

# Maintenance of Certification and Medicare Outcomes

## Cohort Definition

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

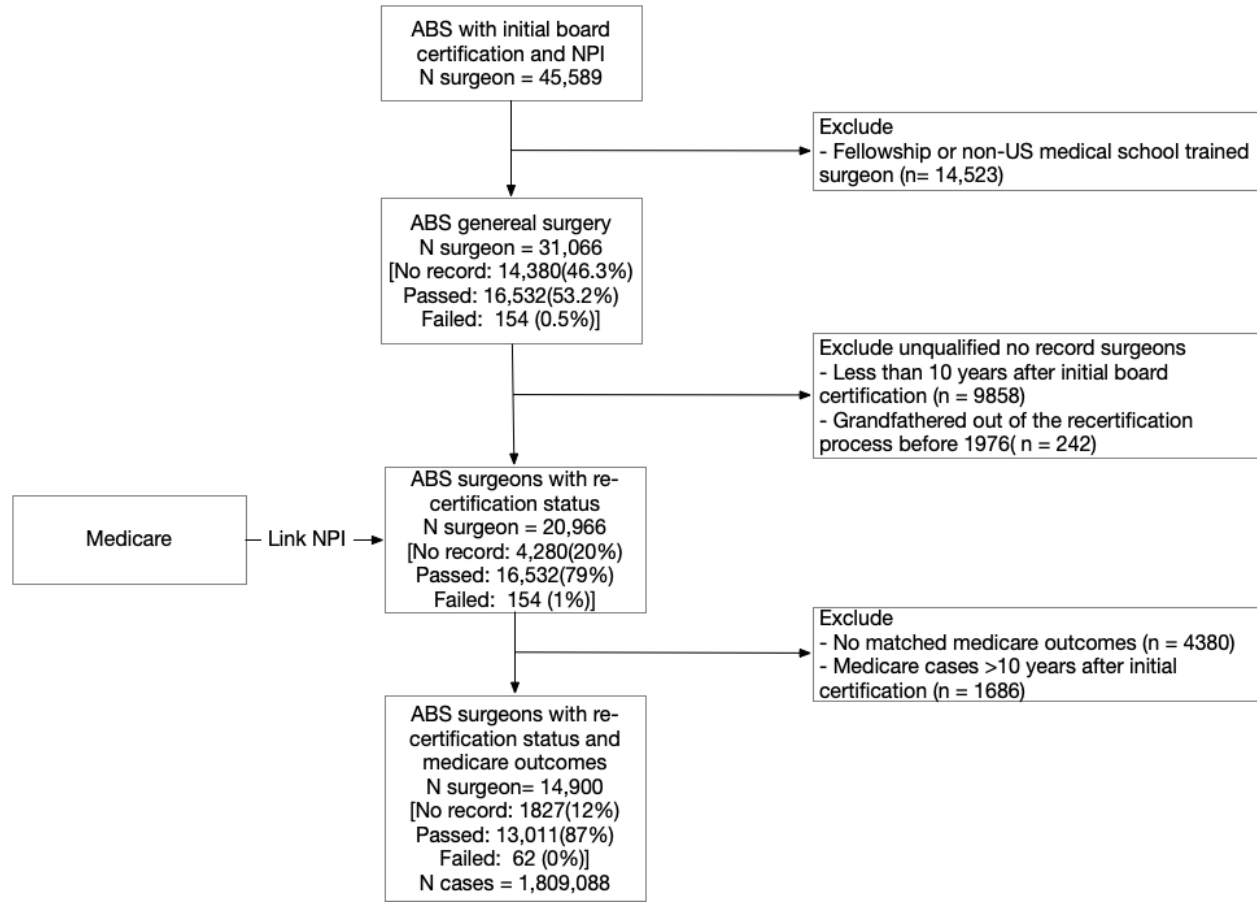
## 1. Data Sources

- ABS certification data (received at September 2019 from ABS)
- 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.

## 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

Exclusion:

- Fellowship or non-US trained surgeons (n = 14523).
  - Fellowship and Med school information is from ABS, AMA 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.

ReCeverPassed	n suregon	percentage
0	154	0.5%
1	16532	53.2%
NA	14380	46.3%

### 3.2. Define never recertified surgeon group (Define NA group)

**3.2.1. At least 10 years after the initial certification year** The ABS require diplomats certified subsequently to pass a secure, multiple-choice comprehensive recertification examination in surgery every 10 years.

4522 surgeons who had no recertification record but had initial board certification more than 10 years ago. We include this group as failed recertification group. Surgeons who didn't have 10 years after the initial certification process were excluded because they didn't have enough time to pass the re-certification exam.

**3.2.2 Grandfathered out of the recertification process** We excluded surgeons who had their initial certification before 1976. It was bases on the recertification was introduced at 1976 “the American Board of Surgery (ABS) introduced time-limited certification in 1976, requiring diplomats certified subsequently to pass. . .”. If the surgeon was initially certified before 1976, she/he was not required for recertification at the initial certification time.

242 surgeons graduated before 1976 and are excluded in the analyses cohort. Below are the surgeon recertification status after excluding the 10 years cutoff and grandfathered out surgeons.

Recert_status	n suregon	percentage
failed	154	1%
NA_failed	4280	20%
passed	16532	79%

## 4. Data linkage

- Only keep cases that performed 10 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.

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	62	0%
NA_failed	1827	12%
passed	13011	87%

6066 (29%) surgeons from ABS didn't have recorded medicare outcomes.