Maintainance of Certification and Medicare Outcomes
Cohort Definition

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Contents

This document describes how the ABS maintenance of certification and medicare outcomes cohort was defined. The data will be used for further statistical analyses.
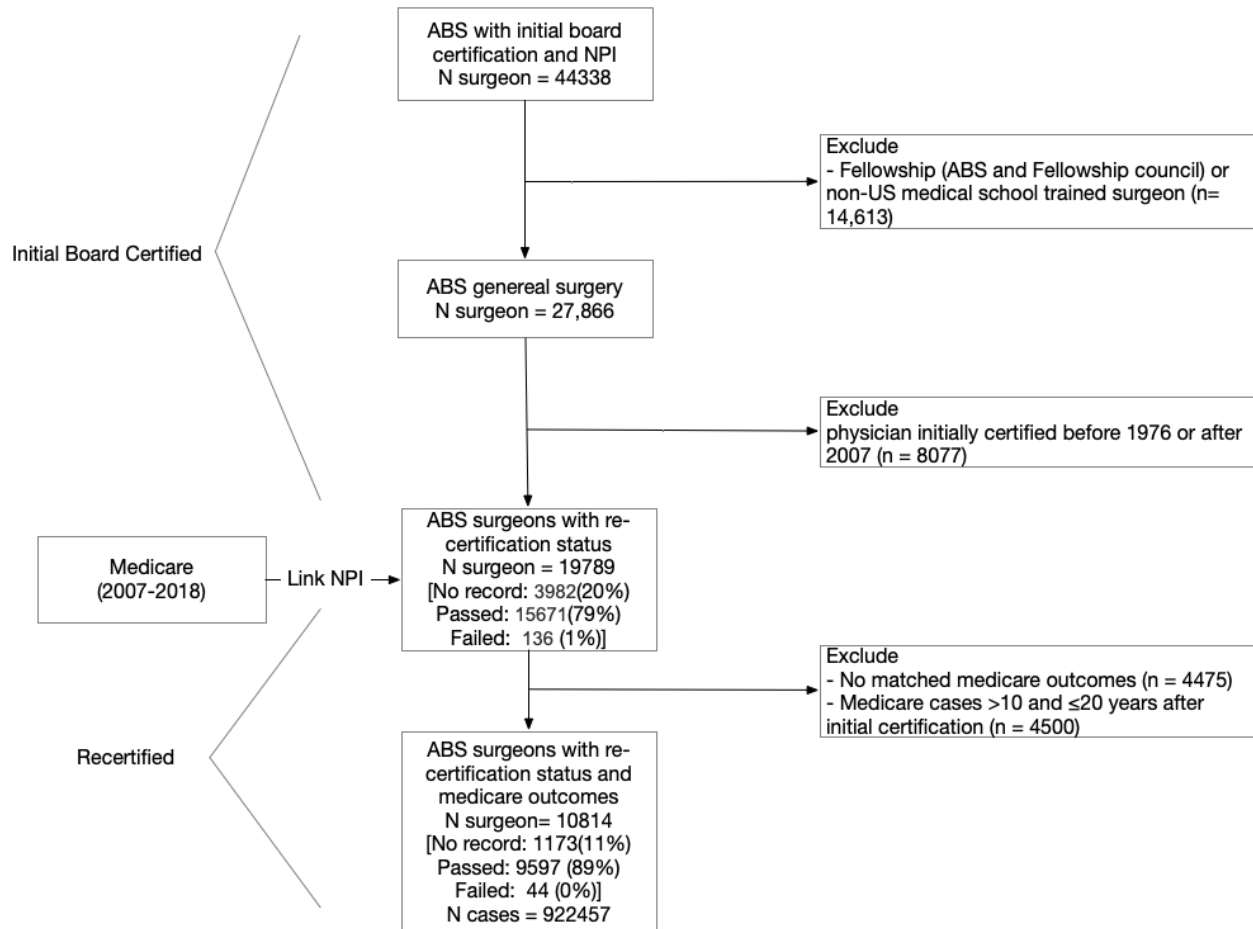
1. Data Sources

- ABS certification data (received at September 2019 from ABS)
- Fellowship Council data (**Need to incorporate Angie's updates from Bariatric project**)
- Medicare claim data

  - Year: 2007-2018
  - Procedures: commonly performed general surgery procedures (162 procedures in total)

ABS and Medicare claim data are linked using physician NPIs. ABS and Fellowship council data are used to exclude fellowship trained surgeons.

2. Cohort definition diagram overview

Below is the consort diagram for the data selection process. Detailed cohort selection descriptions are included in *3. Data Process* and *4. Data linkage*.

3. Data Process

ABS

3.1. Inclusion and Exclusion

Inclusion:

- Surgeons with NPI
- Passed initial certification exam after 1976
- ABS introduced time-limited MOC certification in 1976. So we we only include surgeons who pass their initial certification after 1976. This is also described in Andrew Jones MOC paper, *Certification data were collected from the ABS database for all surgeons initially certified in general surgery by the ABS between 1976 and 2005.*
- Not qualified (10 years after initial certification) for exam after 2017 (exam change in 2017)
    - to address the exam changes in 2017, we excluded all surgeons who were qualified for recertification after(including) 2017. In our dataset, we don't have the recertifcation exam years for surgeons. So it's not possible to know if the surgeon took the exam before or after 2017. By excluding

surgeons who were qualified to take the exam after 2017, we exclude the group who might have taken the exam after 2017. However, this also excluded some surgeons who took recertification exam earlier than 10 years after the initial certification.

Exclusion:

- Fellowship or non-US trained surgeons (n = 16472).
    - Fellowship and Med school information is from ABS and Fellowship Council data.

Below is the re-certification status for all qualified ABS surgeons. Very few surgeons have recorded failed re-certification status. A large portion of surgeons didn't have re-certification records at all, i.e. NA.

Recert_status	n suregon	percentage
failed	136	1%
NA_failed	3982	20%
passed	15671	79%

4. Data linkage

4.1 Link Medicare data with ABS data by NPI

4.2 Only keep cases that performed between 10-20 years after initial certification*

The ABS gives 10 years for surgeons for the recertification. We keep cases that 10 years after the initial certification to better capture the impact of the recertification process. However, we excluded cases happened 20 years after the initial certification to exlude the re-recertification effect,.e. only the first recertification cases were included in the cohort.

Link ABS with Medicare by NPI. Below is the number of surgeons by each recertification category after linked with Medicare outcomes.

Recert_status	n suregon	percentage
failed	44	0%
NA_failed	1173	11%
passed	9597	89%

4475 ABS surgeons don't have Medicare cases matched; 4500 surgeons don't have cases between 10 to 20 years after the initial certification.

5. Q&A

5.1 Did we exclude surgeons who didn't have enough time to pass Recertification exam? For example, if a surgeon only had 8 years after the initial certification, would the surgeon be excluded for the analysis?

In our study, we only included surgeons who were initially board certified before 2007. We have ABS data available up to 2019. So every surgeon in our study had at least 12 years of record after initial certification. ABS requires recertification every 10 years.

5.2 What if a surgeon passed the exam at year 12 after the initial certification? Would the surgeon be excluded because s/he didn't get certified within 10 years?

The surgeon is included. No criteria was about when the surgeon was re-certified. The recertified data we have is binary, without any year information of when the surgeons took the exam. So we can't know if the recertification was on-time or late.

5.3 Examples of how the recertification status were defined.

npi	Gcertyear	ReCeverPassed	Recert_status
surgeon 1	1977	0	failed
surgeon 2	1992	0	failed
surgeon 3	2006	0	failed
surgeon 4	1984	0	failed
surgeon 5	2006	0	failed
surgeon 6	2005	NA	NA_failed
surgeon 7	1979	NA	NA_failed
surgeon 8	1995	NA	NA_failed
surgeon 9	1987	NA	NA_failed
surgeon 10	2006	NA	NA_failed
surgeon 11	1983	1	passed
surgeon 12	1989	1	passed
surgeon 13	2003	1	passed
surgeon 14	1995	1	passed
surgeon 15	2001	1	passed

- Gcertyear: year of initial board certification; ReCeverPassed: Original ABS variable 0 (failed), 1 (passed)