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Background: IVC Filter Utilization

- The national utilization of IVC filters increased substantially after their inception nearly 50 years ago.

- In August 2010, the FDA issued a statement urging clinicians to remove retrievable IVC filters, which were first approved in 2003, as soon as patients no longer required protection from pulmonary embolism.

- This was in the midst of a series of high-profile lawsuits aimed at manufacturers and physicians.
Background: Previous Research

- Increased scrutiny on the appropriateness of IVC filter use has led researchers to examine changes in utilization in the U.S.

- Traditionally, aggregate Medicare claims data have been used to study national service trends, but they provide no insight into geographic variation.

- Thus, we sought to study utilization at a more granular level than has previously been described.
Objectives

- To understand regional variation in filter placement by using Medicare claims data at a state-by-state level

- To examine changes in and variation in the specialties of physicians who placed filters across states
Methods

- Research Identifiable Files for a 5% sample of Medicare beneficiaries nationwide were used to calculate filter utilization rates across states from 2005 – 2015.

- The number of filters placed by radiologists, surgeons, and cardiologists over that time period was identified and utilization rates were calculated for each state.

- Compound adjusted growth rates (CAGRs) were calculated to report changes over time.
Results: IVC filter placement procedures

- In the Medicare fee for service population, placement increased nationally from **149.9 per 100,000 beneficiaries in 2005** to a peak of **182.2 in 2010**
  - CAGR of **+3.3%** from 2005 to 2010

- Utilization **declined to 113.3 between 2010 and 2015**
  - CAGR of **-9.1%** from 2010 to 2015

- The overall filter placement **CAGR between 2005 and 2015 was -2.5%**
Results: Utilization Variation

- In 2005, Medicare utilization ranged from a low of 20.7 (HI) to a 340.3 (NJ)
- In 2015, Medicare utilization ranged from 0 (AK) to 235.6 (SD)
Results: IVC Filter Placement Market Share

- Between 2005 and 2015, radiologists placed 13,335 of all 23,755 cohort beneficiary filters (56.1%)

- Radiologist market share increased from 54.8% in 2005 to 61.0% in 2015 nationwide

- Radiologists' overall state level market share varied considerably, and ranged from 32.9% (NJ) to 93.2% (CO)
Results: IVC Filter Placement Market Share

- Nationally, cardiologists placed 1,755 of 23,755 total filters (7.4%) between 2005 and 2015
  - Cardiologist market share over that period peaked in 2013, with 9.6% of filters placed

- Surgeons placed 8,1821 filters (34.4% of total) between 2005 and 2015
  - Surgeon market share was highest in 2005, with 38.5% of filters placed
Conclusions

- National utilization of IVC filters in the Medicare population peaked around 2010, and has declined ever since. This is concordant with a 2010 FDA warning about potential complications.

- However, utilization, relative growth, and relative decline rates vary considerably at the state level.

- State level market share also varies considerably, although radiologists continue to place the majority of IVC filters in Medicare beneficiaries.

- As researchers focus on changing IVC filter utilization, non-aggregate data sources must be used in order to account for significant geographic variation.