NBCRNA

National Board of Certification & Recertification for Nurse Anesthetists

Annual NCE and SEE Report Calendar Year 2023

Summary of NCE and SEE Performance and Clinical Experience

January 1, 2023 - December 31, 2023

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Introduction

This report presents a summary of information on individual performance on the National Certification Examination (NCE) and the Self-Evaluation Examination (SEE) in the calendar year 2023 (CY2023), January 1, 2023, through December 31, 2023.

Performance on the NCE is summarized first, with pass/fail outcomes presented according to several demographic variables: gender, age, clinical background, and type of graduate degree. Trend data summarizing pass rates over the past five years are also provided in the last column of each table for each demographic. Readers should note that there was no change to the NCE passing standard in 2023. The passing standard was last changed on January 1, 2014; the NBCRNA Board of Directors reviewed the results of a new passing standard setting study in October 2023 and voted to retain the current passing standard.

NCE pass rate summaries are followed by an analysis of candidates' responses on a satisfaction survey administered at the end of the NCE. The survey requested information pertaining to candidates' satisfaction with their registration and test experience. Additionally, descriptive statistics (e.g., mean, standard deviation) are provided for the number of cases performed in various clinical areas by students of nurse anesthesia educational programs who graduated in 2023.

Finally, information about scaled scores for the SEE is presented in the last part of the report, summarizing performance by gender, age, clinical background, type of graduate degree, and year in program. Trend data summarizing the past five years in each demographic subgroup are also provided in the final column of each table.

Candidate Performance on the NCE

The information in **Table 1** addresses the performance of candidates on the NCE during the CY2023 reporting period. Pass rates appear separately for first-time candidates versus repeat candidates, based on the passing standard that took effect on January 1, 2014. The pass rate for the 3,008 first-time candidates is 83.2%. The pass rate is lower for repeat examinees, consistent with the previous year's data.

The CY2023 first-time pass rate (83.2%) is slightly lower than the CY2022 pass rate (83.4%). The cumulative first-time pass rate averaged over the previous five years is 82.9% as shown in the final column of **Table 1** (Years 2019–2023 represents January 1, 2019–December 31, 2023, total N = 16,634). First-time examinee pass rates for the NCE, by year since 2008, can be found in **Table A1** in Appendix A of this report.

The total number of NCE candidates testing increased in 2023 (3,613 in CY2023 vs. 3,548 in CY2022), of which 3,008 were first-time candidates, whereas in CY 2022 2,794 were first-time takers.

Table 1. Pass/Fail Summary for NCE Candidates, 2023

First-Time Candidates		Frequency	Percent	5-year Trend %
	Pass	2,502	83.2%	82.9%
	Fail	506	16.8%	17.1%
	Total	**3,008**	**100.0%**	**100.0%**
Repeat Candidates		**Frequency**	**Percent**	**5-year Trend %**
	Pass	368	60.8%	62.8%
	Fail	237	39.2%	37.2%
	Total	**605**	**100.0%**	**100.0%**

The NCE total scores and domain-level information for first-time candidates can be found in **Table A2** of Appendix A.

Table 2 shows the distribution of test length and pass/fail status. Only *first-time* candidates are included in Table 2. Of the candidates who passed, the majority (53.52%) were administered 70 items (not including the 30 unscored pretest items). Only 5.15% of NCE candidates failed the test in 70 items. Approximately 20.64% of the candidates took the maximum test length of 140 items.

The number of candidates getting a score determination in 70 items decreased in CY2023 over CY2022. In 2023, 58.67% of candidates fell into this category compared to 63.2% in CY2022. The five-year trend is 52.3%.

Table 2. Pass/Fail Summary by Test Length for First-Time NCE Candidates, 2023

	Frequency	Percent	5-year Trend %
Pass in 70 items	1,610	53.52%	47.86%
Pass in 71 to 139 items	493	16.39%	22.97%
Pass in 140 items	399	13.26%	12.07%
Fail in 70 items	155	5.15%	4.44%
Fail in 71 to 139 items	129	4.29%	5.18%
Fail in 140 items	222	7.38%	7.48%
Total	**3,008**	**100.0%**	**100.0%**

Demographic Characteristics of NCE Candidate Population, 2023

The next several tables present pass rates on the NCE grouped by gender, age, clinical background, and degree earned. Only *first-time* candidates are included in these tables. **Table 3** indicates that 63.3% of the NCE candidates were female and 36.2% were male. The pass rates for females in 2023 were the same as in 2022, and males continued to show a slightly higher pass rate than females: 2023 (85.1% vs. 82.0% for male and female, respectively); 2022 (85.4% vs. 82.0%); 2021 (85.7% vs. 83.0%); 2020 (86.3% vs. 84.6%); 2019 (85.1% vs. 83.9%), consistent with the five-year trend (final column of Table 3).

The distribution of females and males in the CRNA population has been relatively consistent at approximately 60% vs. 40% over the past five years.

Table 3. Gender of NCE Candidates, 2023

Gender	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
Female	1,563	82.0%	342	18.0%	1,905	63.3%	81.9%
Male	928	85.1%	162	14.9%	1,090	36.2%	84.4%
Other	11	84.6%	2	15.4%	13	0.4%	88.9%
Total	**2,502**	**83.2**%	**506**	**16.8**%	**3,008**	**100**%	**82.9**%

Table 4 presents the pass rate by age group. The pass rate decreased as examinee age increased, both for the 2023 sample and the five-year trend analysis. Younger students tend to perform better on the NCE. The average age of the 2023 *first-time* NCE candidates was 32.6 years.

Table 4. Age of NCE Candidates, 2023

Age	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
Under 30	781	90.5%	82	9.5%	863	28.7%	90.6%
30 - 35	1,242	83.2%	250	16.8%	1,492	49.6%	86.0%
36 - 39	294	77.0%	88	23.0%	382	12.7%	80.8%
40 or more	185	68.3%	86	31.7%	271	9.0%	69.5%
Total	**2,502**	**83.2**%	**506**	**16.8**%	**3,008**	**100**%	**82.9**%

Table 5 displays pass rates for candidates' clinical background. Approximately 16.5% of the candidates reported their clinical background as ICU/CCU, decreasing from 27.8% in 2022. Pass rate comparisons between different clinical settings should be made with caution, however, because some subgroups for the 2023 data feature small sample sizes. Also, the clinical background categories tend not to be mutually exclusive. While examinees report their clinical background as discrete categories, actual experience may be more diverse and complex (e.g., SICU in some facilities may include CVICU patients, and many other permutations can exist). Finally, this data is self-reported and could be subject to inaccuracies.

When comparing pass rates across clinical background subgroups, readers are advised to refer to the 5-year trend column of Table 5. The pass rates in this column are more reliable for comparisons because they are based on a much larger sample. For instance, over the past five years, first-time NCE examinees with CCU, MICU, NICU, PICU, and SICU clinical backgrounds respectively have demonstrated the highest rates of success on the NCE.

Table 5. Clinical Background of NCE Candidates, 2023

Clinical Background	Pass		Fail		Total		5-year Trend Pass %
	N	Percent	N	Percent	N	Percent	
CCU	233	81.2%	54	18.8%	287	9.5%	83.8%
ER	170	83.7%	33	16.3%	203	6.7%	79.4%
ICU/CCU	393	79.4%	102	20.6%	495	16.5%	81.8%
MICU	306	83.8%	59	16.2%	365	12.1%	83.7%
NEURO ICU	202	81.1%	47	18.9%	249	8.3%	82.9%
NICU	175	87.9%	24	12.1%	199	6.6%	84.8%
OR	148	85.1%	26	14.9%	174	5.8%	81.2%
PACU	160	83.3%	32	16.7%	192	6.4%	79.4%
PICU	195	85.2%	34	14.8%	229	7.6%	85.4%
SICU	246	84.2%	46	15.8%	292	9.7%	84.4%
TRAUMA ICU	212	85.8%	35	14.2%	247	8.2%	82.9%
Other	62	81.6%	14	18.4%	76	2.5%	81.9%
Total	**2,502**	**83.2**%	**506**	**16.8**%	**3,008**	**100**%	**82.9**%

Table 6 displays the distribution of pass rates by degree attained. Of 3,008 first-time NCE takers in 2023, 6.9% (n=207) were from programs that awarded a Master of Science in Nursing degree; 7.6% (n=228) graduated from programs awarding a Master of Science in Nurse Anesthesia degree; 3.9% (n=117) were from other master's programs; and 81.6% (n=2,456) were from programs that awarded a doctoral degree. This is a 7 percentage-point increase from the 74.6% that doctoral candidates comprised in 2022.

When comparing pass rates across clinical background subgroups, pass rate differences across degrees should be viewed with caution because some demographic subgroups feature small sample sizes (Table 6). Readers are advised to refer to the 5-year Trend column of Table 6.

Table 6. Types of Graduate Degrees Reported by NCE Candidates, CY 2023

Degree Upon Completion	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
MS Nursing	164	79.2%	43	20.8%	207	6.9%	84.5%
MS Nurse Anesthesia	161	70.6%	67	29.4%	228	7.6%	76.4%
Other Master's	92	78.6%	25	21.4%	117	3.9%	80.6%
Doctoral Degree	2,085	84.9%	371	15.1%	2,456	81.6%	84.6%
Total	**2,502**	**83.2%**	**506**	**16.8%**	**3,008**	**100.0%**	**82.9%**

Descriptive Information on Number of Clinical Experiences, 2023

The tables in this section report data collected about the number of anesthesia cases performed in clinical areas, as submitted by program directors to the NBCRNA for individuals completing nurse anesthesia programs in the reporting period. *This data reflects records of clinical experiences submitted for individuals with a graduation date in 2023, and not the sample of NCE candidates during this time frame.* As a result, sample sizes presented in this section (2,800) will not equal the number of first-time NCE candidates (3,008) as reported in Tables 1 through 6.

In previous years, there were different academic requirements for Doctoral and Master's candidates, so results were reported separately. While requirements are now the same between the degrees, results in this section still break out by Doctoral and Master's candidates to allow analysis of differences as well as comparison to previous periods. For clarity, these two groups of students are reported separately in Tables 7a through 15a for Master's students (n=475), and in Tables 7b through 15b for Doctoral students (n=2,325), respectively. Clinical experiences are aligned in the table pairs to easily compare the degree types.

The columns are the same in Tables 7 through 15, presenting the following information:
- The first column contains the clinical area in which cases were performed.
- The *N* column represents the number of master's or doctoral records submitted in the reporting period.
- The *Number of Cases Required* column indicates the minimum number of cases that must be completed by an applicant for the applicant to be deemed eligible to take the NCE. If a minimum number of cases is not required, a "0" is entered in this column.
- The *Mean* column indicates the average number of cases reported on the 2023 records.
- The *Standard Deviation* column describes the dispersion in the number of cases reported on the 2023 records.
- The *Median* column indicates the median number of cases (50th percentile) reported on the records in the reporting period. Half the records contained values higher than this number and half contained a value below this number.
- The *Minimum* column indicates the smallest number of cases reported on the 2023 records.

Table 7a. Sections I, II and III: Clinical Experience (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Total Number of Cases	475	600	865.4	134.1	860	612
Total Hours of Anesthesia	475	0	1,739.1	359.1	1,705	308
Total Clinical Hours	475	0	2,586.1	371.2	2,520	2,001

Table 7b. Sections I, II and III: Clinical Experience (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Total Number of Cases	2,325	600	900.1	144.2	880	602
Total Hours of Anesthesia	2,325	0	1,759.6	347.8	1,705	271
Total Clinical Hours	2,325	0	2,749.8	717.8	2,721	1,392

Table 8a. Section IV: Patient Physical Status (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Class I	475	0	82.0	42.8	74	1
Class II	475	0	340.7	91.5	333	110
Class III-VI Total	475	200	442.5	105.3	438	200
Class III	475	50	361.7	86.9	355	163
Class IV	475	10	77.1	35.8	71	10
Class V	475	0	3.2	4.4	2	0
Class VI	475	0	0.5	0.9	0	0

Table 8b. Section IV: Patient Physical Status (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Class I	2,325	0	74.7	34.6	69	1
Class II	2,325	0	344.8	86.7	339	66
Class III-VI Total	2,325	200	480.3	105.0	468	216
Class III	2,325	50	393.1	89.8	380	167
Class IV	2,325	10	83.7	35.4	77	14
Class V	2,325	0	3.0	3.3	2	0
Class VI	2,325	0	0.5	0.8	0	0

Table 9a. Section V: Special Cases (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	475	100	276.9	65.6	267	127
Pediatric, 2-12 years	475	30	72.0	31.8	66	30
Pediatric, under 2 years	475	10	22.1	12.6	18	10
Neonatal, under 4 weeks	475	0	1.0	1.6	0	0
Trauma/Emergency	475	30	50.5	16.6	46	30
Obstetrical Management	475	30	67.6	32.7	60	30
Cesarean delivery	475	10	33.6	15.7	30	10
Analgesia for labor	475	10	32.7	20.1	27	10
Pain Management Encounters	475	15	47.1	53.4	34	15

Table 9b. Section V: Special Cases (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	2,325	100	292.0	77.1	283	101
Pediatric, 2-12 years	2,325	30	67.6	29.3	60	30
Pediatric, under 2 years	2,325	10	21.3	11.5	18	10
Neonatal, under 4 weeks	2,325	0	1.0	1.6	0	0
Trauma/Emergency	2,325	30	51.5	18.5	47	30
Obstetrical Management	2,325	30	65.8	32.0	57	30
Cesarean delivery	2,325	10	29.9	14.3	26	10
Analgesia for labor	2,325	10	35.8	24.2	28	10
Pain Management Encounters	2,325	15	50.2	39.2	38	15

Table 10a. Section VI: Anatomical Categories (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	475	75	185.4	57.2	176	75
Intracranial Total	475	5	14.3	7.7	13	5
Intracranial Open	475	3	10.6	6.4	9	3
Intracranial Closed	475	0	3.7	4.1	3	0
Oropharyngeal	475	20	93.4	48.6	88	20
Intrathoracic Total	475	15	44.3	18.1	41	15
Heart	475	5	30.3	15.2	27	5
Open Heart Total	475	5	15.0	7.7	14	5
Open Heart with Cardiopulmonary Bypass	475	0	13.4	7.3	12	1
Open Heart without Cardiopulmonary Bypass	475	0	1.6	2.1	1	0
Closed Heart	475	0	15.3	13.2	12	0
Lung	475	5	10.2	5.6	9	5
Other	475	0	3.8	4.6	3	0
Neck	475	5	21.8	9.4	20	5
Neuroskeletal	475	20	44.4	22.1	40	20
Vascular	475	10	34.7	16.0	32	10

Table 10b. Section VI: Anatomical Categories (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	2,325	75	184.1	59.0	173	76
Intracranial Total	2,325	5	14.8	8.0	13	5
Intracranial Open	2,325	3	10.4	5.5	9	3
Intracranial Closed	2,325	0	4.4	5.1	3	0
Oropharyngeal	2,325	20	103.3	52.1	96	20
Intrathoracic Total	2,325	15	47.4	22.3	44	15
Heart	2,325	5	30.1	16.8	27	5
Open Heart Total	2,325	5	14.2	8.3	12	5
Open Heart with Cardiopulmonary Bypass	2,325	0	12.6	7.6	11	0
Open Heart without Cardiopulmonary Bypass	2,325	0	1.6	2.4	1	0
Closed Heart	2,325	0	15.9	13.1	13	0
Lung	2,325	5	10.7	5.7	9	5
Other	2,325	0	6.8	10.8	4	0
Neck	2,325	5	23.6	10.7	22	5
Neuroskeletal	2,325	20	44.8	23.3	39	20
Vascular	2,325	10	39.5	18.4	36	10

Table 11a. Section VII: Methods of Anesthesia (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	475	400	618.7	122.3	610	400
Inhalation Induction	475	25	83.0	43.4	73	26
Mask Management	475	25	63.0	63.5	41	25
Supraglottic Airway Devices (total of a & b)	475	35	122.3	50.7	115	35
a. Laryngeal mask	475	0	116.9	48.6	110	0
b. Other	475	0	5.4	23.0	0	0
Tracheal Intubation (total of a & b)	475	250	406.5	77.0	394	253
a. Oral	475	0	388.9	72.7	375	249
b. Nasal	475	0	17.1	14.6	13	0
Alternative Tracheal Intub/Endo (total of a & b)	475	25	78.1	44.6	68	25
a. Endoscopic techniques, total	475	5	20.1	28.2	10	5
1. Actual Placement	475	0	17.7	28.3	8	0
2. Simulated Placement	475	0	2.5	4.2	1	0
3. Airway Assessment	475	0	15.8	63.5	5	0
b. Other techniques	475	5	58.0	43.0	50	5
Emergence from Anesthesia	475	300	580.7	124.5	573	300
Regional Techniques	475					
Actual Administration (total of a, b, c & d)	475	35	161.0	110.5	131	45
a. Spinal (total of 1 & 2)	475	10	56.8	30.6	49	10
1. Spinal Anesthesia	475	0	52.6	29.7	45	6
2. Spinal Pain Management	475	0	4.3	7.5	1	0
b. Epidural (total of 1 & 2)	475	10	34.5	21.6	28	10
1. Epidural Anesthesia	475	0	10.2	14.6	5	0
2. Epidural Pain Management	475	0	24.3	18.1	20	0
c. Peripheral (total of 1, 2, 3 & 4)	475	10	61.4	93.1	37	10
1. Anesthesia Upper	475	0	13.7	17.5	8	0
2. Anesthesia Lower	475	0	13.4	30.0	7	0
3. Pain Management Upper	475	0	11.4	22.9	5	0
4. Pain Management Lower	475	0	23.0	56.9	10	0
d. Other	475	0	6.1	12.0	2	0
1. Anesthesia	475	0	27.0	42.2	16	0
2. Pain Management	475	0	34.3	76.5	16	0
Management (total of 1 & 2)	475	35	89.4	52.6	76	35
1. Anesthesia	475	0	49.2	39.0	41	0
2. Pain Management	475	0	40.2	35.4	33	0
Moderate/deep sedation	475	25	141.6	74.2	135	26

Table 11b. Section VII: Methods of Anesthesia (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	2,325	400	646.8	114.7	636	401
Inhalation Induction	2,325	25	80.3	40.6	71	25
Mask Management	2,325	25	61.0	61.9	42	25
Supraglottic Airway Devices (total of a & b)	2,325	35	124.7	55.6	116	35
a. Laryngeal mask	2,325	0	119.8	52.8	113	13
b. Other	2,325	0	4.9	21.9	0	0
Tracheal Intubation (total of a & b)	2,325	250	417.1	77.8	410	254
a. Oral	2,325	0	398.3	74.7	392	229
b. Nasal	2,325	0	16.7	14.3	13	0
Alternative Tracheal Intub/Endo (total of a & b)	2,325	25	91.9	54.5	80	25
a. Endoscopic techniques, total	2,325	5	17.7	27.8	9	5
1. Actual Placement	2,325	0	14.2	27.9	7	0
2. Simulated Placement	2,325	0	3.5	7.6	1	0
3. Airway Assessment	2,325	0	9.9	31.4	6	0
b. Other techniques	2,325	5	74.0	50.9	65	5
Emergence from Anesthesia	2,325	300	612.0	143.9	591	315
Regional Techniques	2,325					
Actual Administration (total of a, b, c & d)	2,325	35	141.2	79.8	121	35
a. Spinal (total of 1 & 2)	2,325	10	46.3	26.9	40	10
1. Spinal Anesthesia	2,325	0	42.3	24.9	36	2
2. Spinal Pain Management	2,325	0	4.1	8.6	1	0
b. Epidural (total of 1 & 2)	2,325	10	33.5	22.6	27	10
1. Epidural Anesthesia	2,325	0	9.0	12.1	5	0
2. Epidural Pain Management	2,325	0	24.4	20.2	19	0
c. Peripheral (total of 1, 2, 3 & 4)	2,325	10	52.8	49.7	38	10
1. Anesthesia Upper	2,325	0	11.5	14.2	7	0
2. Anesthesia Lower	2,325	0	12.2	16.8	7	0
3. Pain Management Upper	2,325	0	10.6	16.1	5	0
4. Pain Management Lower	2,325	0	18.5	28.0	9	0
d. Other	2,325	0	8.5	16.4	3	0
1. Anesthesia	2,325	0	23.7	28.0	15	0
2. Pain Management	2,325	0	29.1	39.6	16	0
Management (total of 1 & 2)	2,325	35	93.7	59.8	78	35
1. Anesthesia	2,325	0	48.2	39.1	39	0
2. Pain Management	2,325	0	45.5	38.0	36	0
Moderate/deep sedation	2,325	25	149.7	94.2	132	25

Table 12a. Section VIII: Arterial Technique (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	475	25	52.5	20.2	49	25
Intraarterial Blood Pressure Monitoring	475	30	72.7	24.1	70	30

Table 12b. Section VIII: Arterial Technique (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	2,325	25	57.6	24.2	53	25
Intraarterial Blood Pressure Monitoring	2,325	30	83.0	28.1	80	30

Table 13a. Section IX: Central Venous Pressure Catheter (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement—Non-PICC (total of a & b)	475	10	14.2	5.7	12	10
a. Non-PICC, Actual	475	0	9.9	7.6	10	0
b. Non-PICC, Simulated	475	0	4.4	4.6	2	0
Placement—PICC (total of a & b)	475	0	0.9	3	0	0
a. PICC, Actual	475	0	0.7	2.3	0	0
b. PICC, Simulated	475	0	0.3	1.5	0	0
Monitoring	475	15	21.5	7.5	19	15

Table 13b. Section IX: Central Venous Pressure Catheter (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement—Non-PICC (total of a & b)	2,325	10	14.9	6.5	13	10
a. Non-PICC, Actual	2,325	0	10.6	8	10	0
b. Non-PICC, Simulated	2,325	0	4.3	4.2	3	0
Placement—PICC (total of a & b)	2,325	0	0.5	1.7	0	0
a. PICC, Actual	2,325	0	0.4	1.5	0	0
b. PICC, Simulated	2,325	0	0.1	0.7	0	0
Monitoring	2,325	15	22.3	8.8	19	15

Table 14a. Section X: Pulmonary Artery Catheter (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	475	0	4.3	5	3	0
Monitoring	475	0	9.6	7.4	9	0

Table 14b. Section X: Pulmonary Artery Catheter (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	2,325	0	4.8	5.3	3	0
Monitoring	2,325	0	10.3	7.5	9	0

Table 15a. Section XI: Other (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Ultrasound-Guided Techniques (total of a & b)	475	0	66.1	93.5	40	0
a. Regional	475	0	49.9	86.4	25	0
b. Vascular	475	0	16.1	19	11	0
Intravenous Catheter Placement	475	100	168.0	87.9	139	100
Advanced Noninvasive Hemodynamic Monitoring	475	0	10.8	58.1	1	0

Table 15b. Section XI: Other (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Ultrasound-Guided Techniques (total of a & b)	2,325	0	70.2	71.1	51	0
a. Regional	2,325	0	46.3	62.6	27	0
b. Vascular	2,325	0	23.9	22.2	18	0
Intravenous Catheter Placement	2,325	100	167.7	73.8	145	100
Advanced Noninvasive Hemodynamic Monitoring	2,325	0	17.7	90	2	0

NCE Exit Survey Results

Candidates provide important ongoing sources of evaluative information about the examination process. This information serves as essential input for the continuous quality improvement initiatives of the NBCRNA. Candidates are asked to complete a post-examination survey regarding their testing experience. The post-examination survey addressed the following four areas:

- Pre-examination activities such as scheduling, registration, locating the testing center, and interaction with test center staff;
- Examination and testing experience such as content fairness, content readability, test-center experience, and use of testing software;
- Examinee perception of the alternative question formats; and
- Personal preparation prior to examination.

Most of the questions employ a Likert-type rating scale, where respondents are asked to indicate their level of agreement with the survey statements. For the purposes of this report, the Likert response categories, *Strongly Agree* and *Agree,* are combined into a single *Agree* category, and *Strongly Disagree* and *Disagree* are combined into *Disagree*. Completion of the survey is not required as part of the examination process and is not part of the three-hour time limit for the NCE.

Responses were analyzed based on NCE candidates who were administered the exit survey during the period of CY2023. The responses represent tests administered. If a candidate tested more than once during 2023, their responses would be counted each time they completed the survey.

The NBCRNA updated the post-exam survey items starting with September 2022 administrations. For completeness of reporting, responses to both current and removed survey items are included; however, removed items will have smaller *N*s. Additionally, the *N* across items may be slightly inconsistent due to the following:
- Candidates did not always answer every question.
- Prior to September 2022, the survey was split into two unique question sets and randomly administered. Thus, there were small differences in the final numbers of candidates exposed to each of these two question sets.

Candidates continue to indicate satisfaction with scheduling dates and locations. Dates were rated acceptable by 86.05% of candidates while location was acceptable by 89.01% of candidates. Other pre-examination activities were rated acceptable by over 98% of candidates, a slight increase from CY2022 (97%). Regardless of how they respond to the survey, candidates can contact the NBCRNA office after each test administration to address any problems or concerns.

Table 16. Responses to Survey Questions: Scheduling and Registration

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
I was able to schedule an acceptable test date.	3,109	86.05%	504	13.95%
I was able to schedule an acceptable test center location.	3,216	89.01%	396	10.99%
The exam reservation process was easy to use.	3,545	98.12%	67	1.88%
The test center was easy to locate.	3,565	98.67%	47	1.33%
The testing center registration/check-in process was handled in a professional and efficient manner.	3,576	98.98%	36	1.02%

Six items relate to topics such as content alignment with curricula, content readability, and test-center operations. **Table 17** summarizes the responses to these survey items. Overall, the CY2023 NCE candidates were satisfied with their testing experience (98.15% agreement). Agreement concerning the content alignment with curricula increased from 92.5% in CY2022 to 93.66% in CY2023. Content readability slightly decreased from 95.1% in CY2022 to 94.13% in CY2023.

Table 17. Responses to Survey Questions: Examination and Testing Experience

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
The questions on my test today reflected the knowledge and subject matter I have been taught in my educational program.	3,384	93.66%	228	6.31%
The graphs, figures, and diagrams in the questions were legible.	3,401	94.13%	211	5.84%
The graphs, figures, and diagrams in the questions fit onto the screen.	3,479	96.29%	133	3.68%
My testing environment was clean, quiet, and comfortable.	3,565	98.67%	47	1.3%
I encountered no technical problems with the test administration software.	3,557	98.45%	55	1.52%
Overall, I was satisfied with my testing experience.	3,546	98.15%	66	1.83%

In addition to traditional multiple-choice items, the NCE includes the following alternative-item formats.

- Multiple correct response (MCR): the key is a *set* of options. Examinees are instructed how many options to select.
- Short answer/calculation (SA): there are no options to select—the key is a short numerical response.
- Drag and drop (DND): options are ordered or matched using the mouse.
- Hotspot (HS): the key is a region on an image that must be selected with the mouse. Boundaries indicating keyable areas are hidden from examinees.

Table 18 summarizes candidate ability to understand and respond to alternative items. In September 2021, the survey was revised to ask one general question about alternative items instead of one question per item type. Overall, candidates continue to respond positively, with 99.03% agreeing that they understand how to use alternative items compared to 98.3% in CY2022.

Table 18. Responses to Survey Questions: Alternative Item Formats

	Agree		Disagree	
Survey Question	**Count**	**Percent**	**Count**	**Percent**
I understood how to respond to the questions in the alternative formats.	3,578	99.03%	34	0.94%

Responses to items regarding NCE preparation are summarized in **Table 19**. Of the NCE examinees tested in CY2023, 84.14% agreed that the SEE helped them in their certification examination preparation. This is a decrease from 98.3% in CY2022 but continues the steady increase in the past several years (from under 60% in FY2017). Of the various review courses available to examinees, APEX Anesthesia Review was the most popular (78.8%) for preparation for the NCE.

Table 19. Responses to Survey Questions: Preparation for the NCE

Survey Question	Response	Count	Percent
Taking the SEE helped prepare me to take the certification examination.	Agree	3,040	84.14%
	Disagree	531	14.7%
If you took a review course in preparation for this examination, please indicate below which review course you took. If you attended more than one review course, please select the review course you attended which was of the longest duration.	A. Valley Anesthesia Review	285	7.9%
	B. Core Concepts Anesthesia Review	57	1.6%
	C. Prodigy Anesthesia Certification Exam Simulator (PACES)	133	3.7%
	D. APEX Anesthesia Review	2,846	78.8%
	E. Storm Anesthesia	2	0.1%
	F. Another commercial course	4	0.1%
	G. A review course organized by my nurse anesthesia program	44	1.2%
	H. I did not take a review course before this examination	241	6.7%

Demographic Characteristics of the SEE Examinee Population, 2023

The following section summarizes examinee performance on the SEE according to demographics and program year. Variables include gender, age, clinical background, and degree. Scores are from CY2023 with a column on the right of each table displaying five-year trend averages (January 1, 2019–December 31, 2023, *N* = 27,415). **Table A3** of Appendix A summarizes SEE domain-level scores according to program year.

Table 20 summarizes SEE scores by gender and program year. SEE examinees responded 65% female, 34.8% male, and 0.2% other. The mean total scores increased by program year: 410.6 (*n* = 887) for year 1, 422.4 (*n* = 3,546) for year 2, 433.9 (*n* = 1,927) for year 3 and above, and 424.3 (*n* = 6,361) overall. The five-year trend information (last column) shows a similar pattern. 409.9 for year 1, 417.7 for year 2, 424.4 for year 3 and above, and 422.8 overall. When subdivided by gender, examinees responding male or other consistently scored higher than examinees responding female.

Table 20. SEE Candidate Performance by Gender and Program Year, 2023

Program Year	Gender	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Female	576	406.0	39.3	405.2
	Male	312	419.1	42.5	418.5
	Other	-	-	-	-
	Total	**888**	**410.6**	**40.9**	**409.9**
Year 2	Female	2,279	420.0	42.8	415.4
	Male	1,263	426.8	42.8	421.6
	Other	4	429.0	53.0	442.8
	Total	**3,546**	**422.4**	**42.9**	**417.7**
Year 3 and above	Female	1,278	431.0	38.2	421.1
	Male	639	439.4	38.2	429.6
	Other	11	448.5	46.8	430.1
	Total	**1,927**	**433.9**	**38.5**	**424.4**
Total	Female	4,132	421.5	41.7	417.5
	Male	2,214	429.3	42.0	426.1
	Other	15	443.3	47.4	435.1
	Total	**6,361**	**424.3**	**42.0**	**422.8**

Table 21 summarizes SEE scores by age group and program year. The mean age of year-1 SEE examinees was 31.0 years. The mean age of year-2 SEE examinees was 32.1 years. The mean age of year-3-and-beyond SEE examinees was 33.1 years. The mean age of all SEE examinees during the period was 32.3 years, compared to first-time NCE examinees (32.6 years) over the same period. The largest age groups were composed of examinees under the age of 30 (33.5%) and examinees ages 30 – 35 (45.7%). In 2023, younger examinees scored higher than older examinees overall and within the same training year. Similar results were found in the five-year trending sample.

Table 21. SEE Candidate Performance by Age and Program Year, 2023

Program Year	Age	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Under 30	393	413.1	40.7	412.8
	30 – 35	354	411.6	40.6	410.6
	36 – 39	88	405.0	39.5	403.8
	40 or above	53	395.2	44.0	393.7
	Total	**888**	**410.6**	**40.9**	**409.9**
Year 2	Under 30	1,281	426.9	42.6	422.2
	30 - 35	1,555	421.8	42.6	417.0
	36 - 39	420	419.7	41.9	416.0
	40 or above	290	410.1	44.6	403.7
	Total	**3,546**	**422.4**	**42.9**	**417.7**
Year 3 and above	Under 30	455	444.2	36.1	429.5
	30 - 35	997	432.8	40.1	426.3
	36 - 39	290	426.8	34.2	421.8
	40 or above	186	425.7	36.2	417.3
	Total	**1,927**	**433.9**	**38.5**	**424.4**
Total	Under 30	2,129	428.0	42.1	425.3
	30 - 35	2,906	424.3	42.1	424.6
	36 - 39	798	420.7	39.5	420.8
	40 or above	528	414.1	42.8	415.6
	Total	**6,361**	**424.3**	**42**	**422.8**

Table 22 displays summaries of SEE scores by clinical background and program year. Overall, the most commonly identified clinical settings were ICU/CCU (14.0%) and MICU (11.0%).

When comparing SEE performance across clinical background subgroups, be aware of the small counts which can make comparisons spurious. The five-year trend columns and overall means tend to be more reliable because they are based on much larger sample sizes.

Table 22. SEE Candidate Performance by Clinical Background and Program Year, 2023

	Clinical Background	Count	Mean	Std Dev	5-Yr Mean	Program Year	Clinical Background	Count	Mean	Std Dev	5-Yr Mean
Year 1	CCU	77	399.5	42.6	399.2	Year 3 & Above	CCU	170	433.8	40.5	425.8
	ER	61	412.8	35.4	410.7		ER	158	433.9	36.0	421.8
	ICU/CCU	79	409.8	42.4	407.8		ICU/CCU	273	435.0	43.1	424.6
	MICU	79	412.0	41.2	412		MICU	200	437.9	39.8	424.4
	NEURO ICU	74	416.7	35.7	414.9		NEURO ICU	168	426.5	34.8	423.3
	NICU	76	415.1	39.8	413.6		NICU	139	437.1	37.8	423
	OR	66	401.2	39.5	401.2		OR	143	428.5	39.0	418.6
	PACU	64	413.5	39.9	412.9		PACU	144	433.2	34.1	420.3
	PICU	82	408.2	43.1	408.2		PICU	164	436.4	38.0	424.2
	SICU	74	409.6	43.5	408.5		SICU	174	435.1	39.3	425.8
	TRAUMA ICU	79	415.6	42.4	415.6		TRAUMA ICU	157	433.4	34.3	427.2
	Other	77	413.1	42.0	413.1		Other	31	430.5	41.0	416.0
	Not Provided	0	-	-	-		Not Provided	6	-	-	-
	Total	**888**	**410.6**	**40.9**	**409.9**		**Total**	**1,927**	**433.9**	**38.5**	**424.4**
Year 2	CCU	356	422.6	41.5	417.6	Total	CCU	603	422.8	42.6	423.7
	ER	259	420.8	43.6	416.9		ER	478	424.1	40.8	420.3
	ICU/CCU	537	423.1	43.7	419		ICU/CCU	889	425.6	44.0	423.7
	MICU	420	423.6	42.1	418.6		MICU	699	426.4	42.1	423.4
	NEURO ICU	269	426.0	44.5	421.7		NEURO ICU	511	424.8	40.4	422.7
	NICU	229	427.9	41.5	422.4		NICU	444	428.6	40.6	422.1
	OR	223	420.7	44.9	414.2		OR	432	420.3	43.0	416
	PACU	214	418.4	42.9	415.8		PACU	422	422.7	40.3	418.5
	PICU	254	416.7	41.3	411.6		PICU	500	421.8	41.8	420.5
	SICU	424	422.0	42.0	416.5		SICU	672	424.0	42.1	424.1
	TRAUMA ICU	266	426.0	42.0	419.7		TRAUMA ICU	502	426.7	40.1	425.4
	Other	88	413.5	47.4	413.0		Other	196	416.0	44.6	414.0
	Not Provided	7	-	-	-		Not Provided	13	-	-	-
	Total	**3,546**	**422.4**	**42.9**	**417.7**		**Total**	**6,361**	**424.3**	**42**	**422.8**

Table 23 displays summaries of SEE scores by degree upon completion and program year. The percentage of SEE examinees enrolled in MSN programs decreased in 2023 (8.5%) compared to 2022 (12.7%). The number of SEE examinees in doctoral programs continued to increase in 2023 (*N* = 5,490; 86.3%) over the previous years: 2022 (*N* = 4,916; 79.1%), 2021 (*N* = 4,053; 69.6%) and 2020 (*N* = 2,620; 58.9%). Exercise caution when comparing scores among subgroups with small counts.

Table 23. SEE Candidate Performance by Graduate Degree and Program Year, 2023

Program Year	Degree Upon Completion	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	MS Nurse Anesthesia	29	411.7	26.1	400.1
	MS Nursing Major	4	351.5	45.6	351.5
	Other Master's	0	-	-	-
	Doctoral	855	410.9	41.1	410.7
	Not Provided	0	-	-	-
	Total	**888**	**410.6**	**40.9**	**409.9**
Year 2	MS Nurse Anesthesia	264	421.7	48.6	413.7
	MS Nursing Major	249	436.3	43.0	428.2
	Other Master's	194	428.8	33.7	427.1
	Doctoral	2,839	420.9	42.6	416.6
	Not Provided	0	-	-	-
	Total	**3,546**	**422.4**	**42.9**	**417.7**
Year 3 and above	MS Nurse Anesthesia	67	401.1	53.2	422.4
	MS Nursing Major	57	416.6	28.0	427.3
	Other Master's	4	418.0	23.1	427.8
	Doctoral	1,796	435.7	37.5	424.0
	Not Provided	3	-	-	-
	Total	**1,927**	**433.9**	**38.5**	**424.4**
Total	MS Nurse Anesthesia	360	417.0	48.7	421.2
	MS Nursing Major	310	431.6	42.3	427.3
	Other Master's	198	428.6	33.6	427.7
	Doctoral	5,490	424.2	41.7	422.0
	Not Provided	3	-	-	-
	Total	**6,361**	**424.3**	**42**	**422.8**

Post-master's Certificate is reported together with *Other Master's*; *MS Nurse Anesthesia/Anesthesiology* is reported together with *MS Nurse Anesthesia*.

Appendix A - Additional NCE and SEE Performance Data

Table A1. NCE Pass Rate Trends—First-Time Candidates 2008 through December 31, 2023

Reporting Period	Percent Passing
2008* (Graduates 2007 – 2008)	89.9
2009 (Graduates after 2008)	87.7
2010	88.9
2011	89.1
FY2012	88.5
FY2013	88.4
FY2014**	87.8
FY2015	85.0
FY2016	84.5
FY2017	82.6
FY2018	84.3
CY2019	84.4
CY2020	85.2
CY2021	84.1
CY 2022	84.0
CY 2023	83.2

FY refers to Fiscal Year. CY refers to Calendar Year (Jan 1 – Dec 31).
*Passing standard increased in August 2008
**Passing standard increased in January 2014

Table A2. Descriptive Statistics for NCE Total and Domain-Level Scores—First-Time Candidates 2023 (January 1, 2023 – December 31, 2023)

	Mean	Standard Deviation
Total Score	483.9	47.5
Basic Science	485.2	63.5
Equipment, Instrumentation and Technology	491.1	70.8
General Principles of Anesthesia	488.9	57.7
Anesthesia for Surgical Procedures and Special Populations	486.5	58.6

Table A3. Descriptive Statistics for SEE Scores and Domain-Level Information, 2023 (January 1, 2023 – December 31, 2023)

	1st Year in Program		2nd Year in Program		3rd Year in Program		All	
	Avg	SD	Avg	SD	Avg	SD	Avg	SD
Total	410.6	40.9	422.4	42.9	433.9	38.5	424.3	42.0
Basic Science	413.1	47.0	416.8	49.4	425.5	44.7	419.0	47.9
Equipment, Instrumentation and Technology	412.0	46.6	426.9	46.9	438.3	42.4	428.2	46.3
General Principles of Anesthesia	409.4	46.0	424.3	48.9	436.1	45.9	425.8	48.4
Anesthesia for Surgical Procedures and Special Populations	411.2	47.6	425.1	47.8	439.4	45.1	427.5	47.9