NBCRNA
National Board of Certification & Recertification for Nurse Anesthetists

Annual NCE and SEE Report

Summary of NCE and SEE Performance and Clinical Experience

September 1, 2017-August 31, 2018

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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) over the time frame of the NBCRNA's fiscal year 2018 (FY 2018), September 1, 2017 through August 31, 2018.

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 will note that there was no change to the NCE passing standard in FY 2018. The passing standard was last changed on January 1, 2014; the NBCRNA Board of Directors reviewed the results of the 2017 standard setting study and voted to retain the 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. Next, 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 FY 2018.

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.

Please note that the following changes have been included in this FY 2018 annual report:

- NCE domain-level information for first-time candidates is presented in two different tables in the appendices as a new content outline became effective 1/1/2018. SEE domain-level information is presented in two different tables in the appendices as a new content outline became effective 5/1/2018.
- Under Descriptive Information on Number of Clinical Experiences, Position Categories and Pharmacological Agents are no longer reported as these are no longer tracked.
- Clinical experiences are reported separately for Individuals who matriculated into master's and doctoral anesthesia programs.

Candidate Performance on the NCE

The information in **Table 1** addresses the performance of candidates on the NCE during the fiscal year 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 2,439 first-time candidates is 84.3%. The pass rate is lower for repeat examinees, consistent with the previous year's data.

The FY 2018 pass rate (84.3%) is an increase over the FY2017 pass rate (82.6%) and is comparable to the cumulative first-time pass rate (84.8%) averaged over the previous five fiscal years as shown in the final column of **Table 1** (FY 2014–FY 2018 represents September 1, 2013–August 31, 2018, total N = 15,139). First-time examinee pass rates for the NCE, by year since 2008, can be found in **Table A1** in Appendix A of this report.

Table 1. Pass/Fail Summary for NCE Candidates, FY 2018

First-Time Candidates		Frequency	Percent	5-year Trend %
	Pass	2,057	84.3%	84.8%
	Fail	382	15.7%	15.2%
	Total	**2,439**	**100.0%**	**100.0%**
Repeat Candidates		**Frequency**	**Percent**	**5-year Trend %**
	Pass	388	63.4%	62.3%
	Fail	224	36.6%	37.7%
	Total	**612**	**100.0%**	**100.0%**

The NCE total scores and domain-level information for first-time candidates can be found in **Tables A2 and A3** of Appendix A. The examination content outline was revised effective 1/1/2018. **Table A2** reports examinations administered from September 1, 2017 to December 31, 2017, indicated as FY2018A, and **Table A3** reports examinations administered on January 1, 2018 through August 31, 2018, indicated as FY2018B.

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 (57.9%) were administered 70 items (not including the 30 unscored pretest items). Only 4.4% of NCE candidates failed the test in 70 items. Approximately 19.1% of the candidates took the maximum test length of 140 items.

Table 2. Pass/Fail Summary by Test Length for First-Time NCE Candidates, FY 2018

	Frequency	Percent	5-year Trend %
Pass in 70 items	1,413	57.9%	56.7%
Pass in 71 to 139 items	350	14.4%	15.7%
Pass in 140 items	294	12.1%	12.5%
Fail in 70 items	107	4.4%	4.0%
Fail in 71 to 139 items	104	4.3%	4.0%
Fail in 140 items	171	7.0%	7.2%
Total	**2,439**	**100.0%**	**100.0%**

Demographic Characteristics of NCE Candidate Population, FY 2018

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 58.0% of the NCE candidates were female and 42.0% were male. The pass rates between males and females were consistent with the five-year trend (final column of Table 3).

Table 3. Gender of NCE Candidates, FY 2018

	Pass		Fail		Total		5-year Trend
Gender	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**Pass %**
Female	1,177	83.2%	238	16.8%	1,415	58.0%	84.0%
Male	880	85.9%	144	14.1%	1,024	42.0%	86.1%
Total	**2,057**	**84.3%**	**382**	**15.7%**	**2,439**	**100.0%**	**84.8%**

Table 4 presents the pass rate by age group. The pass rate decreased as examinee age increased, both for the FY 2018 sample and the five-year trend analysis. Younger students tend to perform better on the NCE. The average age of the FY 2018 *first-time* NCE candidates was 32.0 years.

Table 4. Age of NCE Candidates, FY 2018

	Pass		Fail		Total		5-year Trend
Age	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**Pass %**
Under 30	788	90.1%	87	9.9%	875	35.9%	90.3%
30 - 35	906	84.7%	164	15.3%	1,070	43.9%	84.8%
36 - 39	242	76.8%	73	23.2%	315	12.9%	78.6%
40 or older	121	67.6%	58	32.4%	179	7.3%	71.0%
Total	**2,057**	**84.3%**	**382**	**15.7%**	**2,439**	**100.0%**	**84.8%**

Table 5 displays pass rates for candidates' clinical background. Over one-third of the candidates reported their clinical background as ICU/CCU (36.5%). Pass rate comparisons between different clinical settings (Table 5) should be made with caution, because some subgroups for the FY 2018 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).

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 PICU, MICU, NEURO ICU, and SICU clinical backgrounds respectively have demonstrated the highest rates of success on the NCE.

Table 5. Clinical Background of NCE Candidates, FY 2018

Clinical Background	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
CCU	265	84.1%	50	15.9%	315	12.9%	85.1%
ER	162	79.8%	41	20.2%	203	8.3%	82.5%
ICU/CCU	739	83.0%	151	17.0%	890	36.5%	83.8%
MICU	275	88.4%	36	11.6%	311	12.8%	86.8%
NEURO ICU	120	84.5%	22	15.5%	142	5.8%	86.7%
NICU	27	77.1%	8	22.9%	35	1.4%	77.1%
OR	7	100.0%	0	0.0%	7	0.3%	78.3%
PACU	13	92.9%	1	7.1%	14	0.6%	81.9%
PICU	56	88.9%	7	11.1%	63	2.6%	88.2%
SICU	252	86.6%	39	13.4%	291	11.9%	86.5%
Trauma ICU	96	84.2%	18	15.8%	114	4.7%	84.5%
Other	45	83.3%	9	16.7%	54	2.2%	84.4%
Total	**2,057**	**84.3%**	**382**	**15.7%**	**2,439**	**100.0%**	**84.8%**

Table 6 displays distribution of pass rates by degree attained. Of 2,439 first-time NCE takers in FY 2018, 25.7% (n=626) were from programs that awarded a Master of Science in Nursing degree; 32.5% (793) graduated from programs awarding a Master of Science in Nurse Anesthesia degree; 16.1% (n=393) were from other master's programs; and 25.7% (n=627) were from programs that awarded a doctoral degree. Pass rate comparisons between different degrees (Table 6) should be made with caution because some demographic subgroups feature small sample sizes.

When comparing pass rates across clinical background subgroups, readers are advised to refer to the 5-year Trend column of Table 6. For instance, over the past five years, first-time NCE examinees coming out of MSN programs appear to exhibit the highest rates of success on the NCE.

Table 6. Types of Graduate Degrees Reported by NCE Candidates, FY 2018

Degree Upon Completion	Pass		Fail		5-year Trend
	N	Percent	N	Percent	Pass %
MS Nursing	551	88.0%	75	12.0%	87.0%
MS Nurse Anesthesia	647	81.6%	146	18.4%	83.2%
Other Masters	337	85.8%	56	14.2%	85.0%
Doctoral Degree	522	83.3%	105	16.7%	83.4%
Total	**2,057**	**84.3%**	**382**	**15.7%**	**84.8%**

Descriptive Information on Number of Clinical Experiences, FY 2018

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 who passed the NCE on the first attempt, and not the sample of NCE candidates during this time frame.* As a result, sample sizes presented in this section (2,313) will not equal the number of first-time NCE candidates (2,439) as reported in Tables 1 through 6.

As noted, students in Master's programs and students in Doctoral programs have different academic requirements based on the Council on Accreditation (COA) Standards. For clarity, these two groups of students are reported separately in Tables 7a through 15a for Master's students (n=1,754), and in Tables 7b through 15b, for Doctoral students (n=559), 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 FY 2018 records.
- The *Standard Deviation* column describes the dispersion in the number of cases reported on the FY 2018 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 FY 2018 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	1,754	600	853.7	139.2	839	600
Total Hours of Anesthesia	1,754	0	1,650.0	316.5	1,600	942
Total Clinical Hours	1,754	0	2,608.7	386.4	2,559	1,514

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	559	600	911.1	160.3	887	600
Total Hours of Anesthesia	559	0	1,826.0	412.6	1,757	867
Total Clinical Hours	559	0	2,866.4	438.0	2,758	2,000

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Class I	1,754	0	83.6	36.8	78	1
Class II	1,754	0	361.5	87.6	354	11
Class III-VI Total	1,754	200	408.5	100.7	495	204
Class III	1,754	50	328.5	85.3	316	100
Class IV	1,754	10	76.6	36.7	70	10
Class V	1,754	0	2.9	3.3	2	0
Class VI	1,754	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	559	0	92.0	46.2	83	13
Class II	559	0	371.3	100	354	158
Class III-VI Total	559	200	447.5	117.7	432	210
Class III	559	50	362.3	103.3	345	163
Class IV	559	10	35.7	35.7	73	18
Class V	559	0	3.4	3.4	2	0
Class VI	559	0	0.6	1.0	0	0

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	1,754	100	245.1	70.5	234	102
Pediatric, 2-12 years	1,754	30	72.7	33.0	67	30
Pediatric, under 2 years	1,754	10	21.8	10.9	19	10
Neonatal, under 4 weeks	1,754	0	1.6	2.2	1	0
Trauma/Emergency	1,754	30	52.8	20.8	47	30
Obstetrical Management	1,754	30	70.5	36.6	60	30
Cesarean delivery	1,754	10	34.1	18.2	31	10
Analgesia for labor	1,754	10	36.4	24.4	29	10
Pain Management Encounters	1,754	15	45.5	39.9	34	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	559	100	254.2	77.9	248	109
Pediatric, 2-12 years	559	30	77.6	39.1	69	30
Pediatric, under 2 years	559	10	22.5	12.0	219	10
Neonatal, under 4 weeks	559	0	1.5	2.2	1	0
Trauma/Emergency	559	30	58.4	23.8	53	30
Obstetrical Management	559	30	74.1	35.1	66	30
Cesarean delivery	559	10	32.6	14.5	31	11
Analgesia for labor	559	10	41.5	26.4	29	10
Pain Management Encounters	559	15	56.0	53.8	34	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	1,754	75	179.2	60.1	168	76
Intracranial Total	1,754	5	14.6	8	13	5
Intracranial Open	1,754	3	11.2	6.8	10	3
Intracranial Closed	1,754	0	3.3	3.6	2	0
Oropharyngeal	1,754	20	94.0	50.1	87	20
Intrathoracic Total	1,754	15	39.5	15.7	37	15
Heart	1,754	5	22.9	11.7	21	5
Open Heart Total	1,754	5	16.3	8.6	15	5
Open Heart with CPB	1,754	0	13.6	8.1	12	0
Open Heart without CPB	1,754	0	2.7	4.1	1	0
Closed Heart	1,754	0	6.9	8.5	5	0
Lung	1,754	5	10.9	5.5	9	5
Other	1,754	0	5.5	5.7	4	0
Neck	1,754	5	22.5	10.6	21	5
Neuroskeletal	1,754	20	44.6	21.1	40	20
Vascular	1,754	10	37.8	17.6	35	10

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	559	75	194.5	64.3	182	77
Intracranial Total	559	5	15	11.6	13	5
Intracranial Open	559	3	11.6	9.4	10	3
Intracranial Closed	559	0	3.4	4.5	2	0
Oropharyngeal	559	20	105.2	58.9	91	24
Intrathoracic Total	559	15	40.5	15.7	38	15
Heart	559	5	22.4	11.5	20	5
Open Heart Total	559	5	15.3	8	14	5
Open Heart with CPB	559	0	13.4	7.4	12	2
Open Heart without CPB	559	0	2	2.5	1	0
Closed Heart	559	0	7.1	7.1	5	0
Lung	559	5	11.1	5.1	10	5
Other	559	0	7	6.7	5	0
Neck	559	5	24.7	10.7	23	5
Neuroskeletal	559	20	46.4	21.2	42	20
Vascular	559	10	38.8	14.2	37	10

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	1,754	400	606.3	110.7	591	400
Inhalation Induction	1,754	25	86.3	41.5	79	25
Mask Management	1,754	25	55.9	62.2	40	25
Supraglottic Airway Devices (total of a & b)	1,754	35	117.3	53.1	108	35
a. Laryngeal mask	1,754	-	111.4	52.1	104	0
b. Other	1,754	-	3.7	18.1	0	0
Tracheal Intubation (total of a & b)	1,754	250	393.8	76.9	384.5	250
a. Oral	1,754	-	357.5	104.4	363	0
b. Nasal	1,754	-	16.7	15.4	13	0
Alternative Tracheal Intub/Endo (total of a & b)	1,754	25	62	35.9	53	25
a. Endoscopic techniques, total	1,754	5	15.8	23.9	8	5
1. Actual Placement	1,754	-	10.9	21.5	6	0
2. Simulated Placement	1,754	-	4.9	12.2	2	0
3. Airway Assessment	1,754	-	11.8	42.4	6	0
b. Other techniques	1,754	5	46.2	29.8	41	5
Emergence from Anesthesia	1,754	300	579.7	130.8	565.5	301
Regional Techniques						
Actual Administration (total of a, b, c & d)	1,754	35	120.7	62.6	105	36
a. Spinal (total of 1 & 2)	1,754	10	45.6	29.3	40	10
1. Spinal Anesthesia	1,754	-	42.1	27.8	37	1
2. Spinal Pain Management	1,754	-	3.6	7.3	1	0
b. Epidural (total of 1 & 2)	1,754	10	36.3	25.7	29	10
1. Epidural Anesthesia	1,754	-	12.5	17.2	6	0
2. Epidural Pain Management	1,754	-	23.8	20.9	18	0
c. Peripheral (total of 1, 2, 3 & 4)	1,754	10	34.4	36	23	10
1. Anesthesia Upper	1,754	-	19.1	22.1	13	0
2. Anesthesia Lower	1,754	-	8	12.7	4	0
3. Pain Management Upper	1,754	-	8.9	12.8	6	0
4. Pain Management Lower	1,754	-	15.2	26.2	7	0
d. Other						
1. Anesthesia	1,754	-	1.8	5.6	0	0
2. Pain Management	1,754	-	3.3	7.8	1	0
Management (total of 1 & 2)	1,754	35	95.9	54.4	81	35
1. Anesthesia	1,754	-	60.8	44.2	50	0
2. Pain Management	1,754	-	35.4	33	27	0
Moderate/deep sedation	1,754	25	122.1	76.7	108	25

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	559	400	645.8	116.8	637	411
Inhalation Induction	559	25	87.1	41.9	78	25
Mask Management	559	25	54.5	49.6	41	25
Supraglottic Airway Devices (total of a & b)	559	35	117.8	59.4	107	35
a. Laryngeal mask	559	-	112.4	56.1	102	24
b. Other	559	-	5.3	23.6	0	0
Tracheal Intubation (total of a & b)	559	250	437.4	91.9	423	267
c. Oral	559	-	384.5	121.8	391	0
a. Nasal	559	-	24.3	21.3	19	0
Alternative Tracheal Intub/Endo (total of a & b)	559	25	66.1	37.4	60	25
a. Endoscopic techniques, total	559	5	15.3	27.4	9	5
1. Actual Placement	559	-	12.8	26.4	7	0
2. Simulated Placement	559	-	2.5	4.1	1	0
3. Airway Assessment	559	-	12.2	52	7	0
b. Other techniques	559	5	50.8	30	46	5
Emergence from Anesthesia	559	300	621.2	135.5	612	300
Regional Techniques	559					
Actual Administration (total of a, b, c,& d)	559	35	142.1	80.5	122	40
a. Spinal (total of 1 & 2)	559	10	46.6	27.5	41	10
1. Spinal Anesthesia	559	-	40.7	24.6	36	3
2. Spinal Pain Management	559	-	5.8	10.1	2	0
b. Epidural (total of 1 & 2)	559	10	42	27.3	36	10
1. Epidural Anesthesia	559	-	15.4	18.2	8	0
2. Epidural Pain Management	559	-	26.6	21.7	21	0
c. Peripheral (total of 1, 2, 3 & 4)	559	10	46.6	45.4	30	10
1. Anesthesia Upper	559	-	27.3	33.9	17	0
2. Anesthesia Lower	559	-	14	15.5	9	0
3. Pain Management Upper	559	-	13.3	21.5	7	0
4. Pain Management Lower	559	-	19.3	28.4	9	0
d. Other	559					
1. Anesthesia	559	-	5.5	18	1	0
2. Pain Management	559	-	7.6	25.7	1	0
Management (total of 1 & 2)	559	35	103.5	71	87	35
1. Anesthesia	559	-	58.6	44.6	50	0
2. Pain Management	559	-	44.8	42.3	34	0
Moderate/deep sedation	559	25	141.3	87.1	123	26

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	1,754	25	53.5	23.6	48	25
Intraarterial Blood Pressure Monitoring	1,754	30	77.6	26.5	73	30

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	559	25	61.2	24.5	57	25
Intraarterial Blood Pressure Monitoring	559	30	87.5	29.4	83	32

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement—Non-PICC (total of a & b)	1,754	10	14.8	7.3	12	10
a. Non-PICC, Actual	1,754	-	9.8	8.8	9	0
b. Non-PICC, Simulated	1,754	-	5	4.5	4	0
Placement—PICC (total of a & b)						
a. PICC, Actual	1,754	-	0.6	1.8	0	0
b. PICC, Simulated	1,754	-	0.6	2	0	0
Monitoring	1,754	15	25.2	10.3	22	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement—Non-PICC (total of a & b)	559	10	15.8	7.6	13	10
a. Non-PICC, Actual	559	-	12.8	8.3	11	0
b. Non-PICC, Simulated	559	-	3	3.5	2	0
Placement—PICC (total of a & b)						
a. PICC, Actual	559	-	0.6	1.6	0	0
b. PICC, Simulated	559	-	0.1	0.6	0	0
Monitoring	559	15	25.4	12.7	22	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	1,754	0	5.0	6.2	3	0
Monitoring	1,754	0	11.9	8.1	11	0

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	559	0	6.1	5.9	5	0
Monitoring	559	0	11.7	7.8	10	0

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Ultrasound (US)-Guided Techniques (total of a & b)	1,754	-	31.5	37.8	20	0
a. Regional	1,754	-	22.1	33.7	11	0
b. Vascular	1,754	-	9.1	11.7	5	0
Intravenous Catheter Placement	1,754	100	182.3	96.2	150	100
Advanced Noninvasive Hemodynamic Monitoring	1,754	0	19.3	100	0	0

Table 15b. Section XIII: Other (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Ultrasound (US)-Guided Techniques (total of a & b)	559	-	45.5	47.8	32	0
a. Regional	559	-	29.5	39.4	17	0
b. Vascular	559	-	16	17.6	12	0
Intravenous Catheter Placement	559	100	193.4	87.9	165	100
Advanced Noninvasive Hemodynamic Monitoring	559	0	0.6	3.5	0	0

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:

- Six statements related to pre-examination activities such as registration and scheduling, locating the testing center, and interaction with test center staff;
- Nine statements related to aspects of the examination experience such as readability, fairness of test questions, and use of testing software;
- Six statements related to examinee perception of the alternative question formats; and
- Three statements related to exam preparation.

Most of the questions employ a Likert-type rating scale, by which respondents 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*. The survey questions and format were developed by the NBCRNA and representatives from Pearson VUE, Inc. Completion of the survey is not required as part of the examination process and is not part of the three-hour time limit. Respondents do not always answer all the questions, as reflected by the unequal sample size across the sections of the survey.

Responses were analyzed based on a sample of NCE test takers who were administered the exit survey during the period of September 1, 2017, through August 31, 2018 (FY18). After each test administration, the test taker can contact the NBCRNA office to address any problems or concerns related to the NCE.

The first seven statements pertain to pre-examination scheduling and registration activities. The responses to the first statement, not included in the table below, indicate that nearly all (97.1%) of the NCE candidates scheduled their examination on the Internet rather than by phone. Responses to the other six survey questions are summarized in **Table 16**.

Table 16. Responses to Survey Questions: Scheduling and Registration
(N=1,538 with about 1% omitted responses to some questions)

	Agree		Disagree	
Survey Question	**Count**	**Percent**	**Count**	**Percent**
I was able to schedule an acceptable test date.	1,374	89.3%	151	9.8%
I was able to schedule an acceptable test center location.	1,410	91.7%	109	7.1%
The Exam Reservation Process was easy to use.	1,513	98.4%	11	0.7%
The test center was easy to locate.	1,493	97.1%	29	1.9%
The test center staff was helpful and knowledgeable.	1,516	98.6%	4	0.3%
The testing center Registration/Check-In Process was handled in a professional and efficient manner.	1,514	98.4%	8	0.5%

The next nine statements relate to mid-administration topics such as the fairness of test questions and readability of the examination. **Table 17** summarizes the responses to these survey questions. Overall (97.2% agreement), the FY 2018 NCE examinees were satisfied with their testing experience.

Table 17. Responses to Survey Questions: Examination and Testing Experience
(N=1,538 with about 1.0% omitted responses to some questions)

	Agree		Disagree	
Survey Question	**Count**	**Percent**	**Count**	**Percent**
I thought the examination questions were fair.	1,301	84.6%	214	13.9%
The graphs, figures, and diagrams in the questions were easy to read.	1,373	89.3%	137	8.9%
The graphs, figures, and diagrams in the questions fit onto the screen.	1,315	85.6%	189	12.3%
I was able to 'scroll' the test window in order to view an entire graph or figure in a question.	1,494	97.2%	15	1.0%
The areas of the content outline were fairly represented.	1,268	82.5%	246	16.0%
My testing environment was clean, quiet, and comfortable.	1,504	97.8%	19	1.2%
I encountered no technical problems with the test administration software.	1,496	97.3%	22	4.4%
The test administration software was user-friendly.	1,514	98.4%	7	0.5%
Overall, I was satisfied with my testing experience.	1,495	97.2%	25	1.6%

Since August 2009, the NBCRNA has administered alternative question formats on the NCE in addition to traditional multiple-choice items. These question formats include multiple correct response (MCR, where the examinee is asked to select an indicated number of correct responses), short answer/calculation (SA, where the examinee types in short, numerical responses), drag and drop (used for matching or ordering questions), and hotspot (where an examinee points and clicks on the correct region of an image). Of all 3,051 takers of the NCE in FY 2018, about half (N = 1,537) provided feedback on these question formats. **Table 18** summarizes the responses to six survey questions related to the MCR, SA, drag and drop, and hotspot question formats.

Table 18. Responses to Survey Questions: Alternative Question Formats (N=1,537 with about 1.5% omitted responses to different questions)

	Agree		Disagree	
Survey Question	**Count**	**Percent**	**Count**	**Percent**
The questions in the Multiple Correct Response format were fair.	1,407	91.5%	107	7.0%
The questions in the Short Answer/Calculation format were fair.	1,449	94.3%	66	4.3%
The questions in the Drag and Drop format were fair.	1,464	95.3%	52	3.4%
The questions in the Hotspot format were fair.	1,423	92.6%	94	6.1%
I understood how to respond to the questions in the alternative formats.	1,482	96.4%	26	1.7%
I needed help figuring out how to respond to the questions in the alternative formats.	558	36.3%	954	62.1%

Responses to the last three items on the exit survey, addressing methods that candidates used to prepare for the examination, are summarized in **Table 19**. Of the NCE examinees testing in FY 2018, over two-thirds (67.9%) stated that the SEE helped them. This is a substantial increase over the past two years where just under 60% reported that the SEE was helpful. Of 1,537 who were asked the question regarding preparation for this examination, 98.2% responded and reported attending a review course. Finally, 88.7% reported that their nurse anesthesia educational program featured computerized testing; this number has been increasing every year since 2013.

Table 19. Responses to Survey Questions: Preparation for the NCE (N=1,537 with about 1.5% omitted responses to different questions)

Survey Question	Response	Count	Percent
Taking the SEE helped prepare me to take the certification examination.	Agree	1,044	67.9%
	Disagree	378	24.6%
If you took a review course in preparation for this examination, please indicate below which review course you took.	Valley Anesthesia	303	19.7%
	Core Concepts	33	2.1%
	Howard Review	1	0.1%
	R&R Board Review	2	0.1%
	PACES	42	2.7%
	CRNA Secrets	5	0.3%
	Review Course at AANA Annual Meeting	1	0.1%
	NARC4U	0	0.0%
	APEX Anesthesia Review	1,066	69.4%
	Other commercial	6	0.4%
	Course Organized by My Program	14	0.9%
	Did Not Take	45	2.9%
Please indicate below if your nurse anesthesia educational program featured any academic tests using computer-based testing.	Yes	1,363	88.7%
	No	156	10.1%

Demographic Characteristics of the SEE Candidate Population, FY 2018

The following tables summarize performance on the SEE according to demographic variables, including gender, age, clinical background, and degree. The scores are presented by year in the program for each variable. Also, the column in the extreme-right of each table displays the five-year trend average (FY 2014 through FY 2018, September 1, 2013–August 31, 2018, N = 17,424) for each demographic subgroup. In addition, summaries of SEE total scores and domain-level information can be found in **Tables A4** and **A5** of Appendix A.

Table 20 summarizes SEE scores by gender: 41.1% of SEE examinees were male and 58.9% were female. The mean total score for Year-2 examinees (406.1) was higher than the mean total score for Year-1 examinees (393.0). The mean SEE score for the Year-3-and-above students was highest at 419.7.

The five-year trend information (last column) shows a similar pattern. Average scores for Year-3-and-above students are higher than for Year-2, which are higher than Year-1 students. Also, males consistently attained slightly higher scores on the SEE than females.

Table 20. SEE Candidate Performance by Gender and Program Year, FY 2018

Program Year	Gender	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Female	167	385.7	46.4	385.0
	Male	139	401.8	47.5	398.9
	Total	**306**	**393.0**	**47.5**	**391.0**
Year 2	Female	1,180	403.4	42.8	397.5
	Male	875	409.7	45.5	405.7
	Total	**2,055**	**406.1**	**44.1**	**400.9**
Year 3 and above	Female	1,121	416.8	40.1	403.8
	Male	708	424.2	43.2	414.3
	Total	**1,829**	**419.7**	**41.4**	**407.9**
Total	Female	2,468	408.3	42.8	398.9
	Male	1,722	415.0	45.4	408.2
	Total	**4,190**	**411.1**	**44.0**	**402.6**

Table 21 summarizes SEE scores by age group. The average age of Year-1 SEE examinees was 31.4 years. The average age of Year-2 SEE examinees was 31.3 years. The average age of Year-3 SEE examinees was 32.1 years. The mean age of all SEE examinees during the period was 31.6 years, on average similar to the sample of first-time NCE examinees (32.0 years). The largest age groups were composed of examinees under the age of 30 (40.9%) and examinees between the ages of 30 and 35 (40.6%). In FY 2018, except for those in the first year of their programs, younger examinees scored higher than older examinees. This variance in trend for Year-1 examinees is likely due to the relatively small N for examinees in this group. The same results were found in the five-year trending sample.

Table 21. SEE Candidate Performance by Age and Program Year, FY 2018

Program Year	Age	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Under 30	143	395.4	51.5	390.6
	30 - 35	100	396.5	44.3	394.3
	36 - 39	37	381.6	45.5	389.8
	40 or above	26	382.6	37.1	379.8
	Total	**306**	**393.0**	**47.5**	**391.0**
Year 2	Under 30	921	410.8	44.3	404.7
	30 - 35	792	404.6	43.3	400.6
	36 - 39	204	402.9	43.5	393.9
	40 or above	138	387.5	42.2	389.3
	Total	**2,055**	**406.1**	**44.1**	**400.9**
Year 3 and above	Under 30	648	422.4	41.0	411.5
	30 - 35	810	420.9	41.2	408.8
	36 - 39	216	417.6	44.7	404.0
	40 or above	155	404.5	36.6	395.4
	Total	**1,829**	**419.7**	**41.4**	**407.9**
Total	Under 30	1,712	413.9	44.4	405.5
	30 - 35	1,702	411.9	43.3	403.4
	36 - 39	457	408.1	45.4	397.8
	40 or above	319	395.3	40.0	391.3
	Total	**4,190**	**411.1**	**44.0**	**402.6**

Table 22 displays summaries of SEE scores by clinical background. Overall, the most commonly identified clinical setting was ICU/CCU (37.8%).

When comparing SEE performance across clinical background subgroups, readers are advised to refer to the five-year trend columns of Table 24. The averages in these columns are more reliable because they are based on much larger sample sizes.

Table 22. SEE Candidate Performance by Clinical Background and Program Year, FY 2018

	Clinical Background	Count	Mean	Std Dev	5-Yr Mean	Program Year	Clinical Background	Count	Mean	Std Dev	5-Yr Mean
Year 1	CCU	39	394.0	44.4	394.1	Year 3 & above	CCU	206	423.1	39.7	410.4
	ER	23	411.2	44.8	397.7		ER	155	410.6	8.7	408.1
	ICU/CCU	105	391.5	49.3	390.2		ICU/CCU	686	418.5	0.3	408.7
	MICU	54	392.4	42.3	390.7		MICU	234	424.3	1.7	409.8
	NEURO ICU	21	388.6	41.6	388.9		NEURO ICU	113	424.0	4.6	409.0
	NICU	3	405.0	33.2	377.5		NICU	41	412.3	1.2	401.9
	OR	0	--	--	383.3		OR	13	415.6	4.6	398.8
	PACU	2	342.5	13.4	372.5		PACU	12	435.3	42.7	411.5
	PICU	11	399.5	49.3	401.8		PICU	51	415.5	6.6	403.6
	SICU	35	383.3	47.4	390.7		SICU	208	420.0	42.9	406.3
	Trauma ICU	9	413.2	68.5	387.1		Trauma ICU	76	417.5	1.3	405.0
	Other	4	389.0	92.2	385.8		Other	34	431.9	0.0	406.7
	Total	**306**	**393.0**	**47.5**	**391.0**		**Total**	**1,829**	**419.7**	**1.4**	**407.9**
Year 2	CCU	245	409.4	46.4	403.6	Total	CCU	490	413.9	44.3	405.0
	ER	167	403.4	43.3	399.5		ER	345	407.2	1.4	402.5
	ICU/CCU	791	405.2	43.5	399.4		ICU/CCU	1,582	410.0	3.3	402.0
	MICU	301	401.8	43.8	403.8		MICU	589	409.9	4.5	404.9
	NEURO ICU	94	406.8	45.9	401.9		NEURO ICU	228	413.6	6.1	403.1
	NICU	24	403.4	46.5	391.5		NICU	68	408.8	42.5	395.3
	OR	16	396.9	51.6	396.5		OR	29	405.3	7.5	397.0
	PACU	11	404.2	52.6	398.3		PACU	25	414.2	1.9	402.2
	PICU	72	412.8	37.3	404.5		PICU	134	412.7	41.9	403.9
	SICU	214	408.9	44.7	402.4		SICU	457	412.0	45.1	403.0
	Trauma ICU	86	410.8	39.6	396.4		Trauma ICU	171	413.9	42.1	399.5
	Other	31	415.4	53.9	400.5		Other	69	422.0	0.7	401.5
	Total	**2052**	**406.1**	**44.1**	**400.9**		**Total**	**4,187**	**411.1**	**4.0**	**402.7**

Table 23 displays summaries of SEE scores by degree to be attained. As is noted, starting in FY 2017, "Post-Master's Certificate" is no longer reported as a separate category; instead, it is reported together with Other Master's degrees. Due to a transcript category change, MS Nurse Anesthesia/Anesthesiology is reported in the MS Nurse Anesthesia category, not in the Other Masters as in the past. Although MSN is still a popular degree, the percentage of SEE candidates enrolled in MSN programs continued to decrease in FY 2018 (23.7%) in comparison to FY 2017 (28.3%) and FY 2016 (32.6%). The number of SEE examinees in doctoral programs continued to increase in FY 2018 (N = 1,291, 30.8%) over the previous fiscal years FY 2017 (N=915, 23.8%) and FY 2016 (N = 544, 18.4%). Score comparisons among groups in this table should be made with caution because of the small sample size of some subgroups.

Table 23. SEE Candidate Performance by Graduate Degree and Program Year, FY 2018

Program Year	Degree Upon Completion	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	MS Nurse Anesthesia	121	393.3	48.8	393.3
	MS Nursing Major	70	391.1	49.3	391.1
	Other Masters	115	393.9	45.4	393.9
	Doctoral*	--	--	--	--
	Total	**306**	**393.0**	**47.5**	**393.0**
Year 2	MS Nurse Anesthesia	811	401.8	42.6	401.8
	MS Nursing Major	593	416.9	45.1	416.9
	Other Masters	272	410.0	44.3	410.0
	Doctoral	379	395.3	41.4	395.3
	Total	**2,055**	**406.1**	**44.1**	**406.1**
Year 3 and above	MS Nurse Anesthesia	332	419.4	38.9	419.4
	MS Nursing Major	328	421.0	44.2	421.0
	Other Masters	257	413.7	42.9	413.7
	Doctoral	912	420.9	40.8	420.9
	Total	**1,829**	**419.7**	**41.4**	**419.7**
Total	MS Nurse Anesthesia	1,264	405.6	43.2	405.6
	MS Nursing Major	991	416.5	45.7	416.5
	Other Masters	644	408.6	44.4	408.6
	Doctoral	1,291	413.4	42.6	413.4
	Total	**4,190**	**411.1**	**44.0**	**411.1**

*There were no doctoral students taking SEE in FY 2018; the 5-year trend mean for doctoral students that took SEE was omitted from reporting because of very small sample size.

Appendix A - Additional NCE and SEE Performance Data

Table A1. NCE Pass Rate Trends—First-Time Candidates 2008 through August 31, 2018

Reporting Period	Percent Passing
2008* (Graduates 2007 – 2008)	89.9
2009 (Graduates after 2008)	87.7
2010	88.9
2011	89.1
FY 2012	88.5
FY 2013	88.4
FY 2014**	87.8
FY 2015	85.0
FY 2016	84.5
FY 2017	82.6
FY 2018	84.3

*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 FY 2018 (September 1, 2017– December 31, 2017)

	Mean	Standard Deviation
Total Score	497.9	43.3
Basic Science	505.1	59.2
Equipment, Instrumentation and Technology	515.7	72.6
Basic Principles of Anesthesia	502.7	56.0
Advanced Principles of Anesthesia	491.8	54.7

Table A3. Descriptive Statistics for NCE Total and Domain-Level Scores—First-Time Candidates FY 2018 (January 1, 2018 – August 31, 2018)

	Mean	Standard Deviation
Total Score	492.3	45.8
Basic Science	494.1	59.1
Equipment, Instrumentation and Technology	502.1	73.7
General Principles of Anesthesia	495.1	57.0
Anesthesia for Surgical Procedures and Special Populations	496.0	59.1

Table A4. Descriptive Statistics for SEE Scores and Domain-Level Information, FY 2018 (September 1, 2017–April 30, 2018)

	1st Year in Program		2nd Year in Program		3rd Year in Program		All	
	Avg	SD	Avg	SD	Avg	SD	Avg	SD
Total	386.6	44.4	402.8	43.5	421.0	41.0	410.9	43.7
Basic Science	391.7	48.4	400.9	49.5	413.9	46.8	406.8	48.6
Equipment, Instrumentation and Technology	394.7	51.7	406.4	50.5	426.0	47.5	415.5	50.3
Basic Principles of Anesthesia	390.0	52.2	406.5	48.8	424.1	47.1	414.3	49.3
Advanced Principles of Anesthesia	375.1	45.8	400.8	47.2	423.7	46.9	410.6	49.1

Table A5. Descriptive Statistics for SEE Scores and Domain-Level Information, FY 2018 (May 1, 2018– August 31, 2018)

	1st Year in Program		2nd Year in Program		3rd Year in Program		All	
	Avg	SD	Avg	SD	Avg	SD	Avg	SD
Total	400.0	50.0	409.5	44.4	417.1	42.2	411.3	44.4
Basic Science	401.2	55.9	406.6	50.2	412.5	48.3	408.2	50.1
Equipment, Instrumentation and Technology	402.2	52.6	414.4	51.1	419.7	46.6	415.3	49.9
General Principles of Anesthesia	400.1	55.5	408.6	46.5	415.7	47.3	410.4	47.8
Anesthesia for Surgical Procedures and Special Populations	401.0	52.5	412.0	51.8	423.5	48.0	415.1	51.0