected by COVID-19. This belief persisted throughout the pandemic. Although most residents initially did not think they should be evaluating and treating COVID-19 patients, two months into the pandemic 100% thought they should.

Table 1. Question-and-answer contents of exported data

| Poster's Intention                  | Number of Posts | % of total (n/total) |
|-------------------------------------|-----------------|----------------------|
| Seeking Information                 | 241             | 53.32 (241/450)      |
| Seeking Discussion                  | 87              | 19.25 (87/450)       |
| Non-question                        | 112             | 24.78 (112/450)      |
| Answering a Question                | 7               | 1.55 (7/450)         |
| Furthering Discussion               | 3               | 0.66 (3/450)         |
| Total                               | 450             | 100                  |

| Comment Features                     | Number of Posts | % of total (n/total) |
|--------------------------------------|-----------------|----------------------|
| Providing Factual Information        | 6               | 1.33 (6/450)         |
| Providing Personal Experiences       | 12              | 2.67 (12/450)        |
| Making an Inquiry - Administrative Questions about the Waiver Process | 56 | 12.44 (56/450) |
| Making an Inquiry - Course Content  | 152             | 33.78 (152/450)      |
| Making an Inquiry - Technologically Related | 66 | 14.67 (66/450) |
| Making an Inquiry - Attendance/Course Credit | 80 | 17.78 (80/450) |
| Providing Opinions                  | 23              | 5.11 (23/450)        |
| Requesting Resources                | 34              | 7.56 (34/450)        |
| Off Topic                           | 21              | 4.67 (21/450)        |
| Total                               | 450             | 100                  |

187 Get Waivered Remote: Comment Analysis of an Interactive Digital Educational Course for Physicians Obtaining a DEA-X Waiver
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Study Objectives: COVID-19 has created opportunities to explore remote learning technologies that can be used to improve the treatment of various patient populations. As a result, many educational conferences moved to digitally broadcasted remote formats. Get Waivered sought to deliver a live, nationwide, digitally broadcast Drug Enforcement Administration (DEA) buprenorphine waiver course. On May 20, 2020, from 10 AM to 6 PM Eastern Standard Time, Get Waivered Remote hosted an interactive virtual DEA-X waiver session. Most sessions target primary care or addiction medicine specialists, and little is known about what questions emergency clinicians have about this process. Information obtained can inform future EM-oriented waiver courses, especially those sponsored by the ACEP. In order to foster information exchange among participants and facilitate maximizing user experience, the Get Waivered Remote platform implemented the Zoom® chat function to provide a forum for real-time information exchange. Aim 1: Better understand participant questions and concerns on obtaining a DEA-X waiver in real-time. Aim 2: Demonstrate how the medical education community can utilize live, synchronized, remote platforms to improve clinician education accessibility. Aim 3: Introduce aspects for improvement and propose additional techniques in digital nudge methodologies to increase the number of waivered clinicians through the use of remote platforms.

Methods: We retrospectively reviewed and analyzed the question-and-answer contents of exported data from the chat. The contents were qualitatively assessed using a framework that evaluated the poster’s intention (PI) and comment features (CF).

Results: PI: A total of 450 posts were analyzed. Seeking information represented 53.32% of posts. Non-question represented 24.78% of posts. The remaining PI categories spanned topics such as seeking discussion, answering a question, or furthering discussion. CF: Making an Inquiry - Course Content represented 33.78% of posts. Making an Inquiry - Attendance/Course Credit and Making an Inquiry - Technologically Related Represented 17.78% and 16.76% of posts, respectively. The remaining CF categories spanned topics such as Making an Inquiry - Administrative Questions about the Waiver Process, Requesting Resources, and others.

Conclusion: Results show that most participants sought to obtain information with the intention of receiving a response from course moderators or facilitators in real-time. It may be worth investigating why there was not as much bidirectional conversation among participants. Most participants posted questions about course content, receiving course credit, and others primarily technologically related. Potential reasons for the last