



# Improving Prophylactic IVC Filter Placement Rate With Ordering Department Buy-in

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# Purpose: Background

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- The value of an inferior vena cava filter depends on the patient's individualized risk profile.
- IVC filter placement for venous thromboembolism prophylaxis is controversial. It is not established which patients will benefit from prophylactic placement<sup>1</sup>.
- Recent literature suggests that prophylactic filter placement in high risk patients does not confer a survival benefit<sup>2</sup>.
- Prophylactic filters expose the patient to significant risks<sup>3</sup>, especially if the filter is not promptly retrieved<sup>4</sup>.



# Purpose: Call to Action

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- There was an anecdotally high rate of prophylactic filter placement at our institution, predominantly among trauma patients.
- We desired to improve our rate of prophylactic filter placement and bring our institutional rate in accordance with the national benchmark of 5.5%<sup>5</sup>.



# Methods

## Intervention

The chief of interventional radiology presented several relevant abstracts from the literature to the chief of trauma surgery in a face-to-face meeting.

## Measure

Over the subsequent year the charts of all filter patients were reviewed and the rate of prophylactic filter placement was recorded. Data was compared to the year prior to intervention.

THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

### A Multicenter Trial of Vena Cava Filters in Severely Injured Patients

Kwok M. Ho, Ph.D., Sudhakar Rao, F.R.A.C.S., Stephen Honeybul, F.R.A.C.S., Rene Zellweger, F.R.A.C.S., Bradley Wibrow, F.C.I.C.M., Jeffrey Lipman, F.C.I.C.M., Anthony Holley, F.C.I.C.M., Alan Kop, Ph.D., Elizabeth Geelhoed, Ph.D., Tomas Corcoran, F.C.I.C.M., Philip Misur, F.R.A.N.Z.C.R., Cyrus Edibam, F.C.I.C.M., Ross I. Baker, F.R.A.C.P., Jenny Chamberlain, R.N., Claire Forsdyke, B.Sc., and Frederick B. Rogers, M.D.

### Inferior Vena Cava Filters for Primary Prophylaxis: When Are They Indicated?

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Semin Intervent Radiol 2012;29:29–35

Observational Study

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### IVC filters—Trends in placement and indications, a study of 2 populations

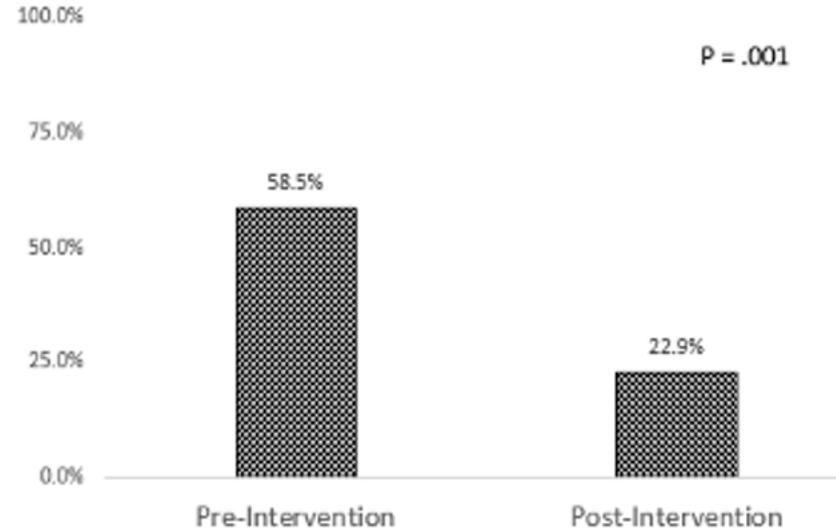
Mahek Shah, MD<sup>1\*</sup>, Talal Alnabehsi, MD<sup>2</sup>, Shantanu Patil, MD<sup>2</sup>, Shilpa Reddy, MD<sup>2</sup>, Brijesh Patel, DO<sup>2</sup>, Marvin Lu, MD<sup>2</sup>, Aditya Chandorkar, MD<sup>2</sup>, Apostolos Peralas, MD<sup>2</sup>, Shripkumar Arora, MD<sup>2</sup>, Niley Patel, MD<sup>2</sup>, Larry Jacobs, MD<sup>1</sup>, Glenn G. Eger, MD<sup>1</sup>



# Results

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- A Pearson Chi-Square was used to compare the proportion of prophylactic IVC filter placements prior to as compared to after the intervention.
- A statistically significant decrease in prophylactic placements was observed following the intervention (58.5% vs. 22.9%,  $P=.001$ ; OR 0.21[.08-.53]). The overall number of IVC filters placed following the intervention decreased from 65 to 35 cases.



**Figure 1.** Rate (%) of prophylactic filter placement prior to and following the intervention.



# Conclusion

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- Following a simple meeting among the trauma and interventional radiologist teams, there was a statistically significant decrease in prophylactic filter placement which endured over the study period.
- Prophylactic filters were 79% less likely to be placed following the intervention.
- Our study demonstrates the value of interdisciplinary meetings to help better align hospital practices with national benchmarks.



# Conclusion: Next Steps

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- We are encouraged by these results to have similar meetings with our referring physicians to discuss other practice improvement in order to continue to decrease our institutional rate of prophylactic filter placement (22.9%) in accordance with national benchmark (5.5%).
- We await the results of our ongoing research on patient demographics for selection of prophylactic filters, socioeconomic factors associated with the rate of filter retrieval, and institution rate of filter removal with 5 year follow up data. This information may better elucidate whether institutional differences of a safety net hospital may necessitate a rate above the national benchmark. We plan to incorporate that evidence into our practice with continued buy in from the referring trauma and surgical care services.



# References

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1. Wehrenberg-Klee, E., & Stavropoulos, S. W. (2012). Inferior vena cava filters for primary prophylaxis: When are they indicated? *Seminars in Interventional Radiology*, 29(1), 29–35.
2. Ho, K. M., Rao, S., Honeybul, S., Zellweger, R., Wibrow, B., Lipman, J., ... Rogers, F. B. (2019). A multicenter trial of vena cava filters in severely injured patients. *New England Journal of Medicine*, 381(4), 328–337.
3. Andreoli, J. M., Lewandowski, R. J., Vogelzang, R. L., & Ryu, R. K. (2014). Comparison of complication rates associated with permanent and retrievable inferior vena cava filters: A review of the MAUDE database. *Journal of Vascular and Interventional Radiology*, 25(8), 1181–1185.
4. Van Ha, T. G. (2006). Complications of inferior vena caval filters. *Seminars in Interventional Radiology*, 23(2), 150–155.
5. Shah, M., Alnabelsi, T., Patil, S., Reddy, S., Patel, B., Lu, M., ... Eiger, G. G. (2017). IVC filters - Trends in placement and indications, a study of 2 populations. *Medicine (United States)*, 96(12).



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