

Resident Attitudes Towards Naloxone and Prescription Practices

Survey Report

University of Michigan Medical School
Branch Program Capstone Project

Study eResearch ID: HUM00154551
IRB 'Not Regulated' Status

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January 2019

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Introduction

Opioid Addiction and Naloxone

Since its harvesting on the banks of the Euphrates during the Sumerian empire, opium and its related products have entranced and entrapped entire communities (1). In the late 1990s, the pharmaceutical industry aggressively promoted prescription opioids as pain relievers, misrepresenting their risks of addiction (2). Since then, these medications have been proved to be highly addictive and many Americans are struggling with and dying from them at skyrocketing rates. In 2015 over 2 million people suffered from substance abuse related to prescription opioid pain relievers (3). In 2017, an estimated 72,000 people died countrywide from drug overdose, with approximately 70% of these deaths involving opioids (4). In Washtenaw County, 55 people from January to August 2018 have died from opioid-related overdose, a 33% increase from the previous year (5).

To address this national crisis, multiple strategies have been put forth. Paramount to these efforts is the idea of harm reduction, or providing patients with access to information and tools that will help those using narcotics or accidentally ingesting them, avoid the tragic effects of these substances (6). To this aim, Naloxone has been instrumental in preventing opioid-related overdose death not only in the community but also in the hospital setting (7). It has also found uses in non-opioid related situations such as traumatic brain injuries (8).

Purpose of Study

On September 7, 2017, the AMA Opioid Task Force issued updated guidance “encouraging physicians to consider co-prescribing Naloxone when clinically appropriate for patients who are at risk for opioid overdose or might be able to help someone at risk”. In the same article, Dr. Sarah Wakeman states “co-prescribing Naloxone is important to ensure all people being prescribed opioids at risk for overdose have this lifesaving medication at home, similar to how we might think about co-prescribing glucagon to someone with insulin-dependent diabetes” (9).

Yet, despite its obvious benefits and the absence of side effects, many medical providers still express ambivalence regarding prescribing Naloxone (10). Adding to the confusion is the fact that in multiple states, including Michigan, Naloxone is supposed to be available over the counter at pharmacies (though in practice often is not). As a result, many providers may not believe it is necessary for them to prescribe Naloxone.

Nonetheless, given the scope of opioid-related deaths both county and countrywide, it is essential that physicians prescribe Naloxone often and freely. Indeed, a study performed in 2017 showed that providers who had received Naloxone education were eleven times more likely to prescribe it to their patients compared to those who had not received such education

(11). Before interventions can educate, however, it is important to understand the current prescription practices and attitudes of providers. To this aim, the following survey was conducted in conjunction with the Addiction Psychiatry department and distributed electronically to residents at the University of Michigan. The goal of the survey was to ascertain resident prescription practices and attitudes towards Naloxone.

Methods

This was an IRB-exempt, anonymous survey using Google Qualtrics, an internet-based data collection program. The study population was 103 residents from multiple programs at the University of Michigan. Program directors were contacted and asked to send the survey link to their residents. There was one follow-up email reminder to residents to fill out the survey. The survey collected individual residency program, residency program year, and answers to 35 multiple-choice questions regarding prescription practices and attitudes towards Naloxone. The survey choices for prescription practices of Naloxone were varied, but for the Inpatient and Outpatient sections were: N/A, 0%, 1-10%, 11-25%, 26-50%, 51-100%. The survey choices for attitudes towards Naloxone were: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree.

Data Curation

Prior to doing the survey analysis, it was necessary to carry out a few data curation steps on the raw returned forms, related to missing or invalid/inconsistent answers. In a number of cases for example, particularly for the Attitudes and Inpatient/Outpatient questions, there were a small number of missing answers. For the Attitudes questions, with 5 choices from “Strongly Disagree” to “Strongly Agree”, I filled in the missing responses with the default “Neutral” value. Likewise, for the Inpatient/Outpatient series of questions, with percentage choices or “N/A” as responses, I filled in any missing responses with the default “N/A” value, as the most likely intended response.

Beyond this, there were problems with questions Q4 (“Have you ever prescribed a Naloxone rescue kit?”), Q8 (“If you have prescribed Naloxone before, in what setting was it?”), and to a lesser extent, Q5 (“If you have prescribed Naloxone previously, how did you provide the prescription?”)—which contributed to the appearance of some anomalous responses.

In the case of Q4, the use of the term “Naloxone rescue kit” confused some (13) respondents as being a specialized form of Naloxone product with which they were not familiar (and thus answered “No”), instead of meaning any Naloxone product in general. The confusion became obvious by looking at their subsequent answers to Q5-Q8, which clearly indicated that they had indeed prescribed some form of Naloxone. For these 13 cases, I decided to modify their Q4 responses from “No” to a new category (“Yes”), indicating that they had prescribed Naloxone, but with an unspecified ‘number of times’ count.

In the case of Q8, I should have provided a default option “I have not prescribed Naloxone”, as I had for Q5, Q6, and Q7. This was an oversight. Many respondents justifiably skipped this question; others appeared to simply fill in the type of setting “Inpatient/ED” or “Outpatient” in

which they were working. By examining the skips and their responses to Q4-Q7, I was able to accurately reconstruct the effective “I have not prescribed Naloxone” option/responses for Q8.

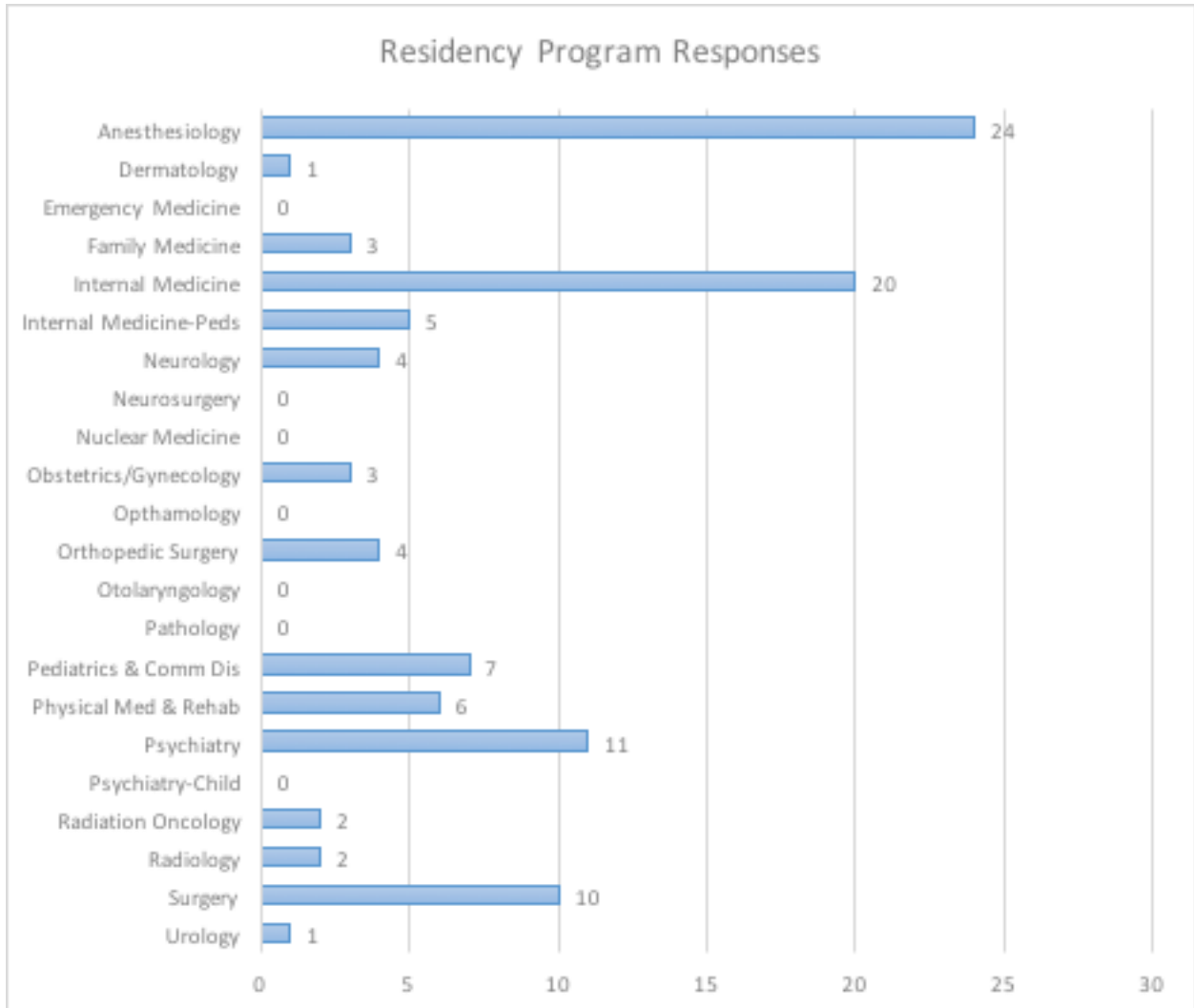
Finally, in the case of Q5, the question asks how the prescription was provided, with the options “Script for pharmacy”, “Naloxone given directly to patient”, or “Other”. It might have been better to ask “How was the Naloxone provided?”, because in 4 cases out of 14 where “Naloxone given directly to patient” was selected for Q5, in Q6 and Q7 one of these was marked “I have not prescribed Naloxone” while the other was marked “The use of Naloxone was not explained” (Q6) or “Instructions were not provided” (Q7)—presumably under the (unintended) interpretation that if the Naloxone was given directly to the patient (for example in the ED), then technically there was no prescription.

The intention of Q5 was to consider both a script, or the Naloxone directly, as alternative forms of ‘prescribing Naloxone’, and thus to make these 4 cases consistent with the others of this type, I replaced the “I have not prescribed Naloxone” responses (option 1) in Q6 and Q7, with the corresponding option 2 above (“use not explained”, or “instructions not provided”) for Q6 (twice) and Q7 (twice), respectively.

Respondents

A total of 103 residents responded to the survey; individual respondents were characterized by two variables, Residency Program and Program Year.

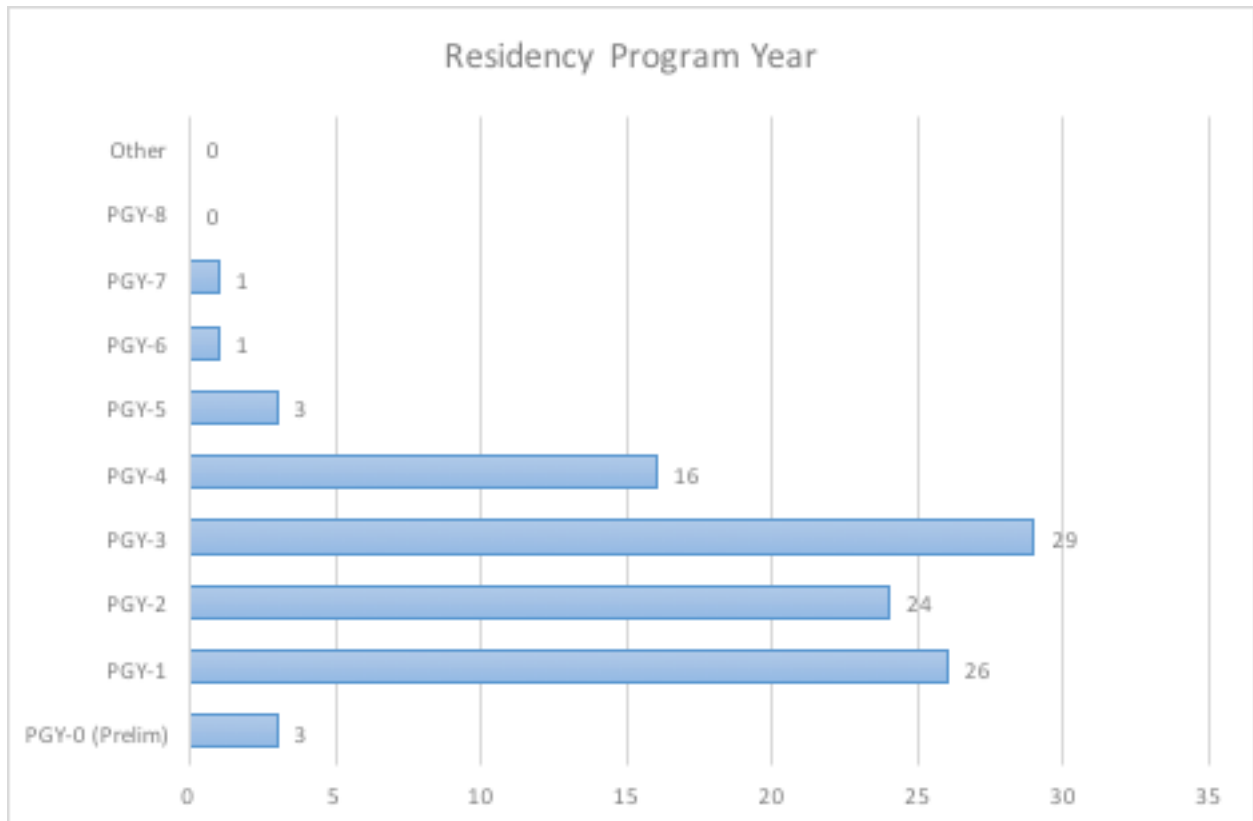
Participating Programs and Years



R0 - Please check which program(s) you are a resident of

As illustrated above, 22 residency programs were invited to participate in the survey; 15 returned responses. Of these, 2 returned 20 or more responses (Anesthesiology and Internal Medicine), 2 others returned 10 or more (Psychiatry and Surgery), and 3 others returned at

least 5 (Internal Medicine-Pediatrics, Pediatrics and Communicable Diseases, and Physical Medicine and Rehabilitation).



R1 - Please select your year of residency

The chart above shows the distribution of program years across all 103 respondents. The largest numbers (almost 80%) are from the first three residency years.

Analysis Overview

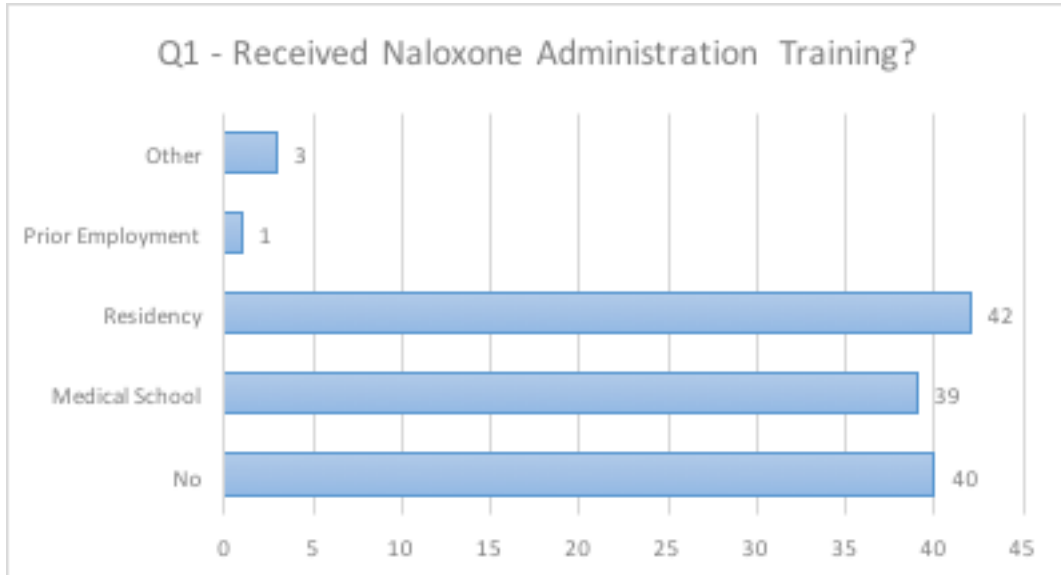
In the sections that follow, the results are summarized for all 35 survey questions, subdivided into four subsets. The chart for each survey question or pair, over *all* participants, is displayed first, followed by summary comments for the entire group along with major characteristics and differences in the responses of the (larger) program groups. In order to respect survey anonymity, I have not subdivided observations about responses within specific programs by the exact residency year.

Finally, for most questions, the total number of responses is 103 (one per survey), but there are several questions (Q1, Q2, Q3, Q6, Q7, Q8) where multiple responses were allowed, so that the total is greater than 103.

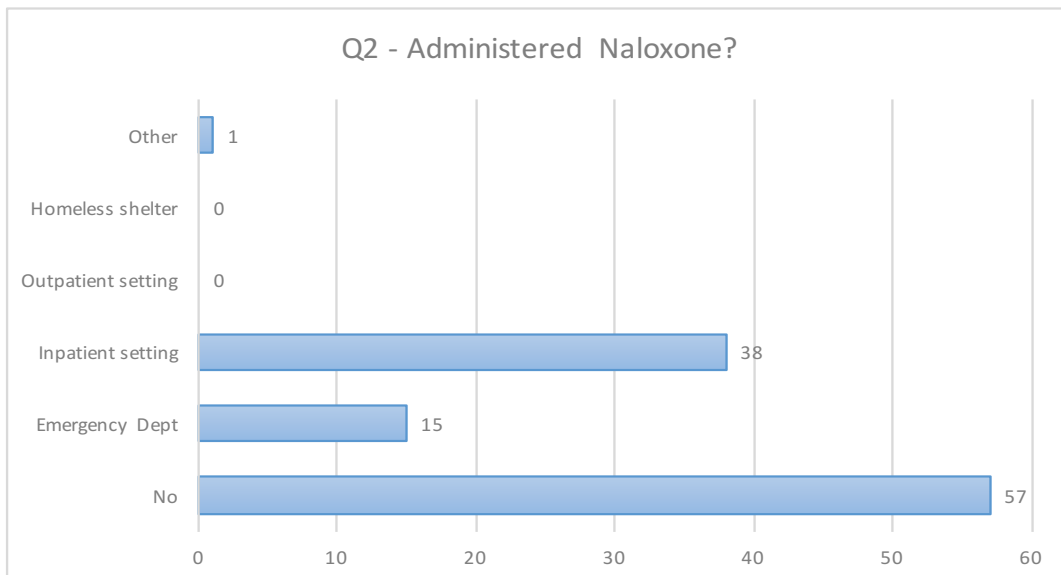
Basic Practices Questions (Q1 - Q8)

The Basic Practices questions cover naloxone administration, prescriptions, and the provision of explanations and instructions to the patient regarding its usage.

Q1-2 Naloxone Administration



Q1: Have you previously received training about the administration of naloxone to reverse opioid overdose? If so, where? (check all that apply)

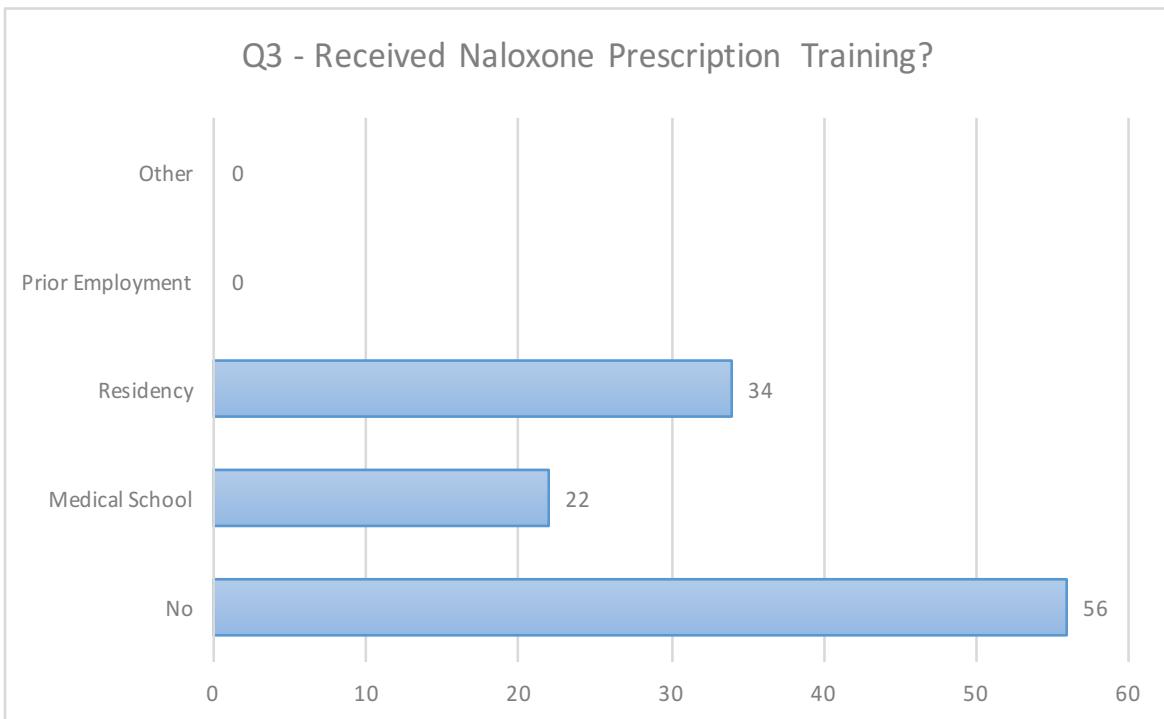


Q2: Have you ever administered naloxone? If so, where? (check all that apply)

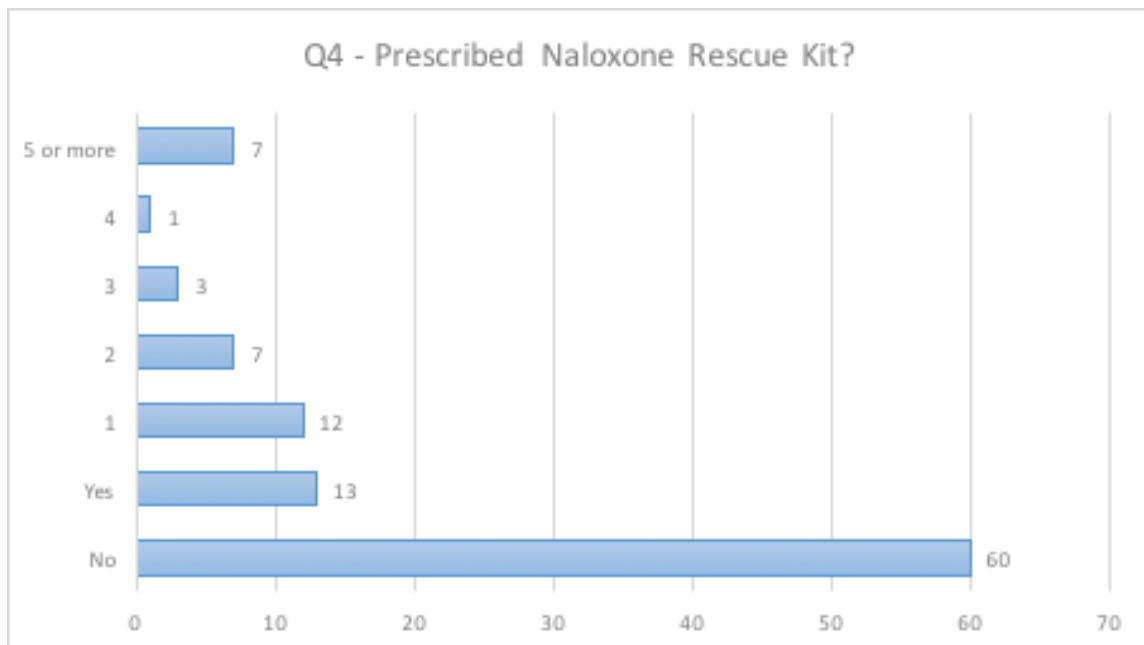
Q1 – Almost 40% of the 103 respondents have not had Naloxone *administration training*; the remaining 63 did, primarily during residency (41% of the total) or while in medical school (37%)—or both (21%). Most of the ‘No’ responses came from Anesthesiology (25% of program respondents, PG-Years 1&2), Dermatology (1 of 1), Internal Medicine (about 50%, mostly PG-Years 1&2), Neurology (3 of 3), Psychiatry (about 50%), and Radiation Oncology (2 of 2).

Q2 – Regarding administration, 55% of the 103 respondents have not *administered* Naloxone; of the rest (46), the location was primarily in an inpatient setting (37% of the total), and secondarily in the Emergency Department (15%)—or both (7%). The main disciplines reporting administration of Naloxone included Anesthesiology, Internal Medicine (including IM-Pediatrics), Physical Medicine, and Surgery.

Q3-5,8 Naloxone Prescription



Q3: Have you ever received training/education about naloxone prescribing? If so, where? (check all that apply)

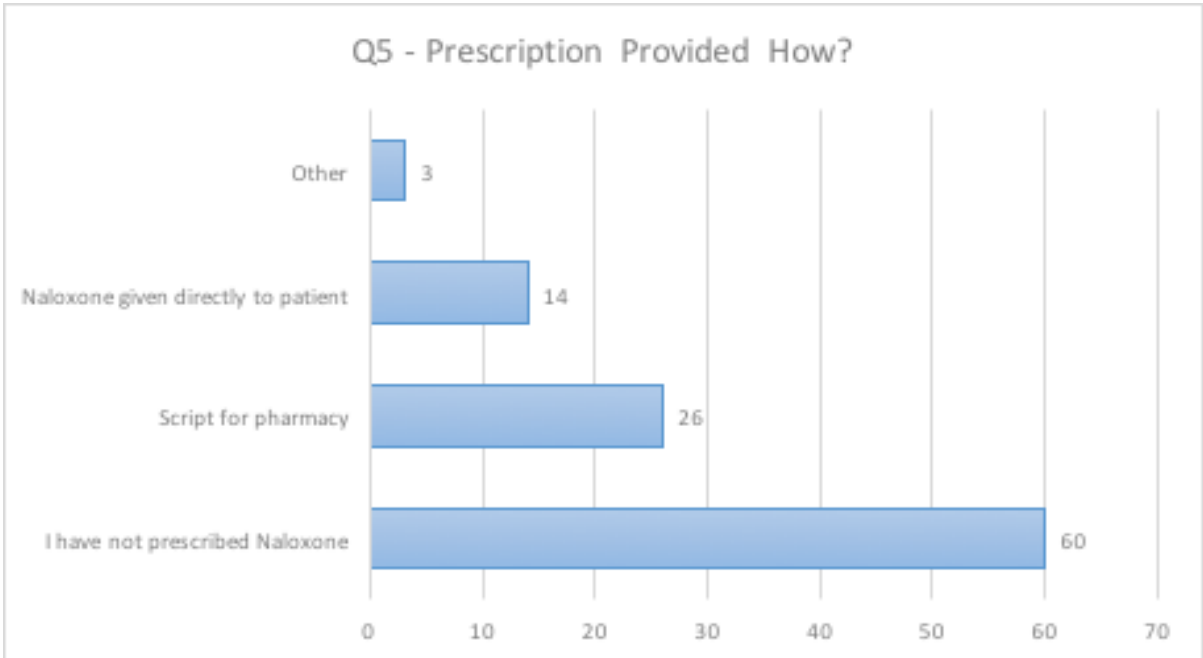


Q4: Have you ever prescribed a naloxone rescue kit? If so, how many times?

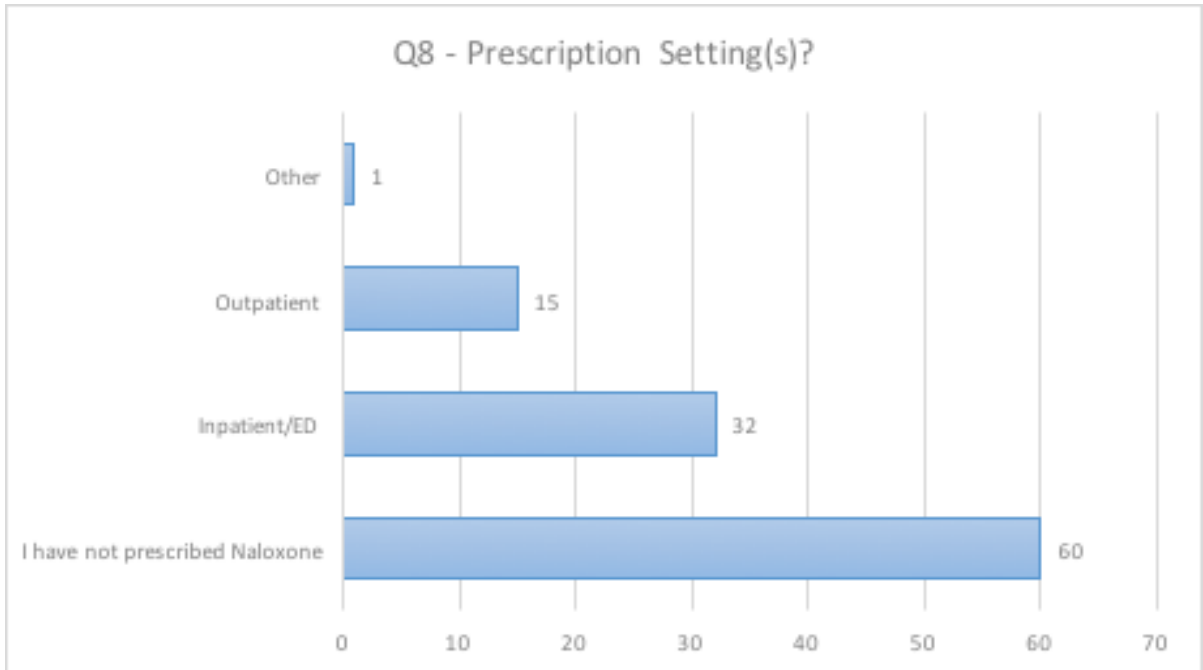
Q3 – About 54% of the 103 respondents have not received Naloxone *prescription training*; of the rest (47), 33% of the total received it during Residency, and 21% during medical school—or both (9%). The respondents that had not received training came primarily from Anesthesiology (about 60% of program respondents, mostly from PG-Years 1&2), Internal Medicine (60%, mostly PG-Years 2&3), Neurology (2 of 3), Obstetrics/Gyn (3 of 3), Pediatrics (6 of 7), Physical Medicine (3 of 6), and Surgery (50% of program respondents, mostly later PG-Years, 4-7). The program with the highest rate of respondents reporting Naloxone prescription training was Psychiatry (almost 75%), followed by IM-Pediatrics (4 of 6).

Q4 – Close to 60% of the 103 respondents have not *prescribed* any form of Naloxone; of the rest (43), 13% did prescribe it in some form (not considered to be a ‘kit’), but with no count [see comments in Data Curation section of the Introduction], while almost 30% have prescribed it one or more times. The 7 respondents who prescribed it 5 or more times were from several programs—Internal Medicine (2), IM-Pediatrics, Neurology, Orthopedic Surgery, and Psychiatry (2). By far the program with the most instances of prescriptions was Psychiatry, followed by Internal Medicine, and Orthopedic Surgery.

Considering the 60 of 103 respondents who had not prescribed Naloxone at all [**which is also directly applicable to Questions 5, 6, 7, and 8**], most were from Anesthesiology (71% of program respondents), Dermatology (1 of 1), Internal Medicine (55%), Obstetrics/Gyn (3 of 3), Pediatrics (7 of 7), Radiation Oncology (2 of 2), and Surgery (80%).



Q5: If you have prescribed naloxone previously, how did you provide the prescription?



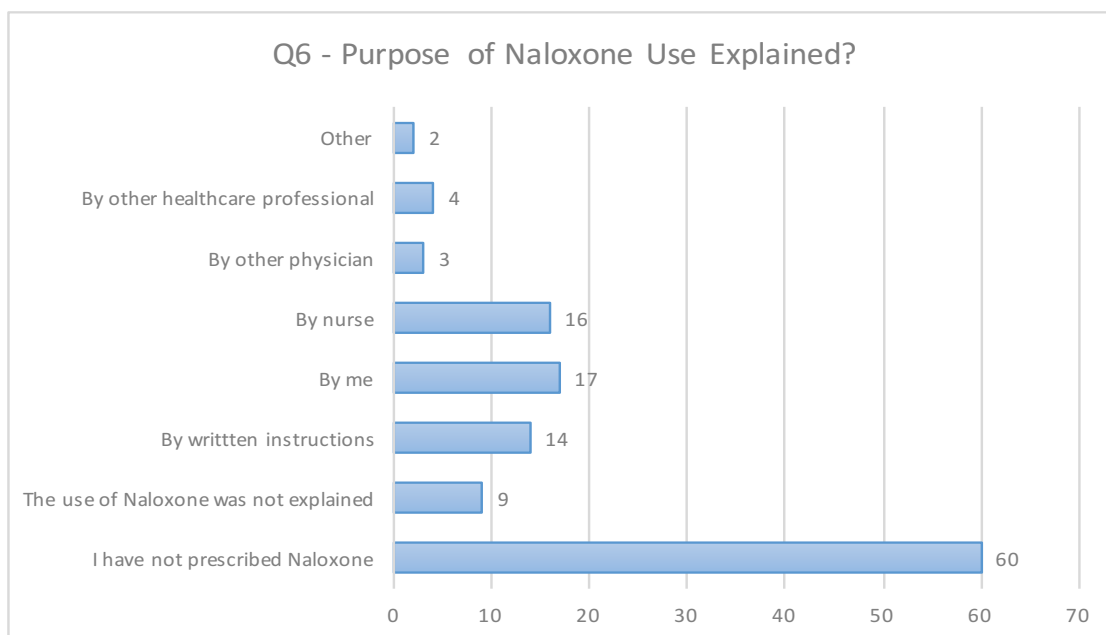
Q8: If you have prescribed Naloxone before, in what setting was it? (check all that apply)

Q5 – Of the more than 40% of the 103 respondents that provided Naloxone to patients, about 2/3 *wrote prescriptions*, while the rest gave Naloxone *directly to the patient*. The programs that primarily provided pharmacy scripts were Internal Medicine (also IM-Pediatrics), and Psychiatry. Anesthesiology and Surgery were more likely to give the drug directly to the patient.

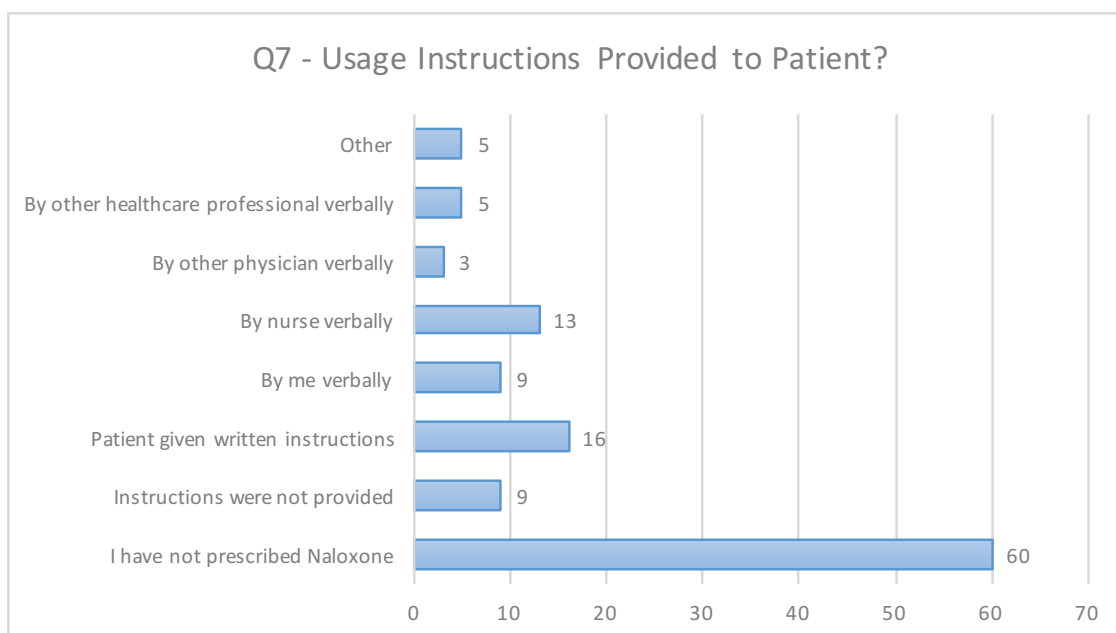
Q8 – Likewise, of the more than 40% that provided Naloxone to patients, about 2/3 did so in an Inpatient/ED *setting*, and the remaining in an Outpatient or other setting.

Given the similarity of the Q5 and Q8 charts, one might guess that Naloxone is normally given directly in the Outpatient setting, and via written prescription in the Inpatient/ED setting. This turned out not to be true, but it was true that scripts were almost always provided in the Outpatient setting, and likewise when Naloxone was given directly to the patient, it was almost always in an Inpatient/ED setting.

Q6-7 Explanations/Instructions



Q6: If you have prescribed Naloxone previously, was the purpose of its use explained to the patient? If so, by whom? (check all that apply)



Q7: If you have prescribed Naloxone previously, were instructions provided to the patient as to how to use Naloxone? If so, by whom and how? (check all that apply)

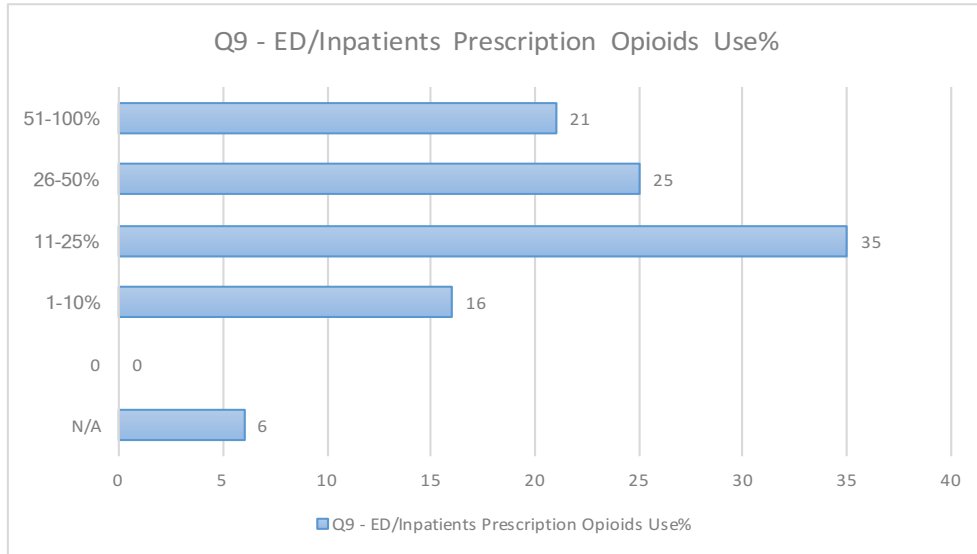
Q6 – Of 42% of total respondents that provided Naloxone, the *purpose of the drug was explained* to the patient about 80% of the time, in a variety of ways but most commonly by the resident respondent, or a nurse, or via written instructions. There were no clear differences between programs except that Internal Medicine and Psychiatry cited a wider set of options as to how the explanation was provided.

Q7 – Similarly, of the 42% percent that provided Naloxone, *instructions for its use were provided* to the patient about 80% of the time, most commonly via written instructions, or by a nurse, or the resident respondent. Again, Internal Medicine and Psychiatry cited a wider set of options as to how the instructions were provided compared to other programs—probably due to having more instances of prescribing the drug.

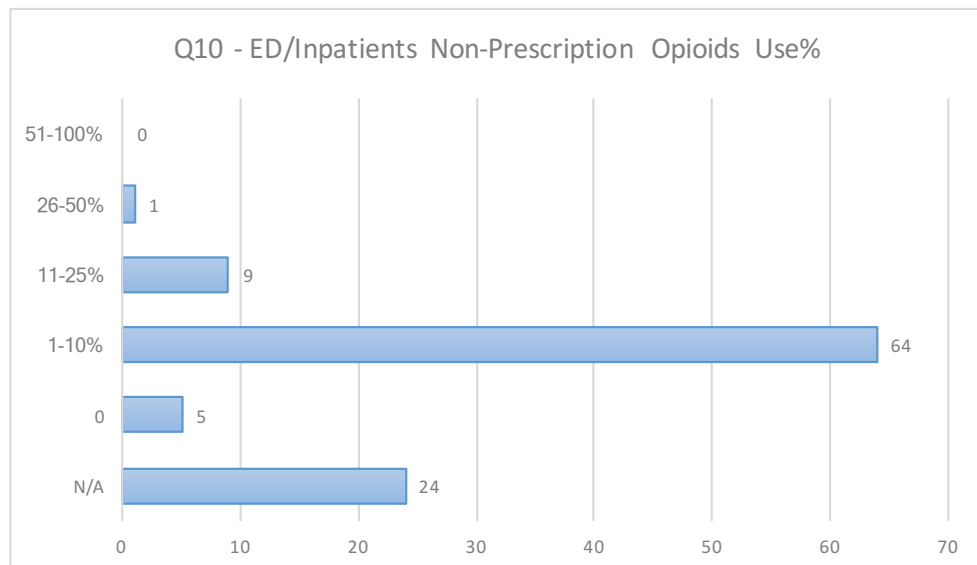
Inpatient Setting Questions (Q9 - Q14)

The Inpatient Setting questions cover what percentages of patients in this setting use or misuse non-/prescription opioids, and how many received Naloxone and instructions for how to use it.

Q9-10 Inpatient Opioid Users



Q9: In the inpatient/ED setting, approximately how many of your patients over the last year used prescription opioids (vicodin, percocet, oxycodone, demerol, dilaudid, fentanyl, morphine, codeine, etc.)?

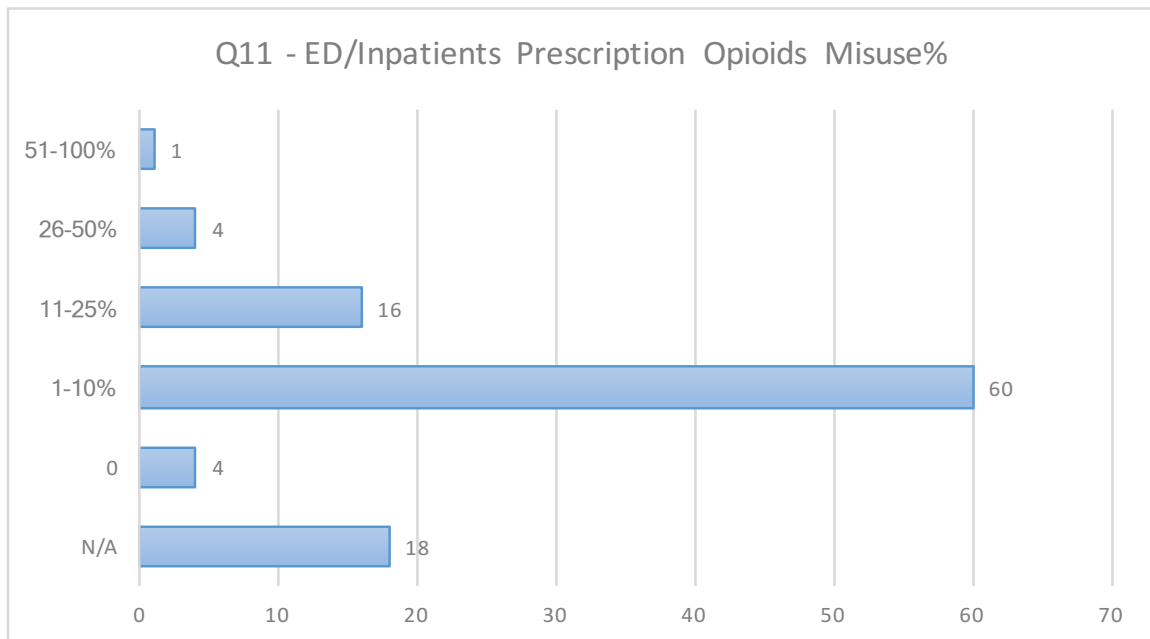


Q10: In the inpatient/ED setting, approximately how many of your patients over the last year used opioids not obtained from a prescription?

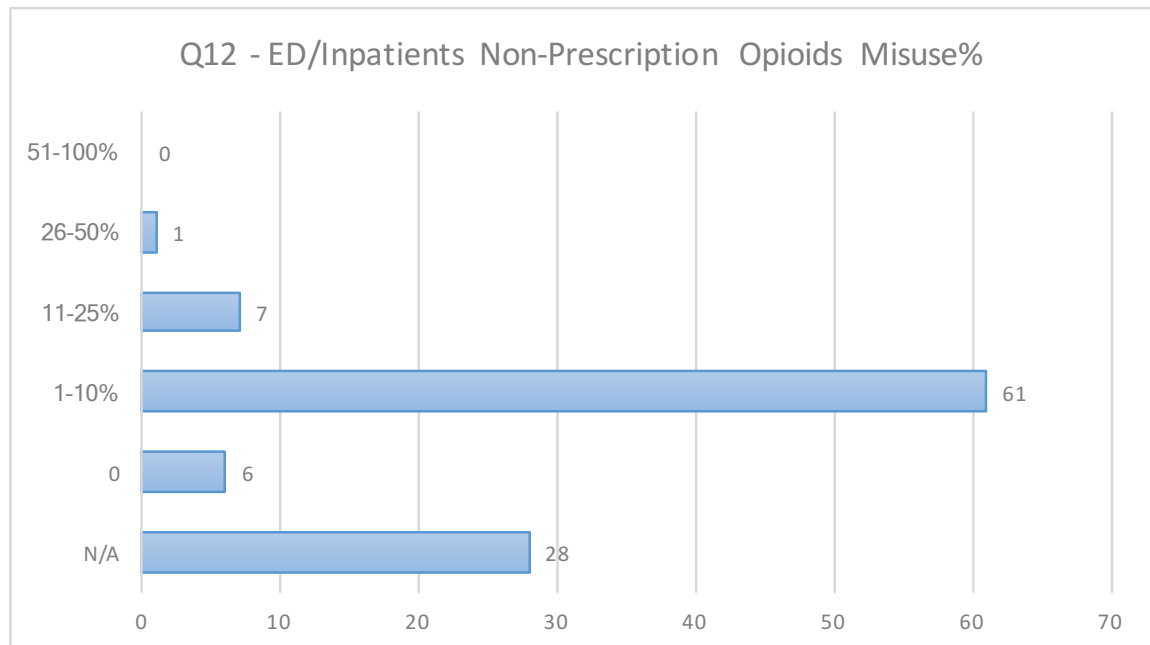
Q9 – In the inpatient setting, around 95% of respondents reported *prescription opioid use* by some non-zero percentage of patients, with the most common answer (34% of all respondents) being 11-25%, followed by 25-50% (24%), 51-100% (20%), and then 1-10% (16%). Not surprisingly the higher percentages of patients were found especially in Orthopedic Surgery and Surgery, with intermediate percentages in Anesthesiology, Internal Medicine, IM-Pediatrics, Neurology, Obstetrics/Gyn, and Physical Medicine, and lower amounts in Pediatrics and Psychiatry. The 6 N/A responses came from Dermatology (1 of 1), Radiation Oncology (2 of 2), Radiology (1 of 2), and Anesthesiology (2 of 24).

Q10 – The inpatient picture is significantly different for *non-prescription opioid use*. There are now 24 N/A responses, most new ones (9) coming from Anesthesiology, with some from Pediatrics, Physical Medicine, and a few other disciplines. Of the other 79 (77%) respondents, by far the most frequent answer (62% of 103) was 1-10%, meaning a small percentage of patients using non-prescription opioids, followed by 11-25% (9%), with the higher percentages reported in Internal Medicine, Surgery, and Orthopedic Surgery.

Q11-12 Inpatient Opioid Misusers



Q11: In the inpatient/ED setting, approximately how many of your patients using opioids over the last year misused prescription opioids?

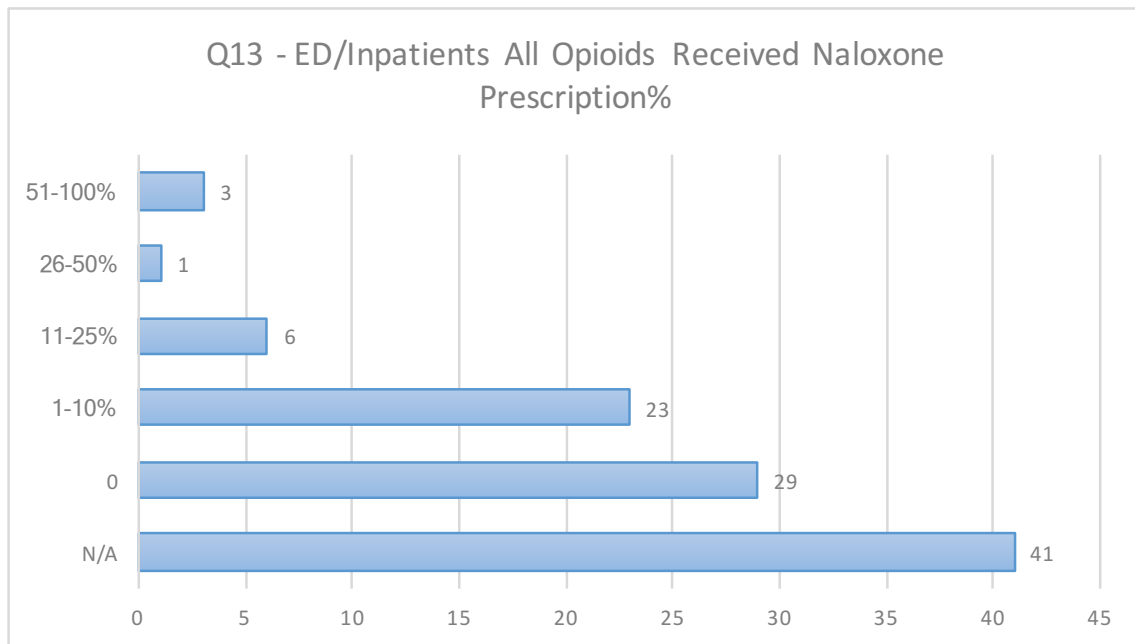


Q12: In the inpatient/ED setting, approximately how many of your patients using opioids over the last year misused opioids not obtained from a prescription?

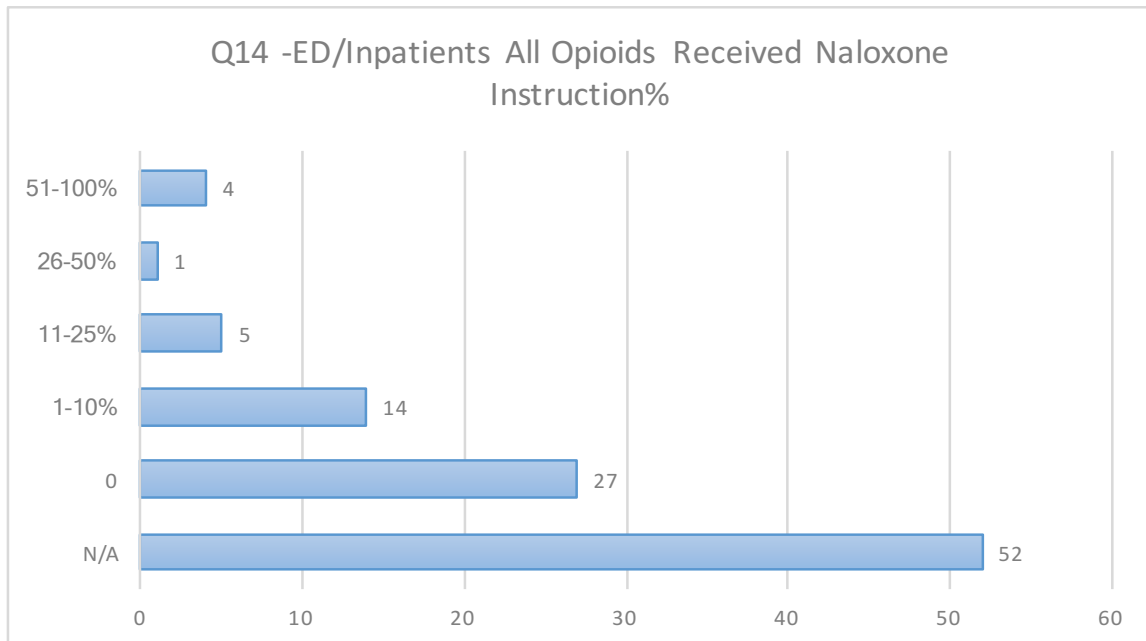
Q11 – With regard to inpatients who *misused prescription opioids*, the Q11 chart shows fairly low percentages overall, with a distribution quite similar in fact to the reported user percentages of non-prescription opioids in the previous Q10 chart. There are 18 N/A responses, and after that 58% of the 103 overall responses were for 1-10%, a small percentage of patients, followed by 16% reporting 11-25% levels. Higher percentages of patients were reported by participants in Internal Medicine, Surgery, and Orthopedic Surgery. The largest number of N/A responses (10) were found in Anesthesiology.

Q12 – For the case of inpatients who *misused non-prescription opioids*, the distribution of responses is somewhat similar. There are now 28 N/A responses, an additional 10 from Q11, distributed across the most numerous services (except Psychiatry). The most common value reported is again 1-10% of patients, by a similar percentage of total respondents (59%), with the next highest report of 11-25% (7% of respondents). The higher percentage responses are again mostly found in Internal Medicine, Surgery and Orthopedic Surgery. The highest numbers of N/A responses are likewise in Anesthesiology (12), with others from fields including Dermatology (1 of 1), Physical Med (4 of 6), Radiation Oncology (2 of 2), and Urology (1 of 1).

Q13-14 Inpatient User/Misusers & Naloxone



Q13: In the inpatient/ED setting, approximately how many of your patients over the last year that used or misused opioids received a Naloxone prescription?



Q14: In the inpatient/ED setting, approximately how many of your patients over the last year that used or misused opioids received Naloxone use instruction?

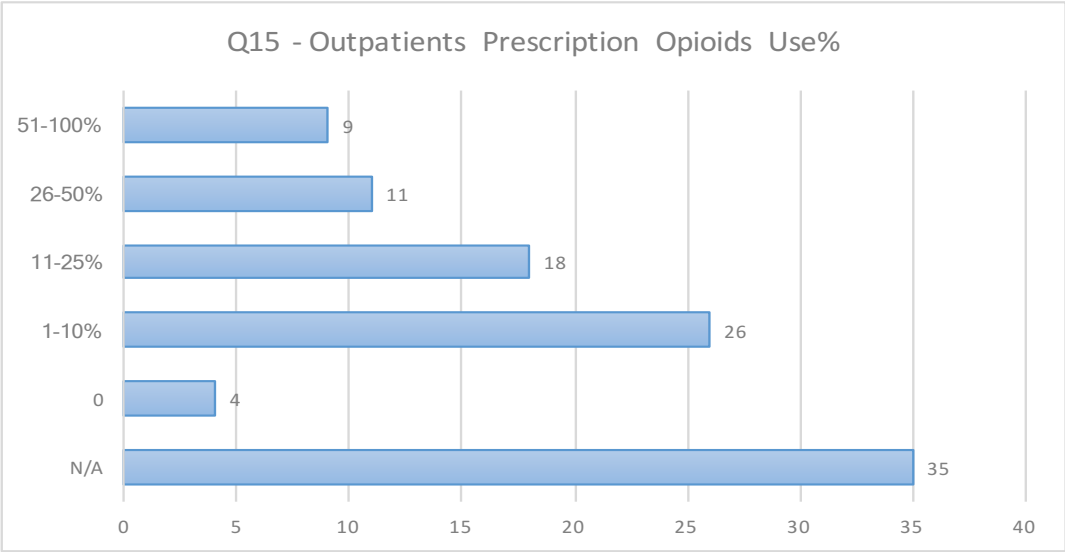
Q13 – Question 13 concerns what percentage of all opioid inpatients *received a Naloxone prescription*. There were 41 N/A responses, the largest group coming from Anesthesiology (17, or 71% of the program respondents), with others scattered across multiple disciplines (except Psychiatry). Of the remaining 62 respondents, the most common response (28% of 103 total) was '0'—meaning none of the patients received Naloxone. Most of these zeros came from respondents in Internal Medicine, IM-Pediatrics, Pediatrics, and Surgery. The next highest answer was 1-10% (22% of respondents), dropping sharply from there for the higher patient percentages. The highest patient percentage responses came from Psychiatry, which by far had the highest average percentage of patients receiving Naloxone prescriptions.

Q14 – Results were similar for Question 14, related to what percentage of all opioid inpatients *received Naloxone use instruction*. Here the number of N/A responses increased by 11 to 52 (50% of total respondents), with the main additions coming from Anesthesiology and Internal Medicine (3 each). Of the remaining 51 responses, the most common answer was again '0' (26% of 103 total), and secondarily 1-10% (14%). The zero responses were mostly from Internal Medicine and IM-Pediatrics. The higher patient percentage responses were again largely associated with Psychiatry.

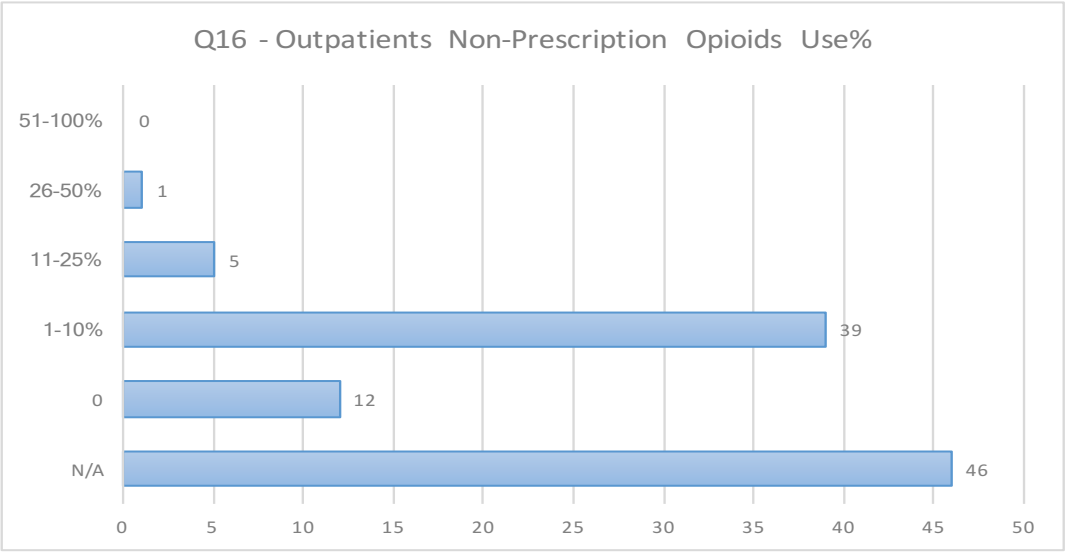
Outpatient Setting Questions (Q15 - Q20)

The Outpatient Setting questions cover what percentages of patients in this setting use or misuse non-/prescription opioids, and how many received Naloxone and instructions to use it.

Q15-16 Outpatient Opioid Users



Q15: In the outpatient setting, approximately how many of your patients over the last year used prescription opioids?

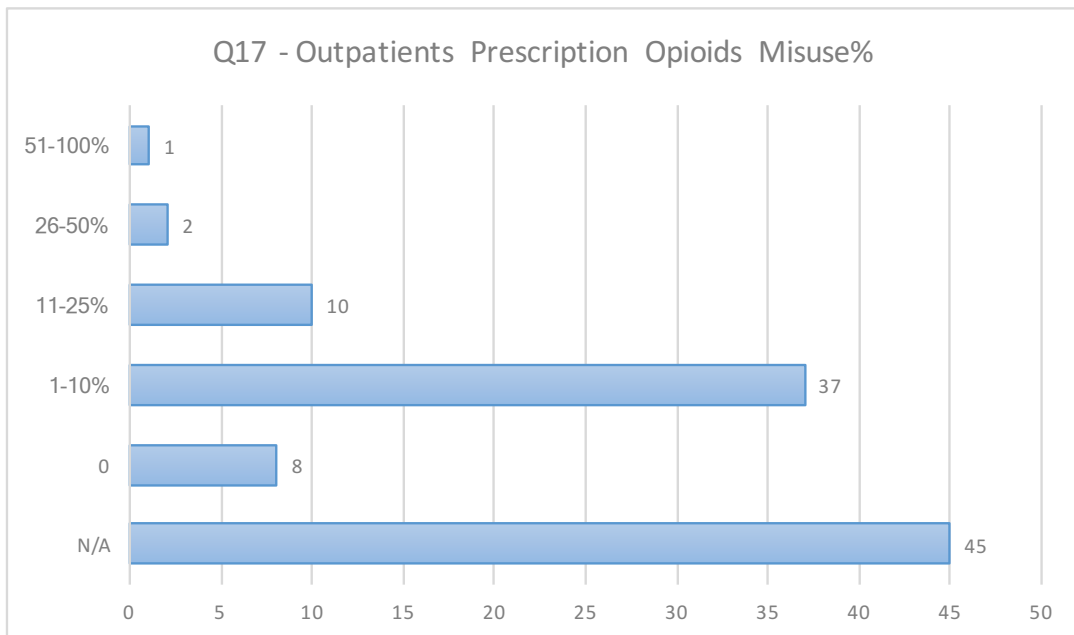


Q16: In the outpatient setting, approximately how many of your patients over the last year used opioids not obtained from a prescription?

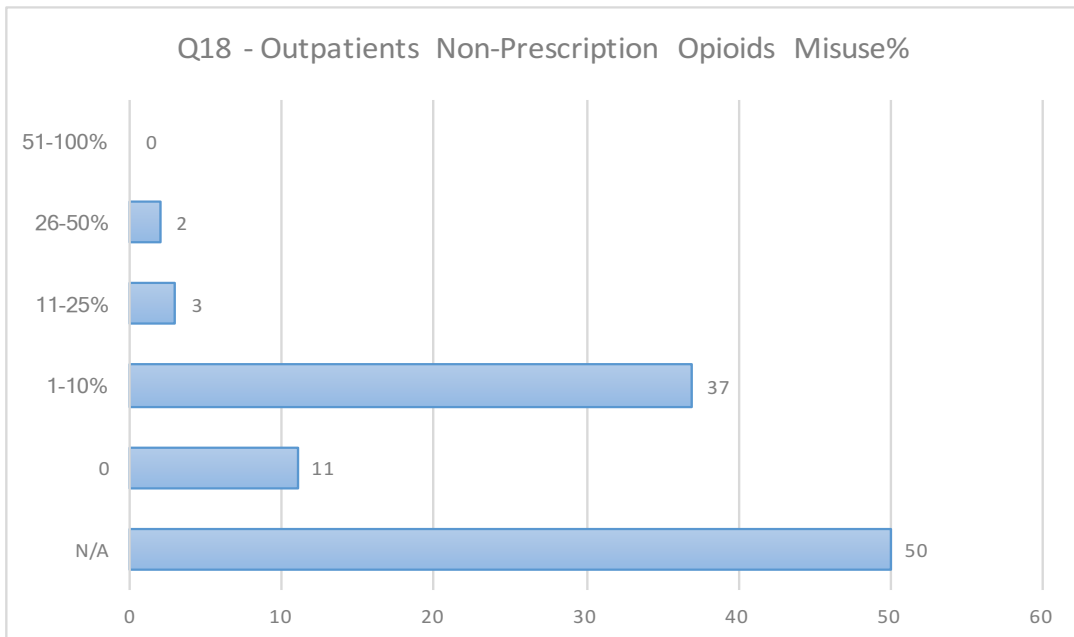
Q15 – In the outpatient setting, around 63% of respondents reported *prescription opioid use* by some non-zero percentage of patients, with the most common answer (25% of all respondents) being 1-10%, followed by 11-25% (17%), 26-50% (11%), and 50-100% (9%). The higher percentages of patients were primarily found in Anesthesiology, Orthopedic Surgery, Radiation Oncology and Surgery, with intermediate levels for Internal Medicine, Physical Medicine, and Psychiatry. In addition, there were many more N/A responses to this outpatient setting question compared to the same question for inpatients (Q9)—35 vs. 6. By far the largest group of these was in Anesthesiology (75% of program respondents), followed by Psychiatry (45%), and Surgery (40%).

Q16 – The outpatient picture is somewhat different for *non-prescription opioid use*. There are now 11 more N/A responses, 46 vs. 35, with the new ones scattered across disciplines. In addition there are more '0' responses, 12 vs. 4, and more of the most common 1-10% response, 39 vs. 26, with a corresponding reduction in the higher level percentages. When compared to the matching inpatient question (Q10), the main differences with the outpatient answers are more N/A and 0 responses for the outpatients, with correspondingly lower counts for the most common 1-10% response (39 vs. 64).

Q17-18 Outpatient Opioid Misusers



Q17: In the outpatient setting, approximately how many of your patients using opioids over the last year misused prescription opioids?

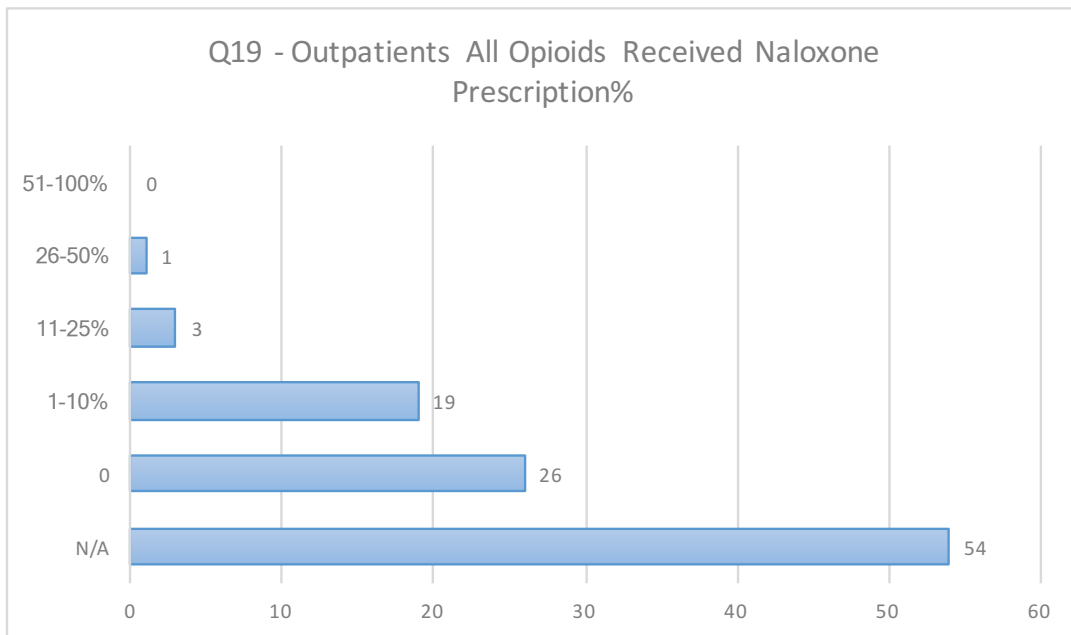


Q18: In the outpatient setting, approximately how many of your patients using opioids over the last year misused opioids not obtained from a prescription?

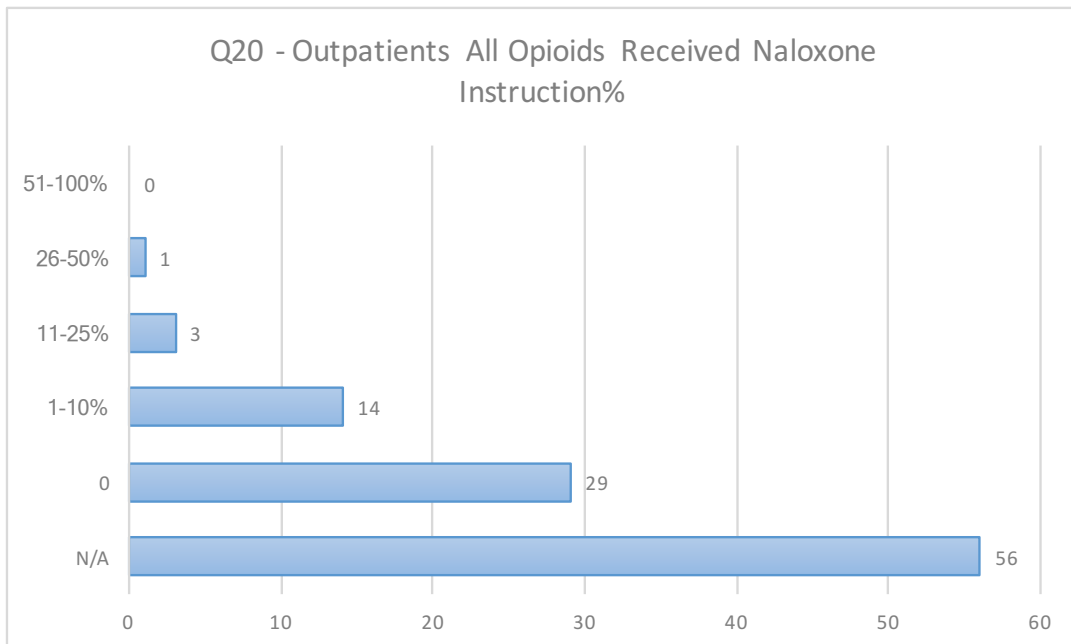
Q17 – With regard to outpatients who *misused prescription opioids*, the Q17 chart shows low percentages overall, with a distribution quite similar to the reported user percentages of non-prescription opioids in the previous Q16 chart (much like the inpatient case). There are 45 N/A responses, and after that 36% of the 103 overall responses were for 1-10%, indicating a low percentage of patients, followed by 10% reporting 11-25% levels. Higher percentages of patients were mostly found in Internal Medicine, Psychiatry, and Surgery. The highest average percentage of such patients was in Internal Medicine. The largest number of N/A responses (20, 83% of program responses) were found in Anesthesiology, followed by Psychiatry (45%), and Surgery (40%). Compared to the corresponding inpatient chart (Q11), the Q17 outpatient chart has considerably more N/A responses (45 vs. 18), and inversely fewer 1-10% (37 vs. 60), and 11-25% (10 vs. 16) responses.

Q18 – For the case of outpatients who *misused non-prescription opioids*, the distribution of responses is somewhat similar to the prescription opioids case above it in Q17. There are several less 11-25% responses, and a few more N/A and '0' responses. The number of N/A responses is now 50, again mostly concentrated in Anesthesiology (88% of program respondents), Surgery (60%), Physical Medicine (50%), and Psychiatry (45%). There are '0' responses in Neurology (3 of 3), Pediatrics (3 of 6), and others scattered elsewhere. The most common patient percentage response is again 1-10% (37, or 36% of the 103 total responses). The very few higher patient percentage responses are scattered over different services. The differences between this Q18 chart for outpatients and the corresponding Q12 chart for inpatients, include many more N/A and some '0' responses for the outpatient case, and far fewer 1-10% and some 11-25% responses, than for the inpatient case.

Q19-20 Outpatient User/Misusers & Naloxone



Q19: In the outpatient setting, approximately how many of your patients using opioids over the last year that used or misused opioids received a Naloxone prescription?



Q20: In the outpatient setting, approximately how many of your patients over the last year that used or misused opioids received Naloxone use instruction?

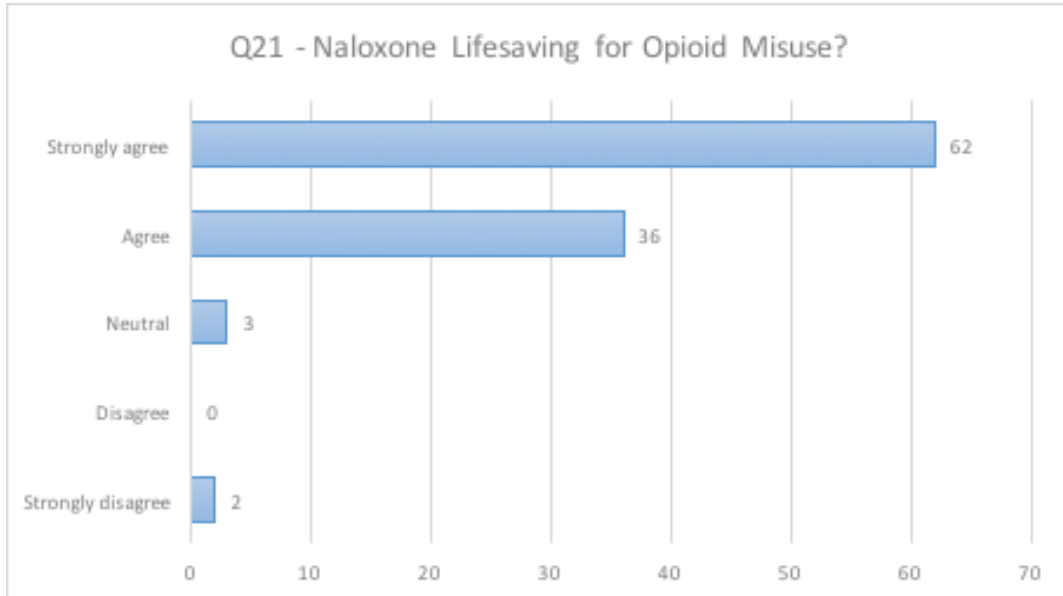
Q19 – Question 19 concerns what percentage of all opioid outpatients *received a Naloxone prescription*. There were 54 N/A responses, the largest group coming from Anesthesiology (21, or 88% of the program respondents), followed by Surgery (60%), Physical Medicine (3 of 6), Orthopedic Surgery (2 of 4), Psychiatry (45%), Pediatrics (3 of 7), and Internal Medicine (35%). Of the other 49 responses, the most common answer was ‘0’ (25% of total), followed by 1-10% (14%), with only a few higher percentages. The zero responses were scattered across disciplines; most of the non-zero responses were found in Internal Medicine (8), followed by Psychiatry (4) and Anesthesiology (3). Compared to the corresponding inpatient chart (Q13), the outpatient case had 13 more N/A responses, with corresponding small decreases in the ‘0’, 1-10%, and 11-25% answers.

Q20 – Results were similar for Question 20, concerning what percentage of all opioid outpatients *received Naloxone use instruction*. Small increases in the N/A and ‘0’ responses for Q20, were compensated by fewer responses of 1-10% compared to Q19. The most changes were seen in Internal Medicine. Compared to the corresponding inpatient case (Q14), the outpatient chart shows a few more N/A and ‘0’ responses, and a few less higher percentage responses (11-25%, 26-50%, and 50-100%).

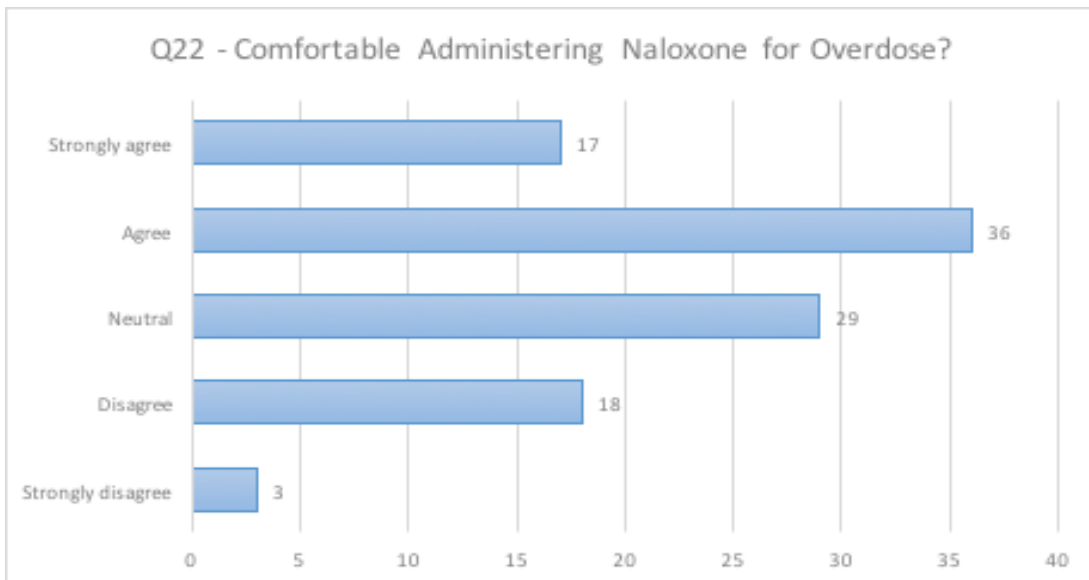
Attitudes Questions (Q21 - Q35)

The Attitudes questions cover opinions related to Naloxone intervention, availability, and risks, along with resident confidence in providing Naloxone, and the level of institutional use.

Q21-23 Intervention



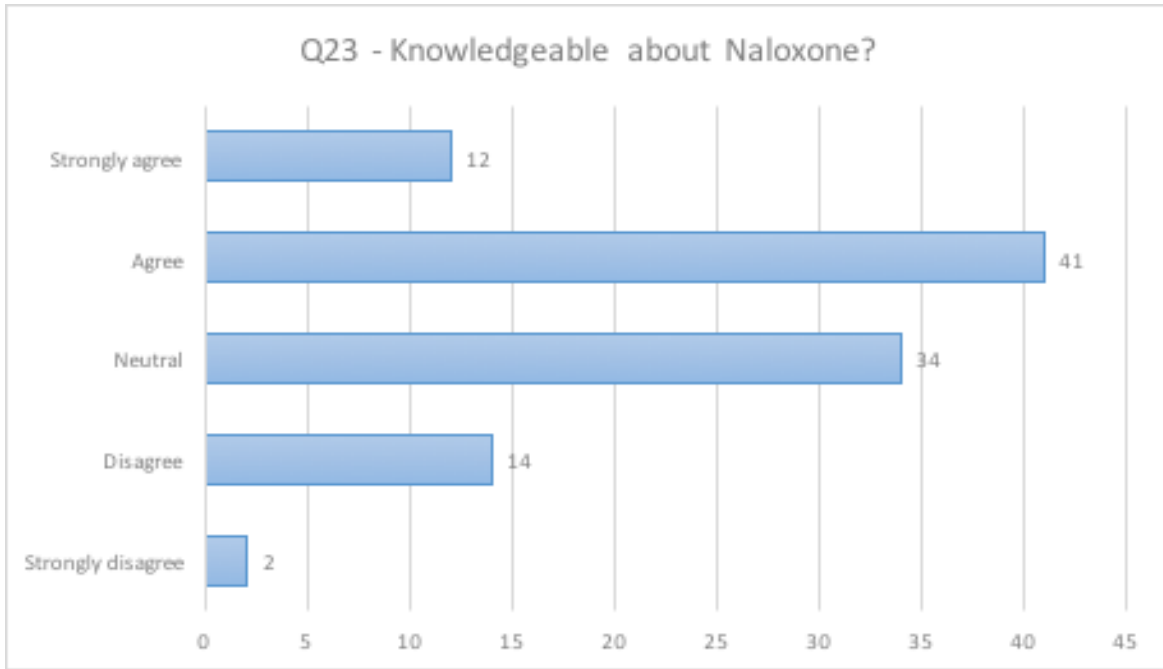
Q21: Naloxone is a lifesaving intervention for patients that misuse opioids



Q22: I feel comfortable administering Naloxone in an overdose situation

Q21 – The first of the Attitudes questions asks *if Naloxone is a lifesaving intervention* for those who misuse opioids. There is stunning agreement on this question; 98 (95%) of respondents either agreed or strongly agreed with the statement, with only 2 strong disagreements and 3 neutral responses (5% total). These 5 responses all appear in different specialties.

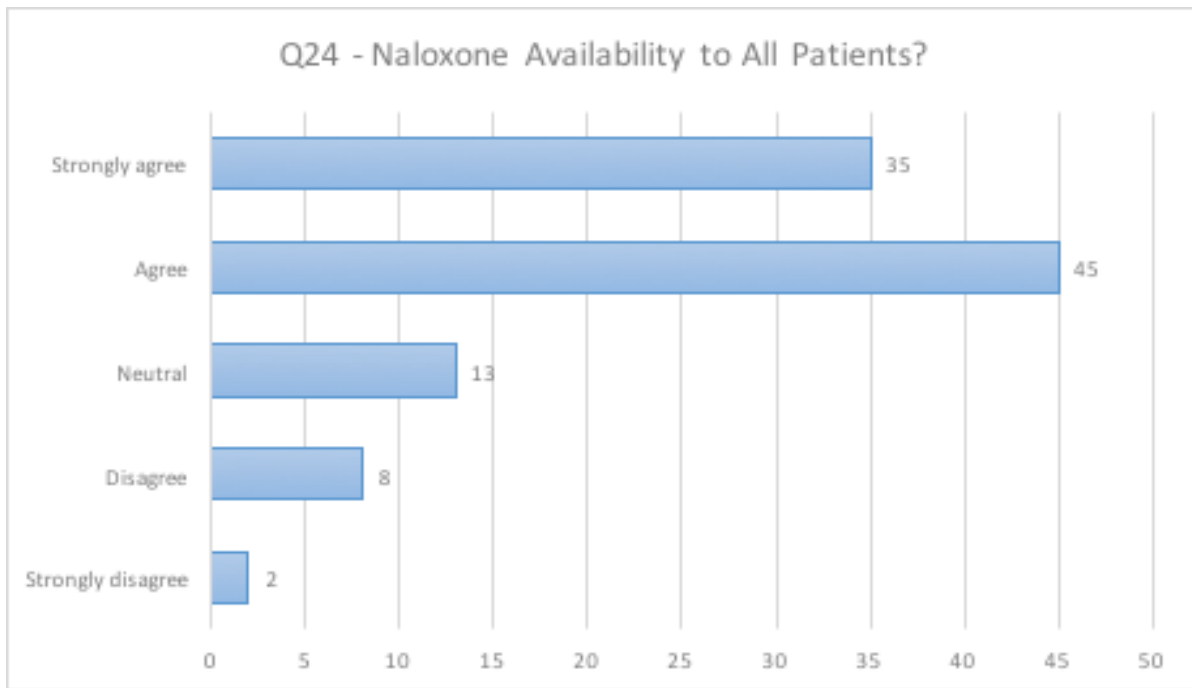
Q22 – The next question asks about *feeling comfortable in administering Naloxone for overdoses*. The answers here are more balanced, but favor agreement. A total of 53 (51%) answered agree or strongly agree to this question, while 21 (20%) answered disagree or strongly disagree, and there were 29 (28%) neutral responses. Adding the disagreements with the neutrals gives 49% that are not definitively comfortable about administering the drug for overdose situations. These 50 responses are distributed fairly evenly across the different services, with a slightly lower rate seen in Anesthesiology (all PG-Year 1).



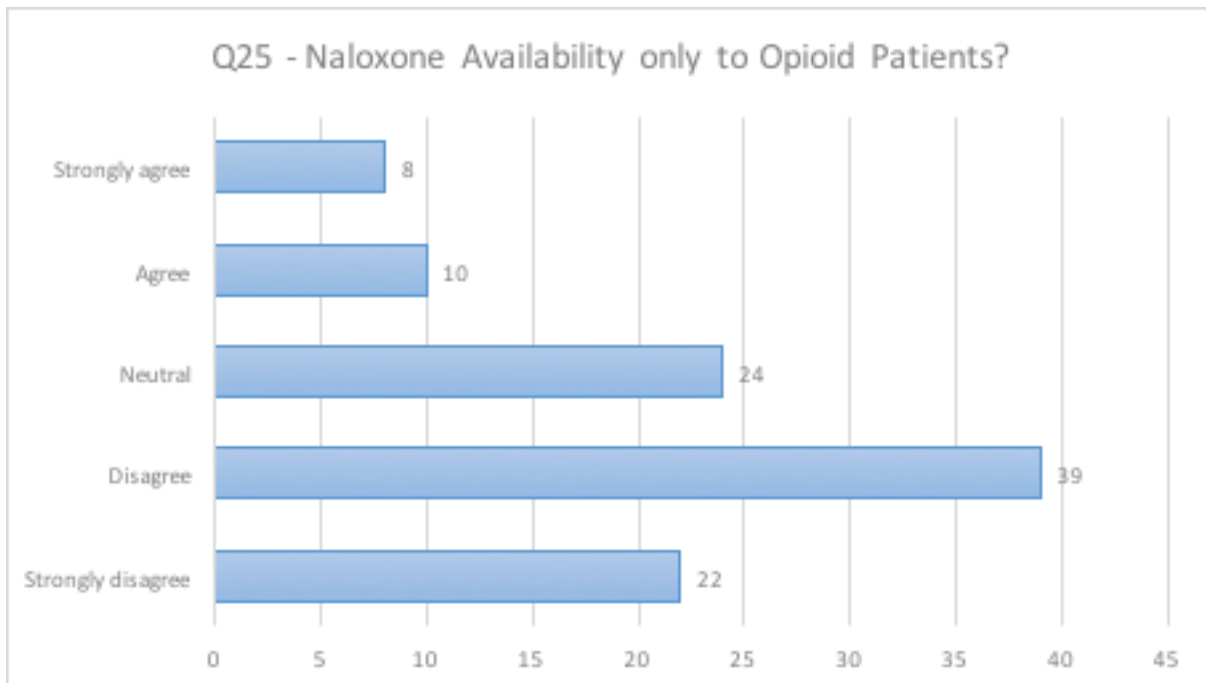
Q23: I am knowledgeable about Naloxone

Q23 – This question asks if the resident is *knowledgeable about Naloxone*. The responses are fairly similar to the previous question, also favoring agreement. Agree and strongly agree responses appear in 53 cases (51%); disagree and strongly disagree appear 16 times (16%), with 34 neutral responses (33%), which if added together, yield 49% who do not feel especially knowledgeable. These 50 cases are similarly distributed fairly evenly, with a lower rate in Anesthesiology (almost all in PG-Year 1).

Q24-27 Availability



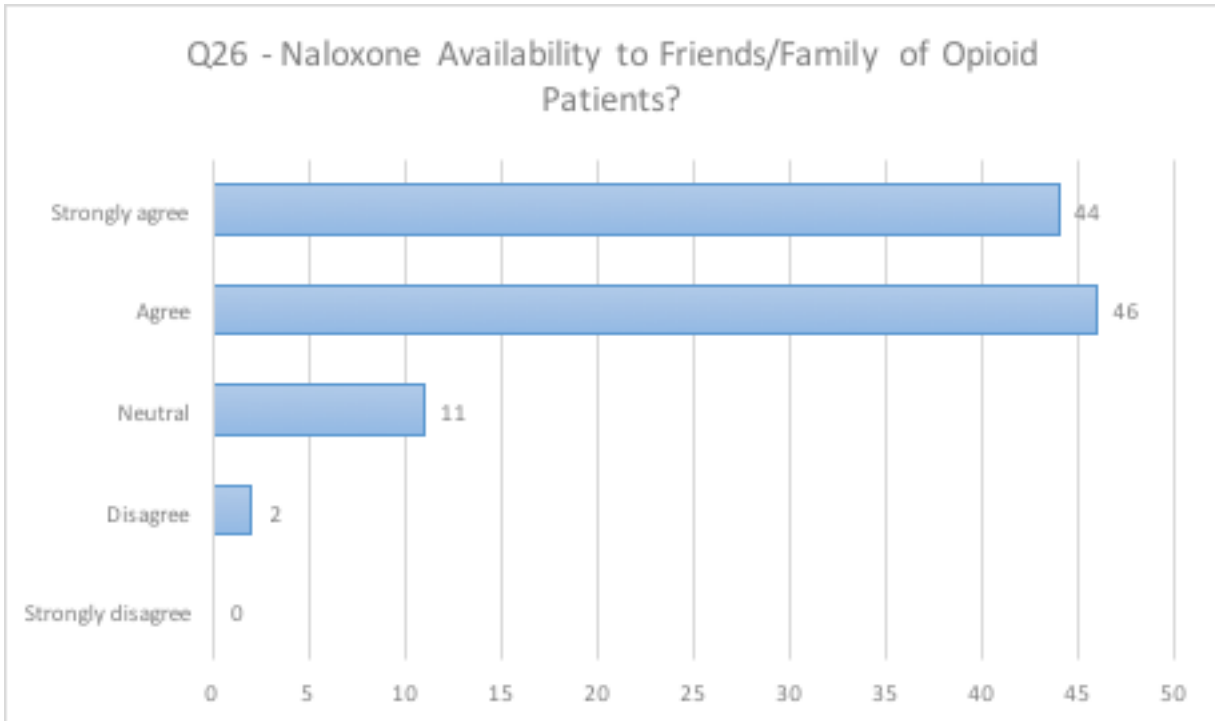
Q24: Naloxone should be available to all patients



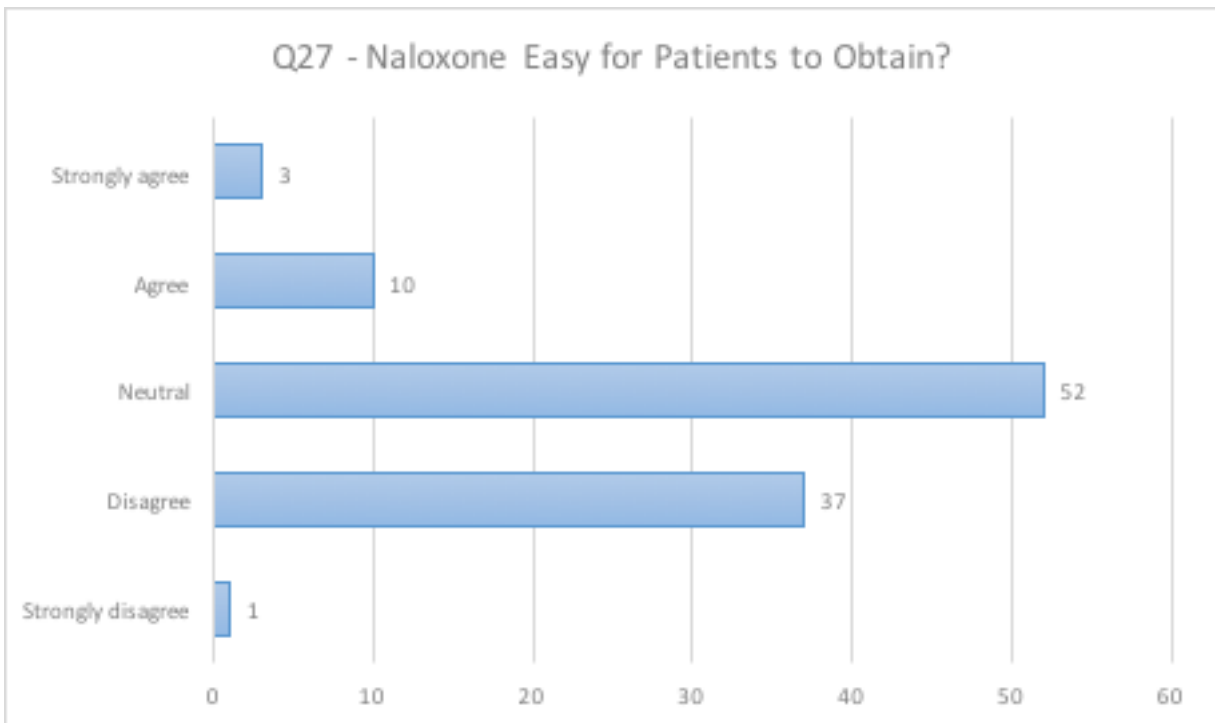
Q25: Naloxone should only be available to patients that use opioids

Q24 – This group of questions focuses on Naloxone availability. Q24 asks if Naloxone *should be made available to all patients*. There is strong agreement with this statement; a total of 80 respondents (78%) agree or strongly agree with the statement. In contrast, only 10 (10%) disagree or strongly disagree, while 13 (13%) of respondents are neutral. The disagrees and neutral responses are scattered fairly evenly across disciplines, perhaps a bit higher in Surgery.

Q25 – The next question in this group asks whether Naloxone *should be available only to patients that use opioids*. Here there is significant disagreement—61 respondents (59%) disagree or strongly disagree with the statement, while only 18 (17%) agree or strongly agree, and 24 responses (23%) are neutral. The agree/strongly agree responses are generally scattered fairly evenly across all services, though a bit higher in Surgery, and not present in Internal Medicine, Pediatrics, Radiation Oncology, nor Radiology.



Q26: Naloxone should be available to friends and family members of patients that use opioids

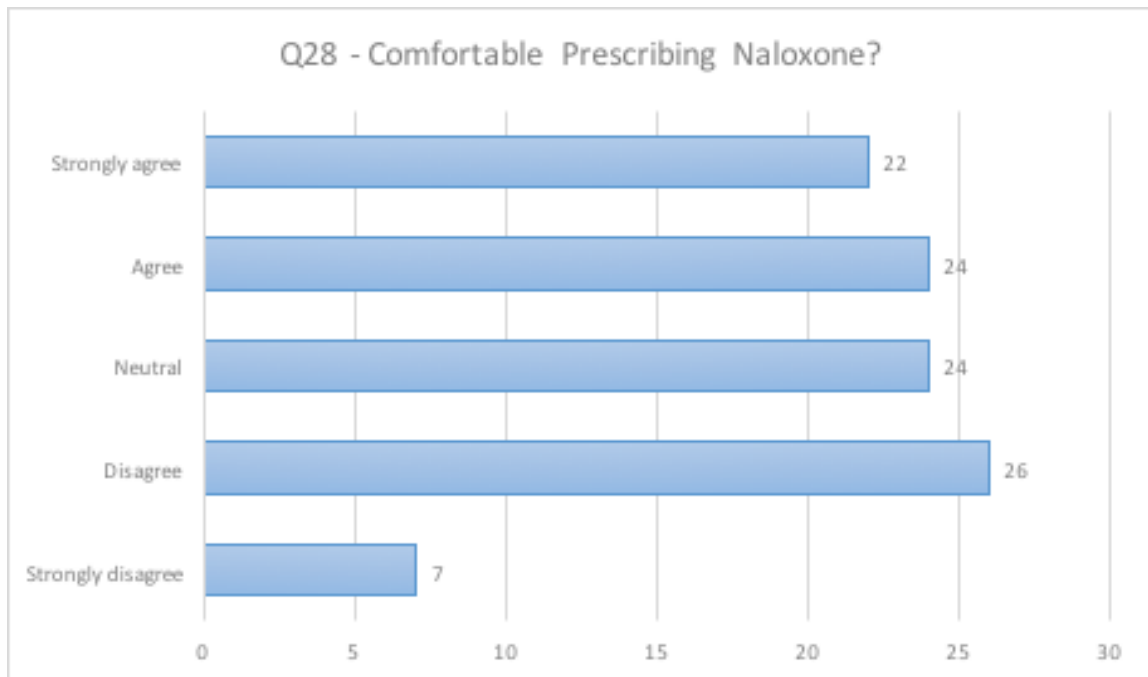


Q27: Naloxone is easy for patients to obtain

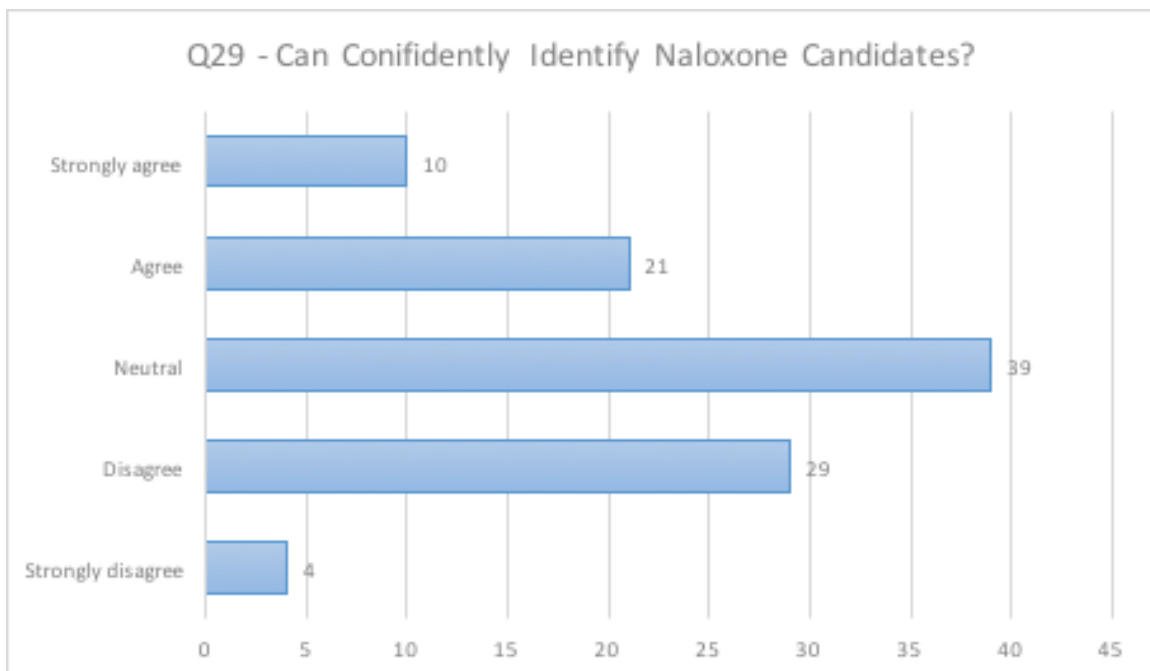
Q26 – Question 26 asks whether Naloxone *should be made available to family and friends of opioid patients*. Here again, there is very strong agreement with the statement. A total of 90 respondents (87%) agreed or strongly agreed; only 2 (2%) disagreed, with 11 (11%) neutral responses.

Q27 – The last question in this group asks *whether Naloxone is easy for patients to obtain*. The most common response here is neutral (52 or 50%), perhaps indicating a lack of information for making a judgement. Of the rest, 38 (37%) disagree or strongly disagree with the statement, while only 13 (13%) agree or strongly agree. The agree/strongly agree responses were most common in Anesthesiology, Internal Medicine, and Psychiatry.

Q28-31 Confidence



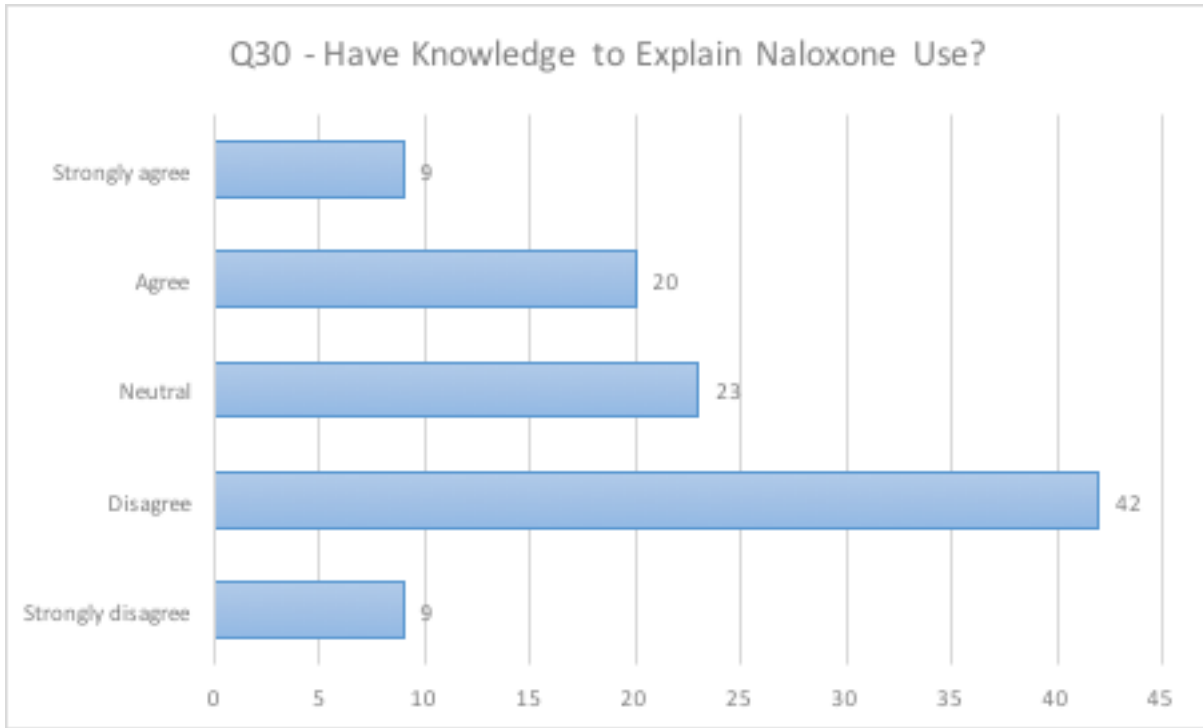
Q28: I feel comfortable prescribing Naloxone to patients



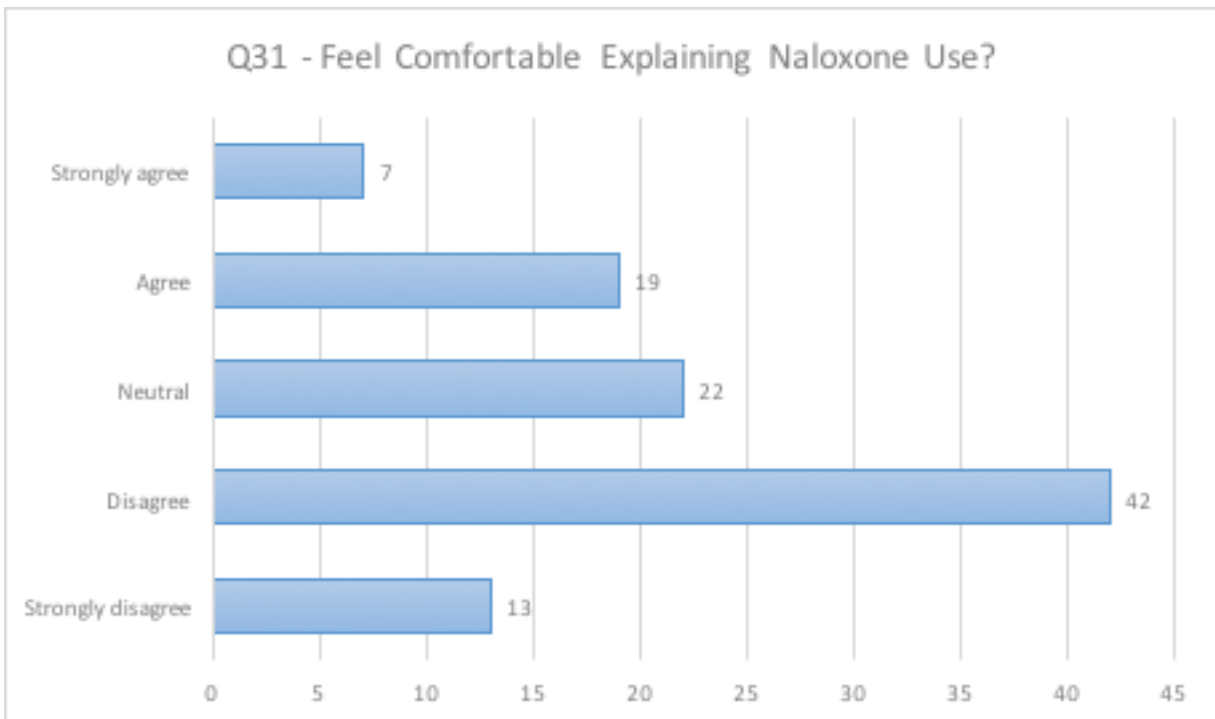
Q29: I can confidently identify patients that would benefit from being prescribed Naloxone

Q28 – This question asks if residents *feel comfortable prescribing Naloxone*. Overall the results are affirmative; 46 respondents (45%) agree or strongly agree, while 33 (32%) disagree or strongly disagree. The remaining 24 (23%) are neutral—also an indication of some degree of discomfort, so one could say that over half (55%) do not definitively feel comfortable prescribing Naloxone. The two disagrees and neutral answers are clustered in Pediatrics, Radiation Oncology, and Surgery, and mixed in Anesthesiology and Internal Medicine—the former with more disagrees and the latter with more agrees. Otherwise, results are fairly mixed, except for Psychiatry, which had the highest percentage of agree/strongly agree responses (80%).

Q29 – The next question asks whether a resident can *confidently identify patients that would benefit from Naloxone*. Here the number of agreement responses is sharply reduced. There are 31 (30%) agree or strongly agree responses, versus 33 (32%) disagree or strongly disagree responses. The most common response is ‘neutral’ (39, or 38%), again indicating some lack of comfort. Adding these to the two disagree responses gives 70% who are not particularly confident about identifying Naloxone candidate patients. By discipline, these are: Anesthesiology – 63%, Dermatology – 0 of 1, Family Medicine – 2 of 3, Internal Medicine – 80%, IM-Pediatrics – 4 of 5, Neurology – 2 of 3, Obstetrics/Gyn – 3 of 3, Orthopedic Surgery – 1 of 4, Pediatrics – 86%, Physical Medicine – 83%, Psychiatry – 27%, Radiation Oncology – 2 of 2, Radiology – 2 of 2, Surgery – 100%, and Urology – 1 of 1.



Q30: I have the necessary knowledge required to explain to a patient how to use Naloxone

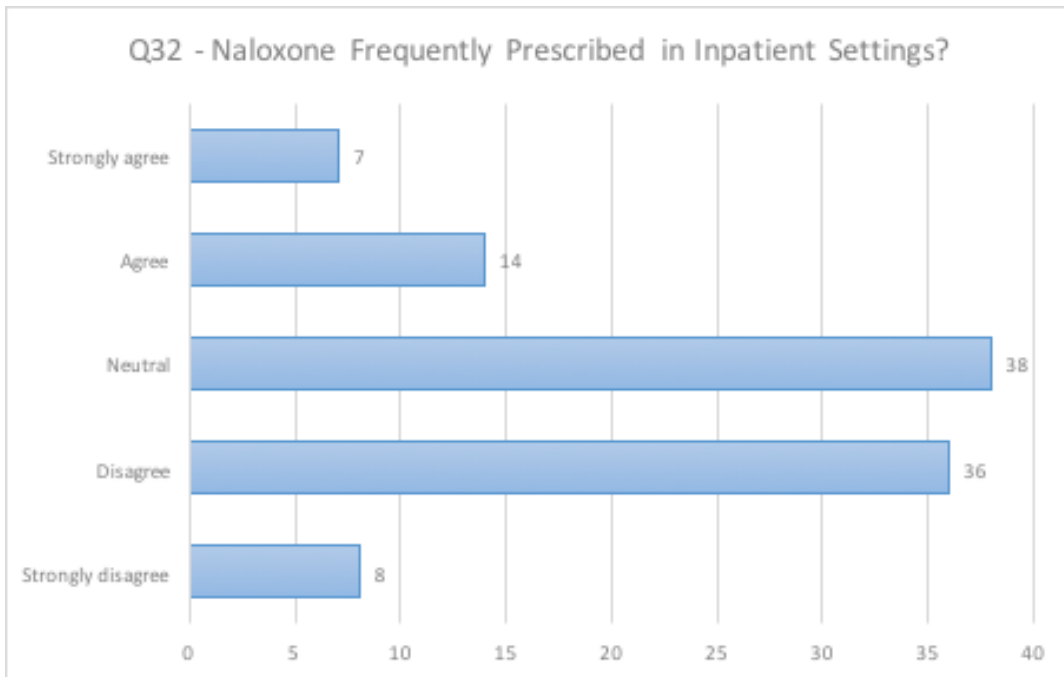


Q31: I feel comfortable explaining to a patient how to use Naloxone

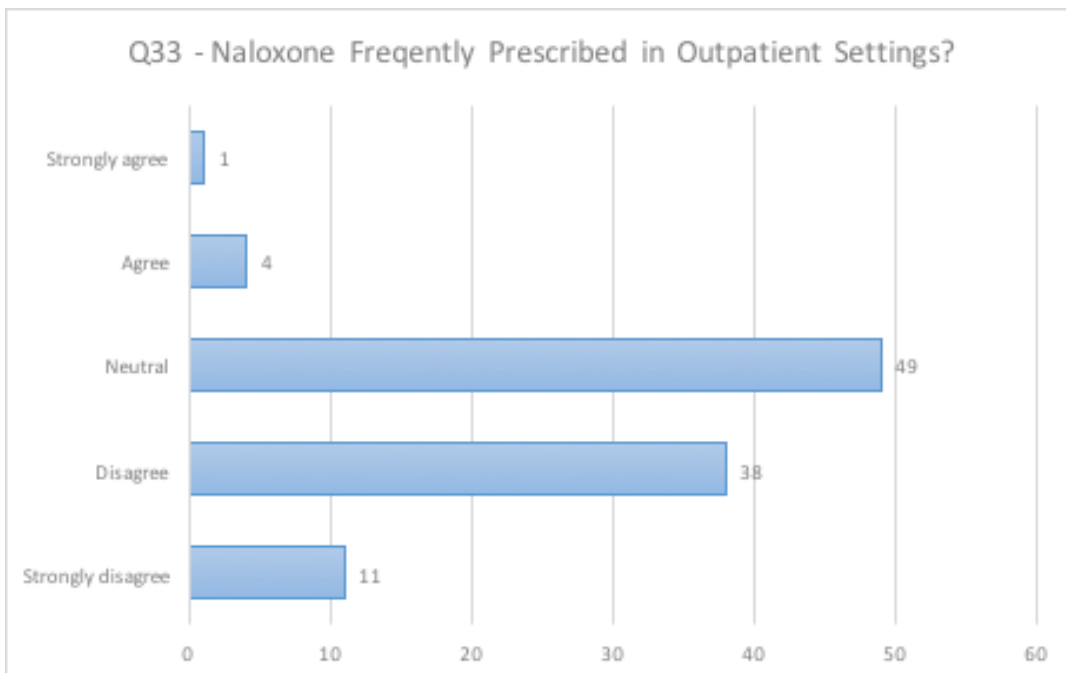
Q30 – Continuing in the same vein, Q30 asks about having the *knowledge to explain Naloxone use*. There are 29 (28%) agree or strongly agree, versus 51 (50%) disagree/strongly disagree, and 23 (22%) neutral. Disagree is the most common response here (42 or 41%). If the neutrals are combined with the disagrees, this gives 72% that do not clearly feel they have the required knowledge. Again by discipline: Anesthesiology – 54%, Dermatology – 1 of 1, Family Medicine – 2 of 3, Internal Medicine – 80%, IM-Pediatrics – 4 of 5, Neurology – 2 of 3, Obstetrics/Gyn – 3 of 3, Orthopedic Surgery – 1 of 4, Pediatrics – 100%, Physical Medicine – 67%, Psychiatry – 63%, Radiation Oncology – 2 of 2, Radiology – 1 of 2, Surgery – 80%, and Urology – 1 of 1. The biggest downward change here was for Psychiatry (27% for Q29, 63% for Q30).

Q31 – The final question in this group asks about *feeling comfortable explaining Naloxone use*. These responses are similar to the previous question; there are 26 (25%) agree/strongly agree responses, 55 (54%) disagree/strongly disagree responses, and 22 (21%) neutral responses. Combining the disagrees with the neutrals, we get 75% of respondents who do not expressly feel comfortable explaining Naloxone use to patients. The results for each discipline are largely the same as for Q30, with only minor differences (+-1) in several of them.

Q32-33 Institutional Setting



Q32: Naloxone is prescribed frequently at my institution in the inpatient setting

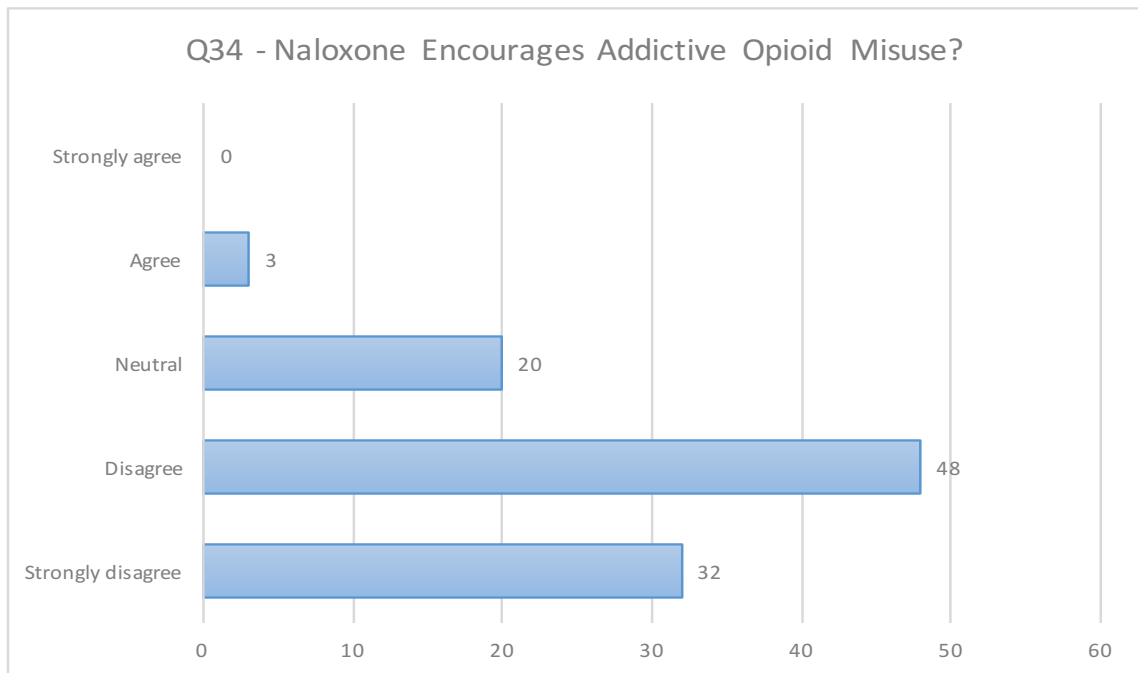


Q33: Naloxone is prescribed frequently at my institution in the outpatient setting

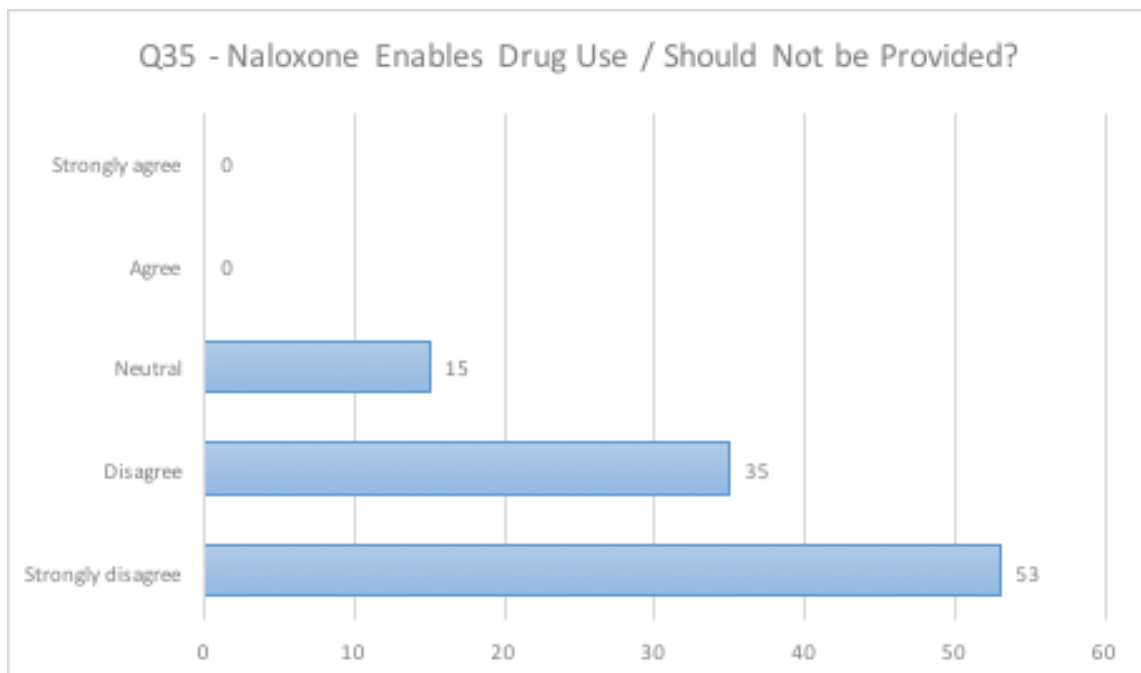
Q32 – Question 32 asks if Naloxone is frequently prescribed in an *inpatient setting*. The most common answer was ‘Neutral’ (38 or 37% of the 103 total), perhaps reflecting a lack of information for making a definitive judgement. The most neutral responses were found in Anesthesiology (12 or 50% of the program responses). Overall, the responses were more negative than positive; 44 (42%) either disagreed or strongly disagreed with the statement, while only 21 (20%) agreed or strongly agreed. More definitive answers were found in Internal Medicine, Physical Medicine, and Surgery, plus Radiation Oncology. Other than that, the responses were fairly mixed through all disciplines.

Q33 – Question 33 asks the same question, but for the *outpatient setting*. The overall pattern is similar, but there is overall stronger disagreement in this case. Again ‘Neutral’ was the most common response (49 or 48% of 103 respondents, 11 more than for Q32). The largest number of these was found in Anesthesiology (17 or 71% of that group); high percentages were also found in Pediatrics, Psychiatry and Surgery. An equivalent number (49) either disagreed or strongly disagreed with the statement, and only 5 either agreed or strongly agreed. Other than this, the results were mixed.

Q34-35 Naloxone Risks



Q34: Naloxone encourages patients that misuse opioids to use them in an addictive manner



Q35: Naloxone enables drug use and should not be provided

Q34 – Question 34 shows significant overall disagreement with the idea that Naloxone encourages patients to use opioids in an addictive manner. A total of 80 respondents (78%) either disagreed or strongly disagreed with the statement; another 20 (19%) were neutral responses, and there were only 3 agreements. Most of the strong disagreements were found in Anesthesiology, Internal Medicine, Psychiatry, and Surgery, as well as Radiology.

Q35 – The final question, on whether Naloxone actually enables drug use, had an even stronger disagreement response than the previous question. A total of 88 respondents (85%) either disagreed or strongly disagreed with the statement, solidly rejecting the enabling view. The remaining 15% were all neutral responses; there were no agreements. The largest rate of neutral responses were found in Surgery (30%), and Anesthesiology (21%). Especially high rates of strong disagreement (>60% of program respondents) within the larger groups were found in Internal Medicine, IM-Pediatrics, and Pediatrics, as well as in Radiology and Radiation Oncology.

Conclusion

As noted in the Introduction, the purpose of this study was to ascertain the attitudes of residents towards Naloxone and their prescription practices, as well as analyze if there were specific differences between residencies on these topics. Given that the number of respondents was 103 out of 735 residents (14%), it is difficult to draw definitive conclusions regarding individual residency programs (especially for those which had 5 or fewer residents responding). However, despite this limitation some conclusions can be gathered, certainly within the confines of the responses received.

It is true that many of the differences cited between residency responses for the larger groups can likely be explained by differences in patient populations and the medical services provided by different programs. Nevertheless, observed differences in terms of knowledge, training, comfort, and experience concerning Naloxone administration and prescribing, may also suggest areas or targets for additional attention or educational interventions.

The first part of the study, focused on prescription practices of residents, showed that slightly more than half of the respondents have been trained to use Naloxone in an overdose situation, but less than half in how to prescribe it. Still fewer have actually administered or prescribed Naloxone. This despite having many of their patients struggling with opioids and in need of overdose prevention measures.

A similar pattern was seen in the second part of the study, concerning the resident attitudes toward Naloxone, where across the board residents had a favorable opinion toward Naloxone, but were unfamiliar or uncomfortable prescribing it to their patients. Nearly all (95%) of respondents view Naloxone as a potential lifesaving intervention, but only half feel comfortable administering it, or feel knowledgeable about it. There is very strong agreement that Naloxone does not encourage addictive opioid misuse and does not enable drug use, and likewise that it should be available to all patients (not just opioid patients), as well as to friends and family members—and that Naloxone is not currently easy for patients to obtain. Yet, when asked if they have the knowledge to explain Naloxone use, and feel comfortable doing so, we see that 70-75% say no or equivocate, and over half do not feel comfortable prescribing Naloxone. Perhaps most important, 70% do not feel they can confidently identify patients who would benefit from being prescribed Naloxone. Surely it is possible to do better than this.

Recently, the AMA Opioid Task Force issued updated guidance “encouraging physicians to consider co-prescribing Naloxone when clinically appropriate for patients who are at risk for opioid overdose or might be able to help someone at risk.” In the same article, Dr. Sarah Wakeman states “co-prescribing Naloxone is important to ensure all people being prescribed opioids at risk for overdose have this lifesaving medication at home, similar to how we might think about co-prescribing glucagon to someone with insulin-dependent diabetes” (9).

Thus, given the scope of opioid-related deaths in this country, it is essential that the residents of the University of Michigan Medical School of all disciplines be exposed to Naloxone education and feel comfortable prescribing it when necessary. Indeed, a study just performed in 2018 showed that a brief curricular intervention among medical residents at an urban, tertiary medical center improved their knowledge, attitudes, and comfort levels toward Naloxone, and significantly increased their prescribing rates (12). This type of approach should be given consideration at UMMS.

In closing, I wish to thank Dr. Jouney for his advice and assistance throughout the project and Dr. Jibson for his help and guidance. I am also grateful to all residency program directors for their support as well as to the residents who took the time to complete the survey.

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