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Reopening Interventional Pain Practices during the Early Phase of the COVID-19 Global Pandemic

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Abstract

Objective. Examine how interventional pain physicians navigated the early phase of reopening practices during the coronavirus disease 2019 (COVID-19) pandemic. **Methods**. In June/July 2020, Spine Intervention Society members were queried about practice demographics, perception of COVID-19 prevalence, financial impact, and implementation of new tools and procedures when re-opening practices. **Results**. Of the 2,295 members approached, 195 (8%) completed the survey. A majority (71%) reported using risk stratification tools and changing scheduling patterns. Nearly 70% performed initial assessments via telehealth and 87% for follow-up encounters. More than 80% performed symptom/temperature checks upon in-person clinic/facility entrance, and 63% screened patients via phone. Most (58%) did not test patients for COVID-19 for office visits, while 38% tested only if symptomatic. For epidural injections, intra-articular injections, and radiofrequency neurotomy procedures, 43% reported not testing patients, while 36% tested patients only if symptomatic. Most (70%) required patients to wear a mask upon entering the clinic/facility. For nonprocedure encounters, respondents used surgical masks (85%), gloves (35%), face shields/goggles (24%), N95 respirators (15%), and gowns (6%). Some (66%) discussed unique COVID-19 risks/complications and 26% provided written information. Most did not make changes to steroid dosage (67%) or peri-procedural anticoagulation management (97%). The vast majority (81%) estimated that COVID-19 will have a moderate-severe financial impact on their practice. **Conclusions**. COVID-19 has dramatically affected interventional pain practices with regard to telehealth, in-clinic precautions, screening/testing protocols, and patient counseling. Practice patterns will continue to evolve as we learn more about the disease and improve methods to provide safe and effective care.

Key Words: Interventional; Pain; Practice; COVID-19; Coronavirus; Pandemic

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has affected the way healthcare is delivered across the world. In areas experiencing spikes in cases, resources have sometimes been re-allocated from elective clinic visits and procedures to acute care [1]. In other places, in-

person visits have been curtailed to prevent the spread of the virus [2]. However, care for patients in acute or chronic pain cannot be delayed indefinitely. A conundrum facing interventional pain physicians is how to maintain access and to continue to deliver a high level of safe and effective care to our patients, many of whom have severe problems that require specialized treatment that only an interventional pain physician can provide [2].

With the goal of minimizing disruptions to patient care, focus during the early phase of the COVID-19 pandemic shifted towards opening practices safely and increasing utilization of telehealth. Multisociety guidelines have been published to discuss risk mitigation techniques, conservation of resources, and continuity of care [3, 4]. In order to investigate physician decision making during the re-opening of interventional pain practices, the Spine Intervention Society (SIS) conducted a survey of its membership. Questions were designed to assess practice patterns relating to scheduling, screening, testing, use of personal protective equipment (PPE), informed consent, steroid dose, disinfection measures, and financial impact. Responses were compared to the Centers for Disease Control and Prevention (CDC) guidelines.

Methods

A link to an anonymous 33-question survey (Appendix 1) was e-mailed to members of SIS on June 18, June 24, and July 1, 2020. The survey remained open through July 15, 2020. The survey addressed practice demographics, perception of risk/prevalence and financial impact, and implementation of new tools and procedures during the pandemic.

Results were tabulated in SurveyMonkey, and filters were developed and applied to examine how different variables, such as perceived prevalence of COVID-19 or geographical region, impacted practice reopening decisions. A group of five reviewers from the SIS COVID-19 Task Force that are fellowship trained in spine/pain medicine with additional training in evidence-based medicine evaluated the survey results. Filtered queries were stratified by country of origin, practice type, and perceived risk/prevalence in the local area. Subgroup analyses were performed as a means of analyzing heterogeneous results.

Statistical analysis for this study was performed with GraphPad (GraphPad Software, LLC, San Diego, CA, USA). Descriptive statistics were calculated using a chi-square (χ^2) test with an α level of 0.05.

Results

The e-mail containing the link to the survey was delivered to 2,295 members. Of these, 195 completed the survey, yielding an 8% response rate. Demographics data for survey respondents are listed in Table 1. The vast majority of respondents were from the United States (83%).

Telehealth

Nearly 70% of respondents performed initial assessments via telehealth, compared to 87% for follow-up appointments. A detailed distribution is presented in Figure 1. When stratified by practice type, private practices (42%) were significantly more likely to see patients solely in person compared to academic practice (8%) ($P < .001$). Similarly, where respondents perceived prevalence in their region was low/very-low, they were statistically more likely to see patients solely in person (36%) compared to respondents who perceived they were practicing in a high/very-high prevalence area (19%) ($P = .04$).

Scheduling

A majority of respondents (71%) used risk stratification tools to identify high risk patients prior to procedure scheduling. Tools utilized varied widely, although most common was implementation of a telephone screening questionnaire in which patients were asked about symptoms, potential exposure, and medical history/comorbidities.

Many respondents reported making administrative changes to their scheduling patterns. For in-office visits, 75% of respondents reduced the number of clinic/office patients, 82% encouraged patients to limit the number of people accompanying them to their visits, 43% worked with other clinicians to schedule clinics to avoid overlap and minimize opportunity for cross-infectivity between clinical staff members, and 4% made no changes. Similarly, for procedural visits, 60% of respondents reduced the number of clinic/office patients, 79% encouraged patients to limit the number of people accompanying them to their visits, 38% worked with other clinicians to schedule clinics to avoid overlap and minimize opportunity for cross-infectivity between clinical staff members, and 6% made no changes.

Screening and Testing

As for screening patients for COVID-19, 87% of respondent reported performing symptom checks at the clinic/facility entrance, 82% were performing temperature checks, 63% screened patients via phone, and 5% did not perform any screening. For surveillance of occupational risk among staff, screening included symptom inquiry (78%) and temperature checks (71%) at the clinic/facility entrance and temperature checks at home (27%), while 10% did not screen staff.

A majority of respondents (58%) did not test patients for COVID-19 for office/clinic visits, while 38% tested patients only if they were symptomatic and met positive screening criteria. Some 5% routinely used polymerase chain reaction (PCR) testing, and 2% routinely used antibody testing. For procedural visits, specifically if patients were undergoing epidural injections, intra-articular injections, and radiofrequency neurotomy procedures, 43% of respondents did not test patients for COVID-19, while 36% tested patients only if they were symptomatic and

met positive screening criteria. Nineteen percent routinely used PCR testing, and 4% routinely used antibody testing. When stratified by practice type, academic centers were significantly more likely to conduct routine PCR testing compared to private practices (31% vs 12%, $P = .009$).

Forty-seven percent of respondents reported that they do not perform neurostimulation procedures. Of those that do, 61% did not routinely test patients or only tested patients if symptomatic and meeting positive screening criteria, 37% routinely used PCR testing, and 2% routinely used antibody testing. Seventy-eight percent of respondents reported that they do not perform vertebral augmentation. Of those that do, 66% did not routinely test patients or only tested patients if symptomatic and met positive screening criteria, 34% routinely used PCR testing, and none routinely used antibody testing. As for extra-spinal (e.g., peripheral joint) procedures, 87% did not routinely test patients or only tested patients if symptomatic and met positive screening criteria, while 8% routinely used PCR testing, 2% routinely used antibody testing. Seven percent of respondents reported that they do not perform these procedures.

If a patient tested positive for COVID-19 on PCR, 82% of respondents waited more than 48 hours to retest compared to 17% waiting 24–48 hours and 1% waiting less than 24 hours. If an asymptomatic patient tested positive for COVID-19, 41% of respondents waited 14–21 days until performing the procedure, 36% waited until the patient had a negative PCR test, 10% waited more than 21 days, 8% waited 7–13 days, 2% waited less than 7 days, and 3% did not perform the procedure. An overwhelming majority (93%) did not perform procedures on asymptomatic patients that continue to test positive on PCR at greater than 2 weeks. As expected, 97% did not perform procedures on symptomatic patients despite a negative PCR test.

Table 1. Demographic data on study participants.

		n	%
Practice type	Private practice (group)	63	32.3
	Academic	50	25.6
	Hospital-employed	42	21.5
	Private practice (solo)	37	19
Practice population density	Suburban	90	46.1
	Urban	85	43.6
	Rural	20	10.3
Perceived prevalence of COVID-19 in local area	Very low	17	8.7
	Low	57	29.2
	Moderate	72	36.9
	High	36	18.5
	Very high	13	6.7

COVID-19 = coronavirus disease 2019.

Personal Protective Equipment (PPE)

Most respondents (70%) reported requiring patients to wear a mask upon entering the clinic/facility, 61% during procedures, and 5% do not require a mask. If patients have difficulty breathing during procedures, 42% reporting allowing removal of the patient's mask. For non-procedure-based patient encounters in the clinic/office setting, PPE used by respondents included surgical masks (85%), gloves (35%), face shields/goggles (24%), N95 respirators (15%), and gowns (6%), while 5% did not use any PPE. PPE used during procedures are detailed in Figure 2 with comparison between respondents indicating perceived low and high risk of potential transmission in their local region. Of note, respondents were able to choose multiple responses for types of PPE used.

Shared Decision Making/Informed Consent

Changes had also been made in practice patterns including informed consent, where 66% reported now discussing unique risks/complications related to COVID-19

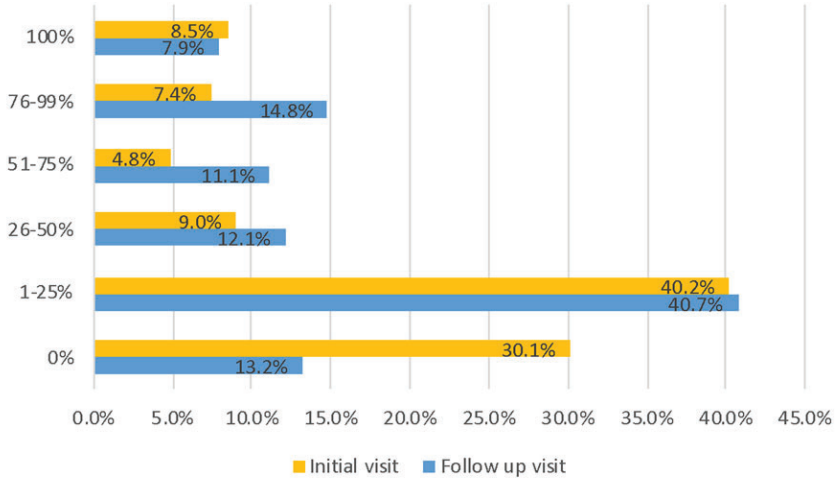

Figure 1. Distribution of initial and follow-up assessment via telehealth.

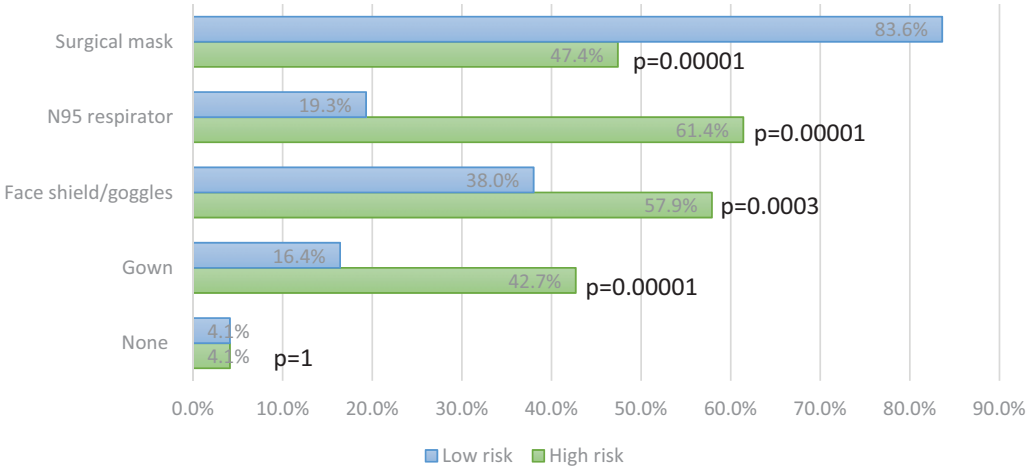

Figure 2. Personal protective equipment used during procedures comparing respondents' perceived risk of potential transmission in the local region.

concerns, 26% were providing written information on COVID-19, and 27% made no changes. Reasons cited by respondents for discouraging patients from undergoing interventional pain procedures included concerns for patient safety (78%), concerns related to exposure/transmission (53%), high prevalence of COVID-19 in the area (35%), inadequate PPE available (28%), and limited healthcare resources (22%). Nineteen percent did not discourage patients from undergoing procedures.

Steroid/Anticoagulation/Disinfection Measures

Additional changes in practice patterns include changes in corticosteroid dosing during injection procedures. Eighteen percent decreased steroid dosage by 50%, 7% decreased dosage by 25%, and 1% decreased by 10%, while 67% did not change steroid dosing. Ninety-seven percent made no changes to their peri-procedural anticoagulation protocol. Sixty-seven percent of respondents reported taking additional precautions with cleaning/disinfecting reusable equipment between procedures.

Financial Impact

Finally, 52% of respondents estimated moderate financial impact on their practice due to COVID-19, while 28% estimated severe impact, 15% estimated minimal impact, and 4% estimated no impact. When stratified by location of practice, the impact in the United States was estimated to be largely moderate (55%) to severe (31%), compared to non-US locations estimating minimal (26%) to moderate (46%) financial impact. When stratified by practice type, academic centers estimated a more significant financial impact (98%) compared to other practice types (77%), $P = .001$.

Discussion

This survey demonstrates the various ways that SIS members navigated practice reopening during the early phase of the COVID-19 pandemic. Overall, responses indicated that the majority of members implemented changes to minimize the risk of transmission and promote safety practices during the early phase of re-opening. Most respondents (71%) used risk stratification tools to identify high risk patients prior to scheduling. This in turn led to changes such as increasing telehealth visits and reducing clinic and procedural volumes in attempts to limit patient, staff, and physician exposure. Private practices were significantly more likely to see patients in person compared to academic and hospital-employed physicians. To speculate, this might be related to greater accessibility of telehealth platforms at larger institutions, which may have either already been implemented prior to the COVID-19 pandemic or more quickly introduced during the pandemic. Additionally, private practices may choose to see more patients in person compared to larger institutions due to greater financial vulnerability.

The majority of respondents adhered to CDC guidelines [5] to screen patients for COVID-19 by performing symptom checks (87%) and temperature checks (82%) prior to appointments. As for conducting COVID-19 testing prior to procedures, over 80% of respondents did not routinely test or only tested if patients were symptomatic and met positive screening criteria. When stratified by practice type, academic centers were more likely to test than private practices (18% vs 3%, $P = .007$). In addition, respondents who perceived they were practicing in a region with high prevalence were also more likely to test compared to those who perceived their region to be a low prevalence area. This is intuitive as regions more severely affected by COVID-19 are more likely to conduct testing.

As for the use of PPE, most physicians reported requiring patients to wear masks upon entering the facility (70%) and during procedures (61%). Surprisingly, 5% did not require masks despite CDC recommendations on the use of masks. For nonprocedure encounters, a

majority of clinicians wore surgical masks (85%) compared to N95 respirators (15%), while 5% did not wear any PPE. Similar findings were seen when interventionalists performed procedures if it was felt that the procedure carried a low risk of potential transmission. Understandably, if there was a perceived high risk of potential transmission, physicians were more likely to use N95 respirators (61%), face shields/goggles (58%), and gowns (43%). Remarkably, 4% of respondents continued to not use any PPE despite perceived high potential risk of transmission, although data were not available to explain whether this was due to preference or PPE shortage.

While there were some changes made to practice patterns such as corticosteroid dosing and peri-procedural anticoagulation protocols, the majority of respondents did not make such changes, 67% and 97%, respectively. The use of corticosteroid for interventional procedures has been a controversial topic during the COVID-19 pandemic as many are concerned about the potential immunosuppressive effect of corticosteroids. While there is no clear evidence of causative effect between spinal administration of corticosteroids and infection [6], one study reported increased risk of developing influenza after receiving a major joint corticosteroid injection [7]. With regard to anticoagulation, early reports reveal high rates of thrombotic events in COVID-19 patients resulting in deep vein thromboses, pulmonary emboli, and stroke [8]. With limited data currently available, larger studies are needed to assess the effect of corticosteroid administration and peri-procedural anticoagulation in patients with COVID-19.

Financial impact was certainly a concern for many respondents with 81% estimating that COVID-19 will have a moderate-severe financial impact on their practice for the year. No difference was observed between practice types or areas of perceived COVID-19 prevalence. With early recommendations from the CDC as well as some state and local governments to postpone evaluation and treatment of nonurgent medical conditions, the impact on all practices, especially during the early stages of the pandemic, was significant. Clinical and procedural volumes decreased to 69.6% and 13% of pre-pandemic volume, respectively [8]. Several survey respondents commented on "significant loss in revenue from volume reduction" and "increased cost of running the business."

Many respondents voiced frustrations regarding published recommendations and guidelines regarding interventional pain management practices, despite limited evidence on causative effects of interventional procedures in potentially increasing the risk of COVID-19. One respondent commented, "We cannot sterilize the universe. We cannot abandon the interventional part of the practice because of risks of using opioids as alternatives worsen the opioid crisis." In the early stages of the pandemic, some physicians reported increasing the prescription of opioids [9]. Not only is that concerning in the setting of an ongoing opioid crisis, but opioids have also been shown to suppress the immune system and therefore may increase susceptibility to infections [10–12]. In short, COVID-19 has created immense challenges to the interventional pain community as we seek to balance the needs of patients in pain against the necessary precautions related to COVID-19.

There are several limitations to this study. As this survey was only available to SIS members with a response rate of 8%, the findings may not be generalizable to the larger interventional pain medicine community. In addition, the low response rate may have introduced non-response bias into the results. Furthermore, 83% of respondents were from the United States, further limiting generalizability of results.

Another limitation of this survey is the evolving prevalence and understanding of COVID-19. This survey was conducted nearly three months after the World Health Organization (WHO) declared the COVID-19 outbreak a global pandemic. Since then, prevalence has waxed and waned, and as we prepare to publish this article, many communities are facing rising numbers of cases and hospitalizations. In addition, our understanding of COVID-19 has increased since the time of the survey. Therefore, this survey only captures responses from a brief period during the early stages of the pandemic, and answers will likely change with time as more is learned about the disease.

Conclusion

From early on, the COVID-19 pandemic has dramatically affected the interventional pain community with regard to in-person vs. virtual visits, in-clinic precautions, screening and testing protocols, and patient counseling. This survey demonstrates how physicians have navigated the early reopening of their practices nearly 3 months after the WHO declared COVID-19 a global pandemic. As the prevalence and our understanding of COVID-19 evolves, practice patterns may continue to change as improved methods are developed to provide safe and effective care to patients.

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Appendix 1: Survey Questions

Your Practice Information

1. What is your practice type?
2. Where do you practice?
3. If in the United States, in which state do you practice?
4. My practice location is best described as ___.
5. What is the perceived COVID-19 risk/prevalence in your area?

Scheduling Appointments

6. Are you using a risk stratification tool to identify high risk patients prior to procedure scheduling?

If yes, please describe:

7. What percentage of patients are you currently seeing via telehealth for initial assessments?
8. What percentage of patients are you currently seeing via telehealth for follow-up appointments?
9. What changes have you made relative to scheduling patients for in-office visits?
10. What changes have you made relative to scheduling patients for procedures?

Screening Patients

11. If your office/facility is screening patients for COVID-19 immediately prior to appointments, which methods are used?
12. What COVID-19 testing do you obtain prior to seeing patients in the office/clinic?
13. What COVID-19 testing do you obtain prior to interventional spine injection-based procedures (e.g., epidural injections, intra-articular injections, radiofrequency neurotomy)?
14. What COVID-19 testing do you obtain prior to neurostimulation procedures?
15. What COVID-19 testing do you obtain prior to vertebral augmentation procedures?
16. What COVID-19 testing do you obtain prior to non-interventional spine procedures (e.g., peripheral joint/tendon/muscle/nerve injections)?
17. If a patient tests positive on a PCR test, how long are you waiting until a patient is retested?
18. How long are you waiting after a positive PCR test in asymptomatic patients to perform procedures?
19. Are you performing procedures on asymptomatic patients who continue to test positive on PCR test at greater than 2 weeks?
20. If a patient has a negative PCR test, but is symptomatic (potential false-negative), do you proceed with the procedure?

Screening Staff

21. If your office/facility is screening staff for COVID-19 prior to work, which methods are used?
22. How often do you test yourself and your staff for potential exposure?

Use of PPE

23. I require patients to wear a mask ___.
24. I wear a ___ during non-procedure-based patient encounters when in the clinic/office setting.
25. I wear a ___ during procedures where I perceive there is **low risk** of potential transmission.
26. I wear a ___ during procedures where I perceive there is **high risk** of potential transmission.

Informed Consent

27. What changes have you made to your informed consent process?

Modifications to Procedures

28. For what reasons are you more likely to discourage patients from undergoing interventional pain procedures at this time?
29. If you are reducing steroid dose due to COVID-19 concerns, by how much?
30. Have you changed your anticoagulation protocols?

Cleaning/Disinfecting after Procedures

31. Are you taking additional precautions cleaning/disinfecting reusable equipment between procedures (e.g., lead aprons, thyroid shield)?

Financial Impact on Your Practice

32. Overall, how much of a financial impact do you estimate COVID-19 will have on your practice for the year?

Other Considerations

33. Please share any other COVID-19-related issues you are dealing with in reopening your practice.