

Supplementary Online Content

Shaw M, Pelecanos A, Mudge AM. Evaluation of internal medicine physician or multidisciplinary team comanagement of surgical patients and clinical outcomes. *JAMA Netw Open*. 2020;3(5):e204088. doi:10.1001/jamanetworkopen.2020.4088

eAppendix. Example Search String

eTable 1. Intervention Characteristics Described in Studies in Review, Based on Indicators Developed for Geriatric Comanagement Models

eTable 2. Risk of Bias for Included Studies for the Outcomes of Length of Stay, Mortality, and Readmissions

eFigure 1. Forest Plot for Unadjusted Length of Stay by Physician-Only or Multidisciplinary Team (MDT) Model

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eFigure 6. Forest Plot for 30-Day Readmissions

This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix. Example Search String

Clinical Question: In adult surgical patients, does internal medicine (IM) physician involvement with or without a multidisciplinary team improve clinical or health service outcomes when compared to standard surgical care?

MEDLINE

	Search string	Results
1	TI surgery OR AB surgery OR TI surgical OR AB surgical OR TI surgeon OR AB surgeon OR MM "postoperative care" OR MM "postoperative complications" OR MM "postoperative period" OR MM "perioperative care" OR MM "preoperative care" OR MM "preoperative period"	1,790,187
2	TI hospitalist* OR AB hospitalist* OR TI internist* OR AB internist* OR TI physician OR AB physician OR TI "general medicine" OR AB "general medicine" OR TI "perioperative medicine" OR AB "perioperative medicine" OR MM hospitalists OR MM "internal medicine"	373,912
3	TI comanagement OR AB comanagement OR TI co-management OR AB co-management OR TI "shared care" OR AB "shared care" OR TI consult OR AB consult OR TI consultant OR AB consultant OR TI consultation OR AB consultation OR MM "Referral and Consultation" OR MM "Models, Organizational"	116,213
4	1 AND 2 AND 3	2,301

eTable 1. Intervention Characteristics Described in Studies in Review, Based on Indicators Developed for Geriatric Comanagement Models¹

Study	Specialty	Physician	Structure indicators							Process indicators					
			MDT	Daily availability	Regular QI	Selection Screening	Inclusion criteria	Evidence-based protocols	Standard order sets	Co-management	Daily rounds	MDT meeting	Advance care planning	Discharge planning	Pre-op assessment
Zuckerman (1992) ²	Orthopaedic	Internist ^a	✓			✓	Age 65+, premorbid status					✓ weekly			
Macpherson (1994) ³	Thoracic	Internist		✓			All patients			✓	✓			✓	✓
Huddleston (2004) ⁴	Orthopaedic	Hospitalist		✓		✓	Age 75+, co-morbidities		✓	✓	✓			✓	✓
Pinzur (2009) ⁵	Orthopaedic	Hospitalist		✓		✓	Co-morbidity or social issue	✓	✓	✓	✓			✓	✓
Salottolo (2009) ⁶	Trauma	Hospitalist		✓	✓	✓	11 exclusion criteria	✓			✓				
Auerbach (2010) ⁷	Neurosurgery	Hospitalist		✓		✓	Comorbidities, high risk for complications		✓	✓	✓				
Della Rocca (2013) ⁸	Orthopaedic	Internist ^b	✓	✓	✓		Age 65+	✓	✓	✓	✓	✓ unclear		✓	✓
Montero Ruiz (2015a) ⁹	Otolaryngology	Internist		✓			All patients			✓					
Montero Ruiz (2015b) ¹⁰	Ophthalmology	Internist		✓			All patients			✓					
Iberty (2016) ¹¹	Vascular	Hospitalist	✓	✓	✓	✓	ASA 3+, LOS >1 day			✓	✓	✓ daily			
Noticewala (2016) ¹²	Orthopaedic	Hospitalist	✓	✓			All patients		✓	✓	✓	✓ daily			
Rohatgi (2016) ¹³	Orthopaedic & Neurosurgery	Hospitalist	✓	✓	✓		All patients	✓	✓	✓	✓	✓ daily		✓	✓

Soong (2016) ¹⁴	Orthopaedic	Hospitalist	✓	✓	✓		All patients	✓	✓	✓	✓	✓ daily	✓ family meetings	✓	✓
Rohatgi (2018) ¹⁵	Colorectal	Hospitalist	✓	✓	✓		All patients	✓	✓	✓	✓	✓ daily		✓	✓

MDT multidisciplinary team; QI quality improvement; ASA American society of anaesthesiologist physical status classification class; LOS length of stay

^a model also included geriatricians

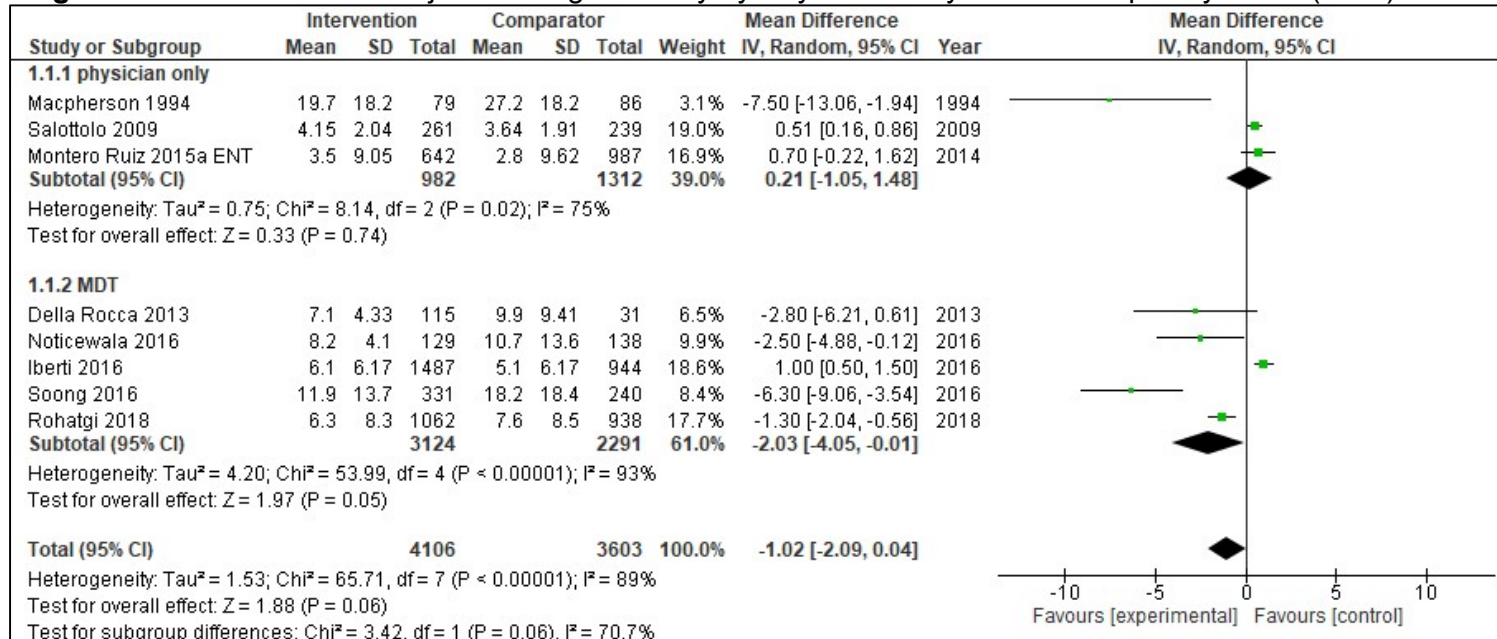
^b model also included geriatricians and family practitioners

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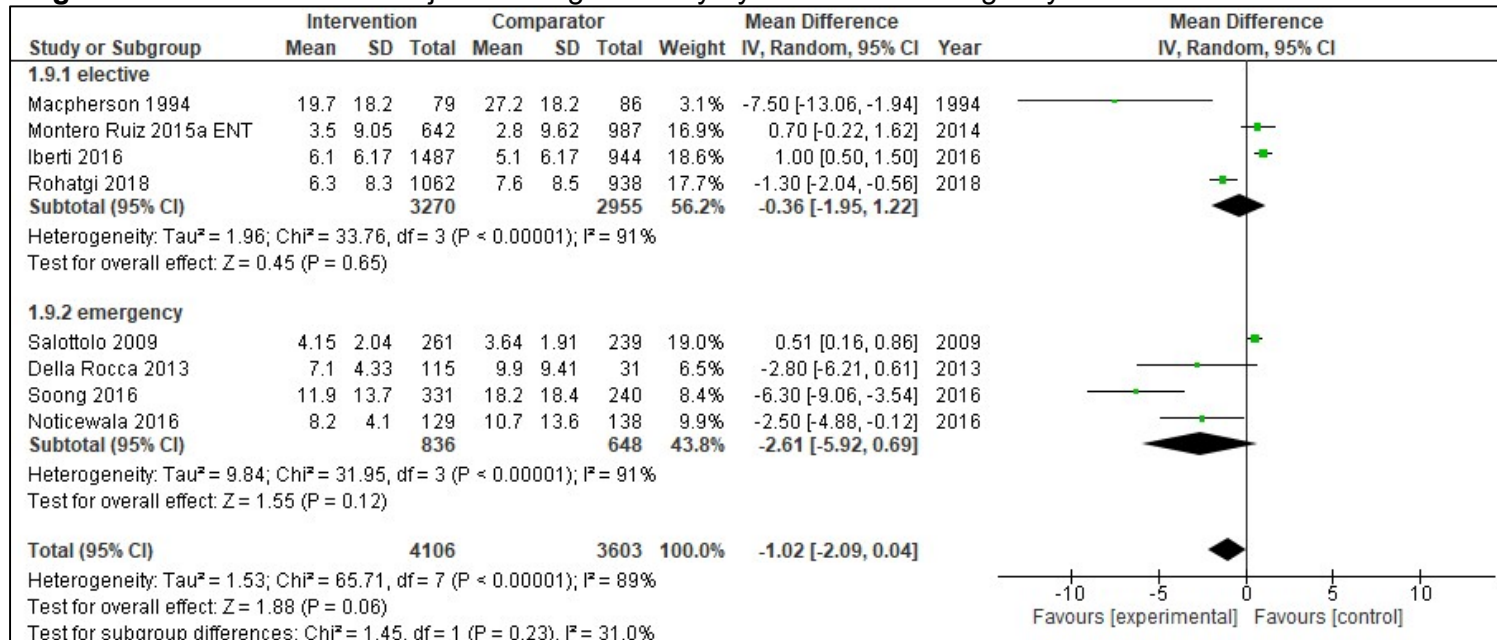
eTable 2. Risk of Bias for Included Studies for the Outcomes of Length of Stay, Mortality, and Readmissions
Red indicates high risk, orange moderate and green low risk.

Study	Randomization process	Confounding	Selection	Classification of interventions	Deviation from intended interventions	Missing data	Measurement of outcomes	Selection of reported result	Overall risk of bias
Zuckerman (1991)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Macpherson (1994)		Moderate Risk (Orange)	High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Huddleston (2004)	Low Risk (Green)							Low Risk (Green)	Low Risk (Green)
Pinzur (2006)		High Risk (Red)	High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	High Risk (Red)	High Risk (Red)
Salottolo (2009)		Moderate Risk (Orange)	Moderate Risk (Orange)	Low Risk (Green)	High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Auerbach (2010)		Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Moderate Risk (Orange)
Della Rocca (2013)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Montero Ruiz (2015)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Montero Ruiz (2015)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Iberti (2016)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Noticewala (2016)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Rohatgi (2016)		Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Moderate Risk (Orange)
Soong (2016)		High Risk (Red)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	High Risk (Red)
Rohatgi (2018)		Moderate Risk (Orange)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Low Risk (Green)	Moderate Risk (Orange)	Moderate Risk (Orange)

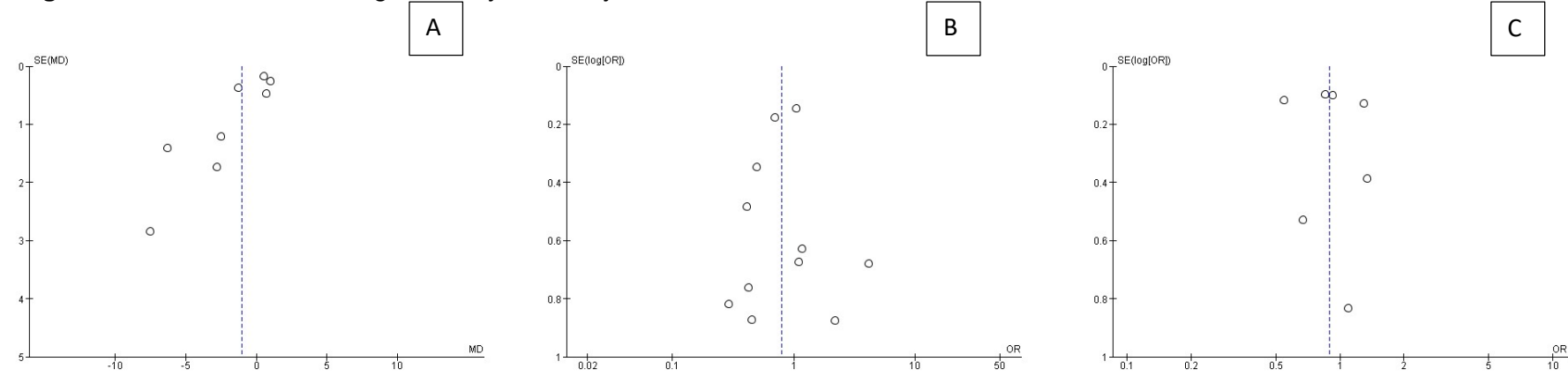
eFigure 1. Forest Plot for Unadjusted Length of Stay by Physician-Only or Multidisciplinary Team (MDT) Model



eFigure 2. Forest Plot for Unadjusted Length of Stay by Elective or Emergency Status

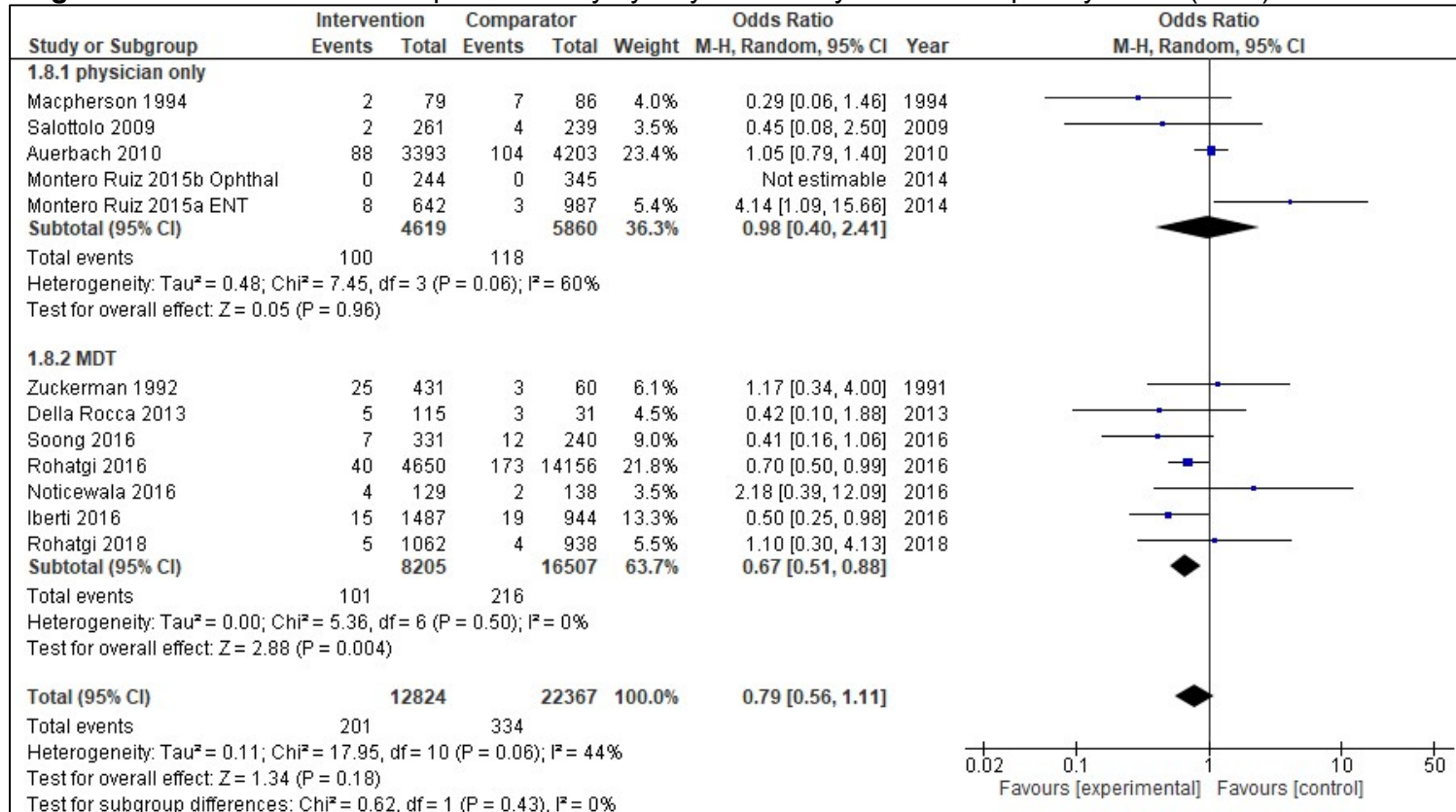


eFigure 3. Funnel Plots for Length of Stay, Mortality, and Readmissions

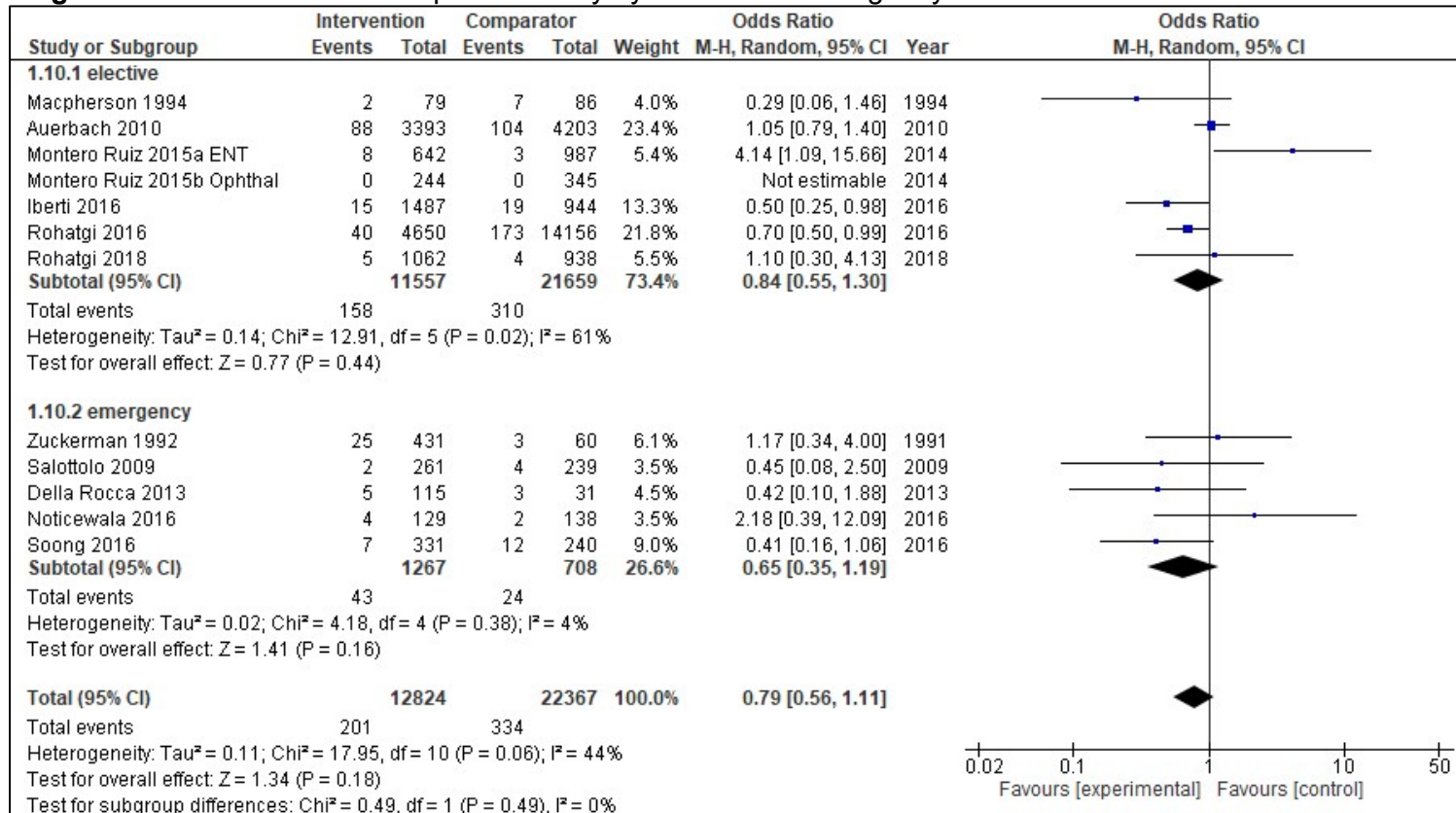


SE standard error, MD mean difference, OR odds ratio

eFigure 4. Forest Plot for In-Hospital Mortality by Physician-Only or Multidisciplinary Team (MDT) Model



eFigure 5. Forest Plot for In-Hospital Mortality by Elective or Emergency Status



eFigure 6. Forest Plot for 30-Day Readmissions

