

The performance of early warning scores in different patient subgroups and clinical settings: A systematic review.

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## Supplementary methods: Search strategy for MEDLINE

- 1- EWS OR early warning score\* OR EARLY WARNING SYSTEM\* OR RAPID RESPONSE SYSTEM\* OR MEWS OR MODIFIED EARLY WARNING SCORE\* OR MODIFIED EARLY WARNING SYSTEM\* OR news OR national early warning score OR news2 OR national early warning score 2 OR ( track and trigger system\* )
- 2- (MH "Intensive Care Units")
- 3- ICU OR intensive care unit\* OR CRITICAL CARE UNIT\* OR CRITICAL CARE
- 4- 2 OR 3
- 5- 1 AND 4
- 6- (MH "Nervous System Diseases")
- 7- neurological disorder\* OR neurological disease OR neurological condition\*
- 8- 6 OR 7
- 9- 1 AND 8
- 10- MH "Cardiovascular Diseases") OR (MH "Cardiology")
- 11- (MH "Thoracic Surgery")
- 12- cardiovascular disease\* OR cardiovascular disorder\* OR heart disease\* OR cardiology\* OR cardiac surgery OR thoracic surgery
- 13- 10 OR 11 OR 12
- 14- 1 AND 13
- 15- (MH "Musculoskeletal Diseases") OR (MH "Orthopedics")
- 16- orthopedic disease\* OR orthopedic surgery
- 17- 15 OR 16
- 18- 1 AND 17
- 19- (MH "Kidney Diseases, Cystic") OR (MH "Kidney Failure, Chronic") OR (MH "Polycystic Kidney Diseases") OR (MH "Renal Insufficiency, Chronic")
- 20- renal disease\* OR renal failure OR kidney disease\*
- 21- 19 OR 20
- 22- 1 AND 21
- 23- (MH "Hematologic Diseases")
- 24- hematologic disorder\* OR hematologic disease\* OR hematology
- 25- 23 OR 24
- 26- 1 AND 25
- 27- (MH "Respiratory Tract Diseases")
- 28- respiratory disease\* OR respiratory disorder\*
- 29- 27 OR 28
- 30- 1 AND 29
- 31- (MH "Gastroenterology")
- 32- gastrointestinal disorder\* OR gastrointestinal disease\* OR gastroenterology OR hepatology
- 33- 31 OR 32
- 34- 1 AND 33
- 35- (MH "Medical Oncology") OR (MH "Surgical Oncology")
- 36- oncology OR cancer OR chemotherapy
- 37- 35 OR 36
- 38- 1 AND 37
- 39- (MH "Wounds and Injuries") OR (MH "Emergency Medicine")
- 40- emergency department\* OR emergency OR emergency room\* OR trauma\*
- 41- 39 OR 40
- 42- 1 AND 41
- 43- (MH "Sepsis") OR (MH "Infection")
- 44- INFECTION\* OR INFECTIOUS DISEASE\* OR SEPSIS
- 45- 43 OR 44
- 46- 1 AND 45
- 47- (MH "Obstetrics")
- 48- (obstetrics and gynecology) OR OBSTETRIC\*
- 49- 47 OR 48
- 50- 1 AND 49
- 51- (MH "Allergy and Immunology")
- 52- immunological disease\* OR immunological disorder\*

53- 51 OR 52  
54- 1 AND 53  
55- (MH "Internal Medicine")  
56- medical ward\*  
57- 55 OR 56  
58- 1 AND 57  
59- (MH "General Surgery")  
60- surgical ward\*  
61- 59 OR 60  
62- 1 AND 61  
63- 5 OR 9 OR 14 OR 18 OR 22 OR 26 OR 30 OR 34 OR 38 OR 42 OR 46 OR 50 OR 54 OR 58 OR 62

## Supplementary methods: Search strategy for CINAHL

- 1- EWS OR early warning score\* OR EARLY WARNING SYSTEM\* OR RAPID RESPONSE SYSTEM\* OR MEWS OR MODIFIED EARLY WARNING SCORE\* OR MODIFIED EARLY WARNING SYSTEM\* OR news OR national early warning score OR news2 OR national early warning score 2 OR ( track and trigger system\* )
- 2- (MH "Intensive Care Units")
- 3- ICU OR intensive care unit\* OR CRITICAL CARE UNIT\* OR CRITICAL CARE
- 4- 2 OR 3
- 5- 1 AND 4
- 6- (MH "Nervous System Diseases")
- 7- neurological disorder\* OR neurological disease OR neurological condition\*
- 8- 6 OR 7
- 9- 1 AND 8
- 10- (MH "Heart Diseases") OR (MH "Cardiovascular Diseases")
- 11- (MH "Heart Surgery")
- 12- cardiovascular disease\* OR cardiovascular disorder\* OR heart disease\* OR cardiology\* OR cardiac surgery OR thoracic surgery
- 13- 10 OR 11 OR 12
- 14- 1 AND 13
- 15- (MH "Orthopedic Surgery") OR (MH "Musculoskeletal Diseases")
- 16- orthopedic disease\* OR orthopedic surgery
- 17- 15 OR 16
- 18- 1 AND 17
- 19- (MH "Kidney, Cystic") OR (MH "Kidney Diseases")
- 20- renal disease\* OR renal failure OR kidney disease\*
- 21- 19 OR 20
- 22- 1 AND 21
- 23- (MH "Hematologic Diseases")
- 24- (MH "Lymphatic Diseases")
- 25- hematologic disorder\* OR hematologic disease\* OR hematology
- 26- 23 OR 24 OR 25
- 27- 1 AND 26
- 28- (MH "Respiratory Tract Diseases")
- 29- respiratory disease\* OR respiratory disorder\*
- 30- 28 OR 29
- 31- 1 AND 30
- 32- (MH "Digestive System Diseases")
- 33- gastrointestinal disorder\* OR gastrointestinal disease\* OR gastroenterology OR hepatology
- 34- 32 OR 33
- 35- 1 AND 34
- 36- (MH "Cancer Patients") OR (MH "Oncology")
- 37- oncology OR cancer OR chemotherapy
- 38- 36 OR 37
- 39- 1 AND 38
- 40- (MH "Wounds and Injuries") OR (MH "Trauma")
- 41- emergency department\* OR emergency OR emergency room\* OR trauma\*
- 42- 40 OR 41
- 43- 1 AND 42
- 44- (MH "Infection")
- 45- INFECTION\* OR INFECTIOUS DISEASE\* OR SEPSIS
- 46- 44 OR 45
- 47- 1 AND 46
- 48- (MH "Obstetric Emergencies") OR (MH "Obstetric Patients")
- 49- ( obstetrics and gynecology ) OR OBSTETRIC\*
- 50- 48 OR 49
- 51- 1 AND 50
- 52- (MH "Internal Medicine")
- 53- (MH "Allergy and Immunology")

- 54- medical ward
- 55- immunological disease\* OR immunological disorder\*
- 56- 52 OR 53 OR 54 OR 55
- 57- 1 AND 56
- 58- (MH "Surgical Patients")
- 59- surgical ward\*
- 60- 58 OR 59
- 61- 1 AND 60
- 62- 5 OR 9 OR 14 OR 18 OR 22 OR 27 OR 31 OR 35 OR 39 OR 43 OR OR 47 OR 51 OR 57 OR 61

### Supplementary methods: Patients' subgroups

- 1- Cardiology patients
- 2- Neurology patients
- 3- Orthopaedic patients
- 4- Renal patients
- 5- Haematology patients
- 6- Respiratory patients
- 7- Gastroenterology patients
- 8- Oncology patients
- 9- Emergency patients
- 10- Infection patients
- 11- Medical patients
- 12- Surgical patients
- 13- Intensive care patients

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Table S1. Risk of bias assessment results

TOOL	Study	Validation	Quality	
			Risk of bias	Applicability
PROBAST	Kellett, 2012 (S1)	External	low	low
	Kim, 2017 (S2)	External	Unclear	unclear
	Bozkurt, 2015 (S3)	External	High	high
	Seak, 2017 (S4)	External	High	high
	Hu, 2016 (S5)	Internal	Unclear	high
	Liljehult, 2016 (S6)	External	Unclear	high
	Mulligan, 2010 (S7)	External	High	high
	Cooksley, 2012 (S8)	External	Unclear	unclear
	Vaughn, 2018 (S9)	External	High	high
	Young, 2014 (S10)	External	High	high
	von Lilienfeld-Toal, 2007 (S11)	External	Unclear	high
	Pedersen, 2018 (S12)	External and Internal	low	low
	Forster, 2018 (S13)	External	low	low
	Pimentel, 2018 (S14)	External	low	unclear
	Sbiti-rohr, 2016 (S15)		Unclear	high
	Brabrand, 2017 (S16)	External	Unclear	unclear
	Jo, 2016 (S17)	External	High	high
	Barlow, 2007 (S18)	External	low	unclear
	Bilben, 2016 (S19)	External	Unclear	unclear
	Delahanty, 2019 (S20)	Internal	low	low
	Redfern, 2018 (S21)	External	low	low
	Churpek, 2017 (S22)	External	High	high
	Faisal, 2019 (S23)	External	low	low
	Churpek 2017 (S24)	External	low	low
	Henry, 2015 (S25)	Internal	low	low
	Brink 2019 (S26)	External	Unclear	unclear
	de Groot, 2014 (S27)	External	Unclear	unclear
	Corfield, 2014 (S28)	External	low	low
	Goulden, 2018 (S29)	External	Unclear	unclear
	Khwannimit, 2019 (S30)	External	Unclear	unclear
	Ghanem-Zoubi, 2011 (S31)	External	Unclear	unclear
	Saeed, 2019 (S32)	Internal	Unclear	unclear
	Innocenti, 2018 (S33)	External	Unclear	unclear
	Camm, 2018 (S34)	External	Unclear	unclear
	Tirotta, 2017 (S35)	External	Unclear	unclear
	Pong, 2019 (S36)	Internal	Unclear	unclear
	Prabhakar, 2019 (S37)	Internal	Unclear	unclear
	Martino, 2018 (S38)	External	Unclear	unclear
	Vorwerk, 2009 (S39)	External	Unclear	unclear
	Qin, 2017 (S40)	External	Unclear	unclear
	Schmedding, 2019 (S41)	External	Unclear	unclear
	Albur, 2016 (S42)	External	Unclear	unclear
	Cildir, 2013 (S43)	External	Unclear	unclear
	Chiew, 2019 (S44)	External	Unclear	unclear

Samsudin, 2018 (S45)	Internal	Unclear	unclear
Chang, 2018 (S46)	External	Unclear	high
Geier, 2013 (S47)	External	Unclear	unclear
Asimwe, 2015 (S48)	Internal	Unclear	unclear
Hung, 2017 (S49)	External	Unclear	high
Garcea, 2006 (S50)	External	Unclear	high
Yoo, 2015 (S51)	External	Unclear	unclear
Siddiqui, 2017 (S52)	External	Unclear	unclear
Calvert, 2016 (S53)	Internal	low	unclear
Awad, 2017 (S54)	Internal	low	low
Reini, 2012 (S55)	External	Unclear	unclear
Chen, 2019 (S56)	External	Unclear	high
Baker, 2015 (S57)	External	Unclear	unclear
Gök, 2019 (S58)	External	low	unclear
Moseson, 2014 (S59)	External	Unclear	unclear
Jo, 2013 (S60)	External	Unclear	unclear
Kwon, 2018 (S61)	External and Internal	Unclear	unclear
Usman, 2019 (S62)	External	High	high
Jang, 2019 (S63)	Internal	low	low
Wei, 2019 (S64)	External	High	high
Lee, 2019 (S65)	Internal	low	low
Singer, 2017 (S66)	External	Unclear	unclear
Eick, 2015 (S67)	External	Unclear	unclear
Bulut, 2014 (S68)	External	Unclear	unclear
Kivipuro, 2018 (S69)	External	Unclear	unclear
Eckart, 2019 (S70)	External	Unclear	unclear
Ho, 2013 (S71)	External	Unclear	unclear
Skitch, 2018 (S72)	External	Unclear	unclear
Liu, 2014 (S73)	Internal	low	unclear
Dundar, 2016 (S74)	External	Unclear	high
Yuan, 2018 (S75)	External	Unclear	high
Naidoo, 2014 (S76)	External	Unclear	unclear
Liu, 2015 (S77)	External	low	unclear
So, 2015 (S78)	External	Unclear	unclear
Dundar, 2019 (S79)	External	Unclear	high
Lam, 2006 (S80)	External	Unclear	unclear
Xie, 2018 (S81)	External	Unclear	unclear
Cattermole, 2009 (S82)	Internal	Unclear	unclear
Heitz, 2010 (S83)	External	High	unclear
Srivilaithon, 2019 (S84)	Internal	Unclear	unclear
Cattermole, 2014 (S85)	External	Unclear	unclear
Najafi, 2018 (S86)	External	Unclear	high
Bartkowiak, 2019 (S87)	External	Unclear	unclear
Kovacs, 2016 (S88)	External	low	low
Plate, 2018 (S89)	External	low	low
Sarani, 2012 (S90)	External	low	low
Hollis, 2016 (S91)	External	Unclear	unclear

Gardner-Thorpe 2006 (S92)	External	Unclear	unclear
Garcea, 2010 (S93)	External	High	high
Cuthbertson, 2007 (S94)	External	High	unclear
Prytherch, 2010 (S95)	Internal	low	low
Smith, 2013 (S96)	External	low	low
Ramsussen, 2018 (S97)	External	Unclear	unclear
Ghosh, 2018 (S98)	Internal	low	low
Duckitt, 2007 (S99)	Internal	low	low
Colombo, 2017 (S100)	External	High	high
Abbot, 2016 (S101)	External	High	high
Wheeler, 2013 (S102)	External	Unclear	unclear
Graziadio, 2019 (S103)	External	Unclear	unclear



Table S2. Early warning scores used in studies of patients' sub-populations and settings

		HR	SBP	RR	Temp	APVU/LOC	O2 Sat	Supp O2	Urine OP	Other
Kellett, 2012 (S1)	IEWS	✓	✓	✓	✓	X	✓	✓	X	X
Seak, 2017 (S4)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Bozkurt, 2015 (S3)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Kim, 2017 (S2)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Hu, 2016 (S5)	IEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Mulligan, 2010 (S7)	EWS	✓	✓	✓	✓	✓	X	X	X	X
Liljehult, 2016 (S6)	EWS	✓	✓	✓	✓	✓	✓	✓	X	X
Cooksley, 2012 (S8)	MEWS	✓	✓	✓	✓	✓	✓	X	✓	X
Cooksley, 2012 (S8)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Vaughn, 2018 (S9)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Von Lilienfeld-Toal, 2007 (S11)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Young, 2014 (S10)	MEWS	✓	✓	✓	✓	X	X	X	X	✓
Barlow, 2007 (S18)	EWS	✓	✓	✓	✓	✓	✓	X	✓	X
Bilben, 2016 (S19)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Brabrand, 2017 (S16)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Forster, 2018 (S13)	NEWS	✓	✓	✓	✓	✓	✓	✓	✓	X
Jo, 2016 (S16)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Pedersen, 2018 (S12)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Pimentel, 2018 (S14)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Pimentel, 2018 (S14)	NEWS2	✓	✓	✓	✓	✓	✓	✓	X	✓
Sbiti-rohr, 2016 (S15)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Henry, 2015 (S25)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Innocenti, 2018 (S33)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Garcea, 2006 (S50)	EWS	✓	✓	✓	✓	✓	X	X	✓	X
Qin, 2017 (S40)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Albur, 2016 (S42)	EWS	✓	✓	✓	✓	✓	✓	X	X	X
Asiimwe, 2015 (S48)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Brink 2019 (S26)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Camm, 2018 (S34)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Chang, 2018 (S46)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Chiew, 2019 (S44)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Chiew, 2019 (S44)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Churpek, 2017 (S22)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Churpek, 2017 (S22)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Churpek, 2017 (S24)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Churpek, 2017 (S24)	MEWS	✓	✓	✓	✓	✓	X	X	X	X

Cildir, 2013 (S43)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Corfield, 2014 (S28)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
De Groot, 2014 (S27)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
De Groot, 2014 (S27)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Delahanty, 2019 (S20)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Delahanty, 2019 (S20)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Faisal, 2019 (S23)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Geier, 2013 (S47)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Ghanem-Zoubi, 2011 (S31)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Goulden, 2018 (S29)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Hung, 2017 (S49)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Khwannimit, 2019 (S30)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Khwannimit, 2019 (S30)	SOS	✓	✓	✓	✓	✓	X	X	✓	X
Khwannimit, 2019 (S30)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Martino, 2018 (S30)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Pong, 2019 (S36)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Pong, 2019 (S36)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Prabhakar, 2019 (S37)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Prabhakar, 2019 (S37)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Redfern, 2018 (S21)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Saeed, 2019 (S32)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Samsudin, 2018 (S45)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Samsudin, 2018 (S45)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Schmedding, 2019 (S41)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Siddiqui, 2017 (S52)	EWS	✓	✓	✓	✓	✓	✓	X	X	X
Tirotta, 2017 (S35)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Vorwerk, 2009 (S39)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Yoo, 2015 (S51)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Awad, 2017 (S54)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Baker, 2015 (S57)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Calvert 2016 (S53)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Gök, 2019 (S58)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Chen, 2019 (S56)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Jo, 2013 (S60)	HOTEL	X	✓	X	✓	✓	✓	X	X	✓
Jo, 2013 (S60)	VIEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Moseson, 2014 (S59)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Reini, 2012 (S55)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Bulut, 2014 (S68)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Cattermole, 2009 (S82)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Cattermole, 2014 (S85)	WORTHING	✓	✓	✓	✓	✓	✓	X	X	X

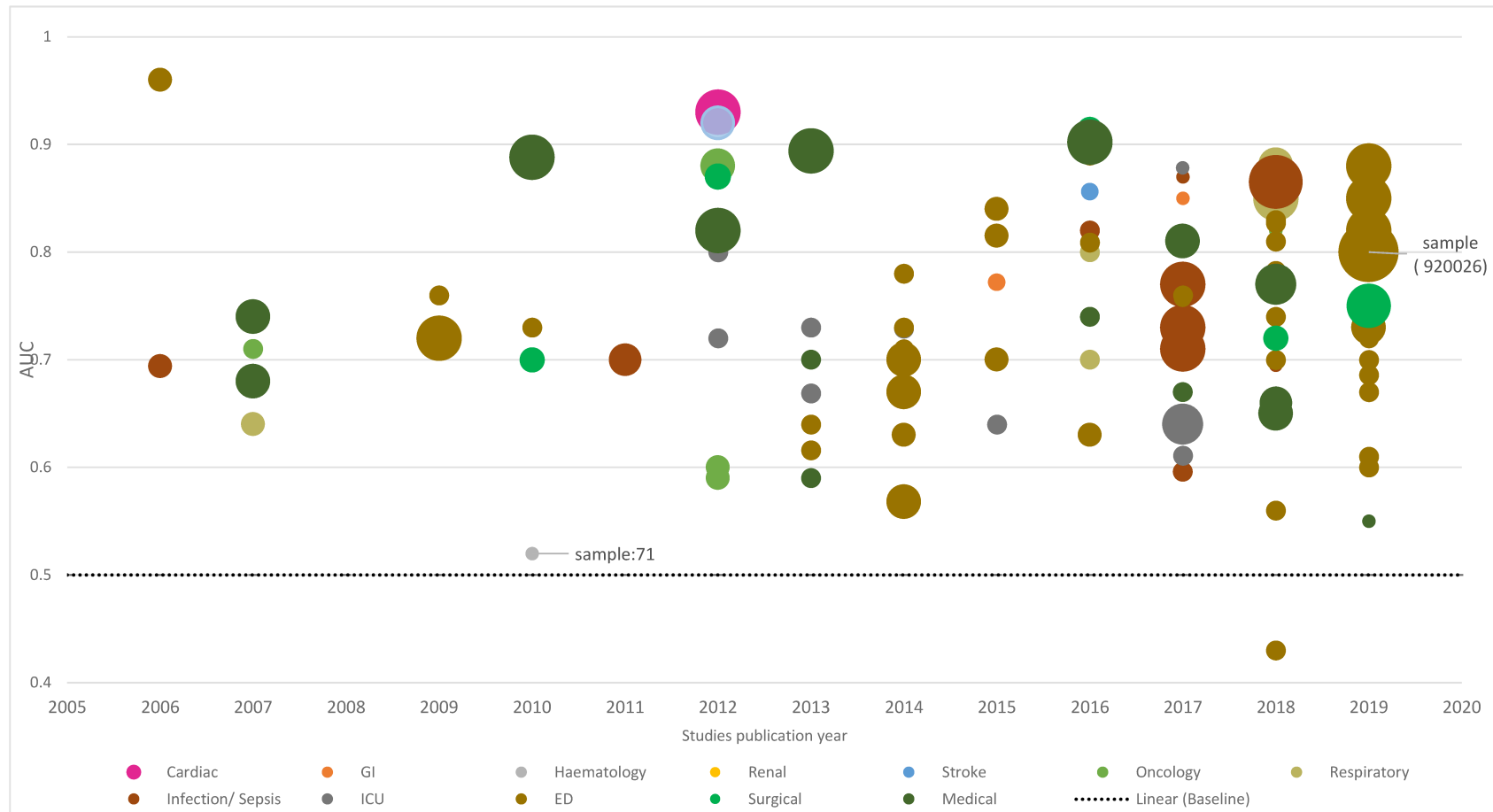
Cattermole, 2014 (S85)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Cattermole, 2014 (S85)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Heitz, 2010 (S83)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Dundar, 2016 (S74)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Dundar, 2016 (S74)	VIEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Dundar, 2019 (S79)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Eckart, 2019 (S70)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Eick, 2015 (S67)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Liu, 2015 (S77)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Liu, 2015 (S77)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Ho, 2013 (S71)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Jang, 2019 (S63)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Kivipuro, 2018 (S69)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Kwon, 2018 (S61)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Liu, 2014 (S73)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Lee, 2019 (S65)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Lee, 2019 (S65)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Lee, 2019 (S65)	TREWS	✓	✓	✓	✓	✓	X	X	X	✓
Naidoo, 2014 (S76)	TREWS	✓	✓	✓	✓	✓	X	X	X	✓
Najafi, 2018 (S86)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Singer, 2017 (S66)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Skitch, 2018 (S72)	HEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Skitch, 2018 (S72)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
So, 2015 (S78)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Srivilaithon, 2019 (S84)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Lam, 2006 (S80)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Usman, 2019 (S62)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Yuan, 2018 (S75)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Yuan, 2018 (S75)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Wei, 2019 (S64)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Xie, 2018 (S81)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Bartkowiak, 2019 (S87)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Bartkowiak, 2019 (S87)	MEWS	✓	✓	✓	✓	✓	X	X	✓	X
Cuthbertson, 2007 (S94)	EWS	✓	✓	✓	✓	X	✓	X	X	X
Cuthbertson, 2007 (S94)	MEWS	✓	✓	✓	✓	X	✓	X	X	X
Garcea, 2010 (S50)	EWS	✓	✓	✓	✓	✓	X	X	✓	X
Gardner-Thorpe 2006 (S92)	MEWS	✓	✓	✓	✓	✓	X	X	✓	X
Hollis, 2016 (S91)	EWS	✓	✓	✓	✓	✓	✓	X	X	X
Kovacs, 2016 (S88)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Plate, 2018 (S89)	VIEWS	✓	✓	✓	✓	✓	✓	✓	X	X

Sarani, 2012 (S90)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Abbott, 2016 (S101)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Duckitt, 2007 (S99)	WPC	✓	✓	✓	✓	✓	✓	X	X	X
Duckitt, 2007 (S99)	EWS	✓	✓	✓	✓	✓	X	X	X	X
Colombo, 2017 (S100)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Ghosh, 2018 (S98)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Ghosh, 2018 (S98)	MEWS	✓	✓	✓	✓	✓	X	X	X	X
Graziadio, 2019 (S103)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Prytherch, 2010 (S95)	VIEWES	✓	✓	✓	✓	✓	✓	✓	X	X
Ramsussen, 2018 (S97)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Smith, 2013 (S96)	NEWS	✓	✓	✓	✓	✓	✓	✓	X	X
Wheeler, 2013 (S102)	Hotel	✓	X	✓	X	✓	✓	X	X	✓
Wheeler, 2013 (S102)	MEWS	✓	✓	✓	✓	✓	X	X	X	X

Total	133
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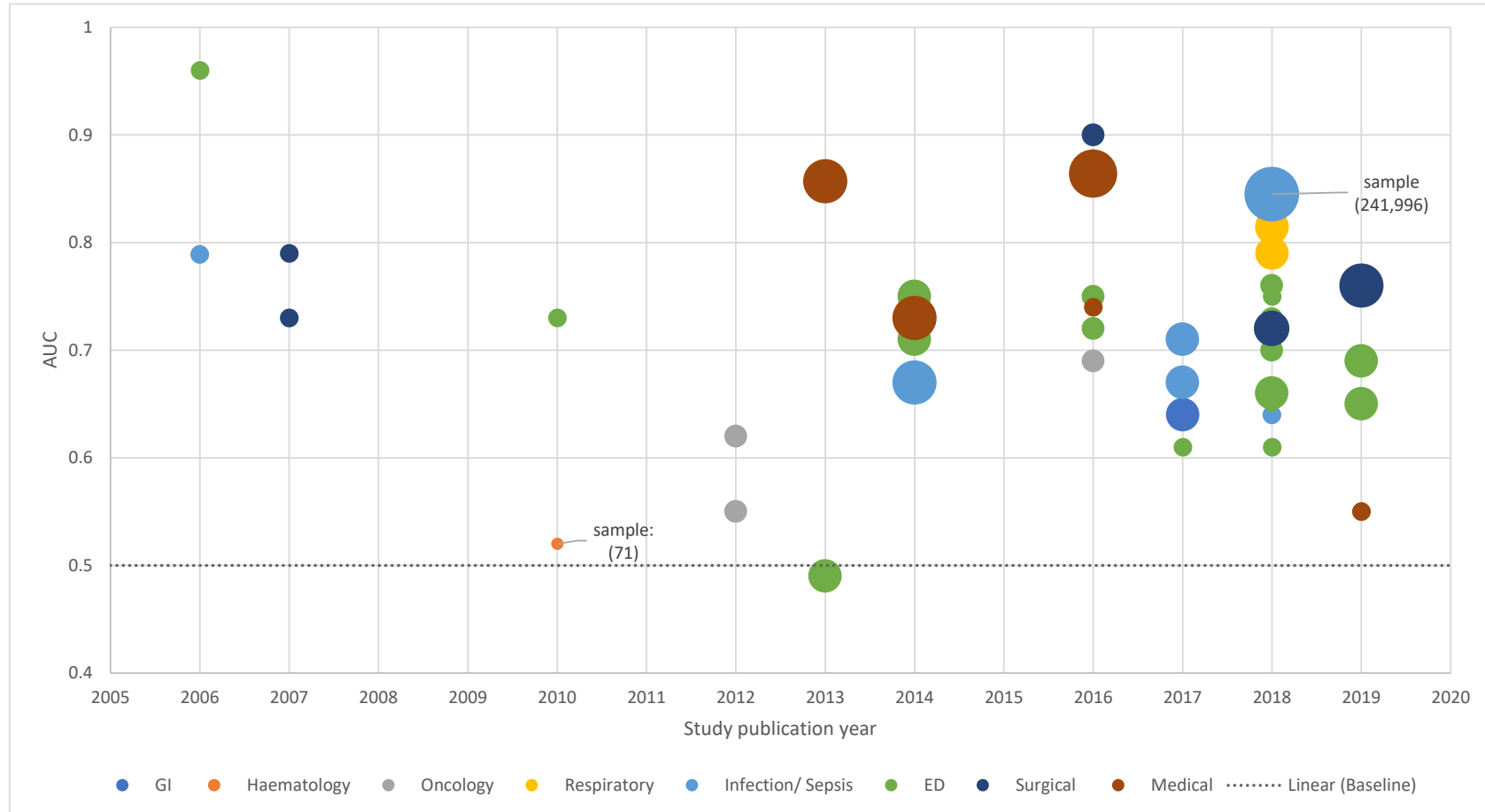
**Abbreviations:** HR: heart rate, SBP: systolic blood pressure, RR: respiratory rate, Temp: temperature, AVPU/LOC: alert, verbal response, physical response, unresponsive score or level of consciousness, O2 sat: Oxygen saturation, Supp O2: supplemental oxygen, Urine OP: urine output, Other: other parameters, i.e., blood biomarkers. VIEWES: Vitalpack early warning score, MEWS: modified early warning score, EWS: early warning score, NEWS: national early warning score, NEWS2: national early warning score 2, SOS: Search Out Severity score, Worthing: Worthing physiological scoring system, HOTEL: Hypotension, Oxygen saturation, Temperature, ECG abnormality, Loss of independence score, TREWS: Triage in Emergency department Early Warning Score, HEWS: Hamilton early warning score.

Figure S1. Predictive performance of early warning scores for mortality in studies from 2005 to 2020 for different disease subgroups and clinical settings



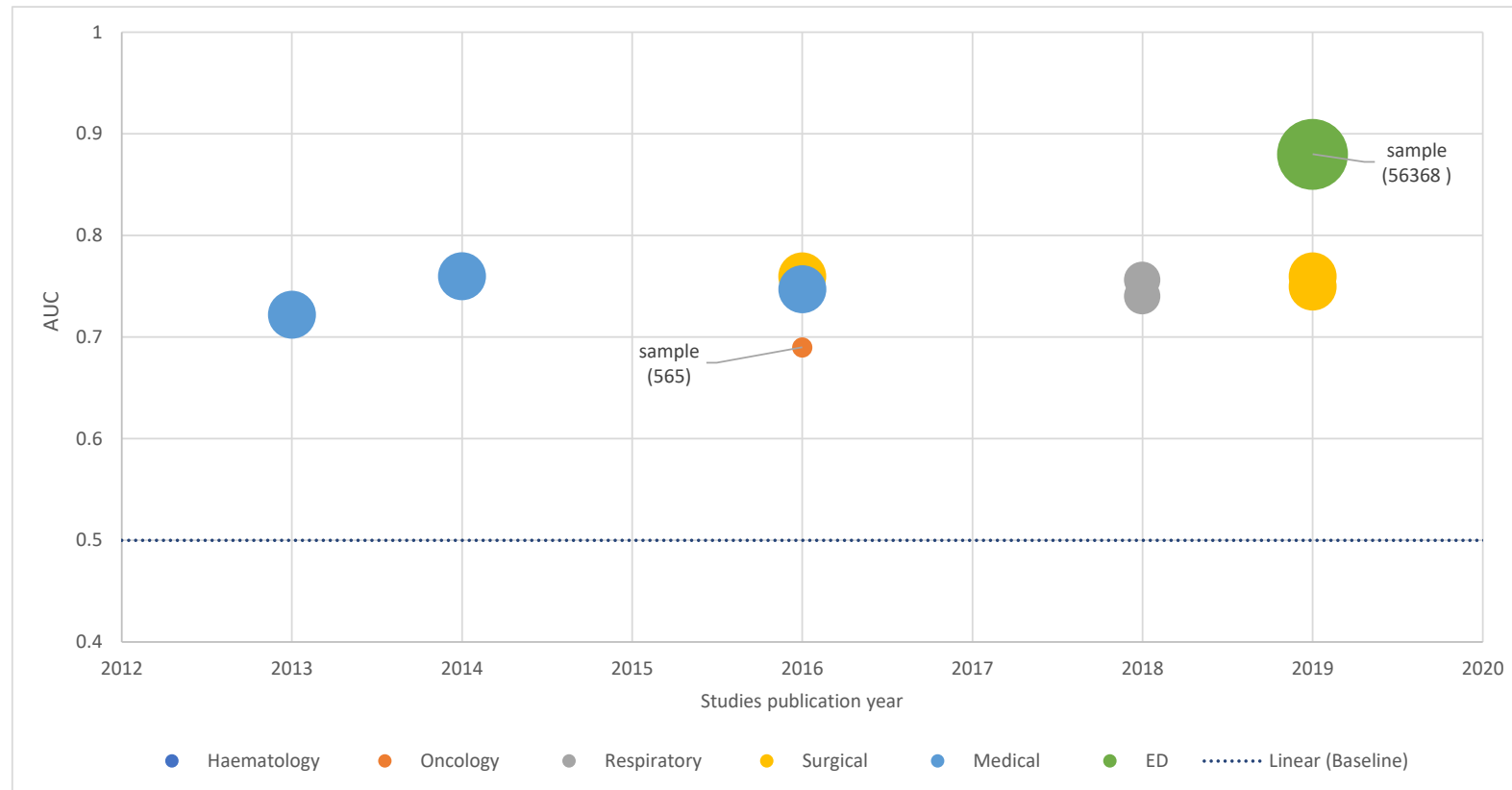
*Abbreviations:* AUC: Area Under the Curve; ED: Emergency Department; GI: Gastrointestinal diseases; ICU: Intensive Care Unit. Note: Bubbles sizes represents the sample size in each study.

Figure S2. Predictive performance of early warning scores for intensive care admission in studies from 2005 to 2020 for different disease subgroups and clinical settings



**Abbreviations:** AUC: Area Under the Curve; ED: Emergency Department; GI: Gastrointestinal diseases. Note: Bubbles sizes represents the sample size in each study.

Figure S3. Predictive performance of early warning scores for cardiac arrest in studies from 2012 to 2020 for different disease subgroups and clinical settings



**Abbreviations:** AUC: Area Under the Curve; ED: Emergency Department; GI: Gastrointestinal diseases. Note: Bubbles sizes represents the sample size in each study.