National Institute for Health and Care Excellence

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Consultation

Chapter 28 Structured ward rounds

Emergency and acute medical care in over 16s: service delivery and organisation

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Chapter 28 Structured ward rounds

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28 Structured ward rounds

28.1 Introduction

Ward rounds are critical to the smooth flow of the patient journey as they are the key method by which patients in hospital are systematically reviewed by the multidisciplinary team. During a ward round, the current status of each patient is established and the next steps in their care planned. The use of structured ward rounds is recommended by the Royal College of Physicians and the Royal College of Nursing.

Ward rounds are common practice in hospitals across the UK, but they vary in their method, membership and execution. The guideline committee wanted to find out if one method was more effective than others, or if their use has more impact on one patient population over another.

The committee wanted to determine if there was existing evidence to recommend particular practices for effective ward rounds that could be applied to patients with acute medical emergencies.

28.2 Review question: Do structured ward rounds improve processes and outcomes?

For full details see review protocol in Appendix A.

Table 1: PICO characteristics of review question

Population	Adults and young people (16 years and over) admitted to hospital with a suspected or confirmed AME.
Interventions	Structured ward round models including using: • Ward round checklists (generic checklists, not condition-specific). • Daily goals charts.
Comparison	No ward round checklists or daily goal charts.
Outcomes	• Mortality (critical) • Avoidable adverse events (critical) • Quality of life (critical) • Patient and/or carer satisfaction (critical) • Length of stay/time to discharge (critical) • Missed of delayed investigations (important) • Missed or delayed treatments (important) • Staff satisfaction (important)
Exclusion	Operating theatres (surgical literature can be referenced in other considerations if necessary).
Study design	Systematic reviews (SRs) of RCTs, RCTs, observational studies only to be included if no relevant SRs or RCTs are identified.

28.3 Clinical evidence

Sixteen studies were included in the review; 2 RCTs, 2 prospective cohort studies, 9 before-after studies, and 3 non-randomised comparative studies[4,11,13,19,26,29,57,62,64-66,83,84,86,88,90]; these are summarised in Table 2 below. Evidence from these studies is summarised in the clinical evidence summary below (Table 3;Table 4;Table 5;Table 6;Table 7). See also the study selection flow chart in

Appendix B, forest plots in Appendix C, study evidence tables in Appendix D, GRADE tables in Appendix F and excluded studies list in Appendix G.

Table 2: Summary of studies included in the review

Study	Intervention and comparison	Population	Outcomes	Comments
Artenstein 2015[4] Before and after study	Coached ward rounds: 'Broder service', structured, interdisciplinary ward rounds to coach the elements of high-quality care (n=381). Versus Comparator group before implementation (n=358).	Before-and-after comparison pilot study of patients (n=739) on 1 general medical/surgical ward of a 716-bed tertiary, academic medical centre in Springfield, USA. Data collected for 3 months post-implementation in 2013 compared to data from the same ward in the same 3 month period in 2012.	Length of stay (narrative only).	'Broder service': rounds were scripted and standardised to address patient progress. They were conference-room-based, 7 days a week and included the physician coach, 2 ward-assigned newly-appointed consultants, 2 case managers, the nurse manager, a social worker, pharmacist, respiratory therapist and bedside nurses. Control: unclear what came before the introduction of the 'broader service'.
Brosey 2015[11] Before and after study	Structured hourly nurse rounds: Before (pre-implementation of structured nurse rounds). Versus After (post-implementation of structured nurse rounds).	Observational study conducted in a 24-bed medical surgical nursing unit with private and semiprivate rooms. The name and location of the unit is not disclosed. There were 35 patient surveys completed during the pre-implementation phase, 81 patient surveys post-implementation and 472 patient surveys 1 year after project implementation.	Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) patient survey domain: overall satisfaction.	The HCAHPS patient survey contained a total of 9 domains including communication with nurses, communication with doctors, discharge information and pain management. It is unclear how long the structured nurse rounds were implemented for. Follow-up (1 year after project implementation) was extracted. Unadjusted data used.
Byrnes 2009[13] Before and after study	Implementation of a mandatory checklist of protocols and objectives:	The before-and-after comparison study was conducted in the 24-bed surgical/burn/trau	Mortality.	Not a lot of detail given about the checklist that was used before implementation of the mandatory checklist. Initial and follow-up

Study	Intervention and comparison	Population	Outcomes	Comments
	Pre-intervention (n=632 SICU admissions). Versus Post-intervention (n= 653 ICU admissions).	ma ICU in Barnes-Jewish Hospital, a 1228-bed tertiary care hospital affiliated with Washington University School of Medicine, using 1399 patients admitted between June 2006 and May 2007.		audits- verbal consideration of ICU protocols and objective. Domains included: insulin protocol, DVT prophylaxis and electrolyte protocol. Unadjusted data used.
Conroy 2015[19] Before and after study	Electronic process-of-care checklist for use during morning medical rounds: Baseline (635 valid checklist records were generated across 43 consecutive days). Versus Intervention (577 valid checklist records were generated across 41 consecutive days).	Before-and-after comparison study was conducted in a 19-bed general ICU within a tertiary hospital in Metropolitan NSW, Australia for a period of 16 weeks (April-August 2009). There were a total of 293 patients admitted to the ICU who were involved in the study- 141 at baseline and 152 at intervention.	Missed or delayed treatments, missed or delayed investigations (surrogate= compliance with care).	Baseline involved an audit of morning medical ward rounds using the e-checklist audit tool 7 days a week. This was completed to identify current practices and the data was collected by research nurses. Each audit was conducted independently after completion of the ward rounds; patient medical records were checked and beside nurses were consulted as required for accuracy and to minimise potential confounders. Care processes included: pain management, glucose management, head-of-bed elevation, sedation management, nutrition assessment, mechanical ventilation weaning, stress ulcer prophylaxis, DVT prophylaxis and medication review.
Dodek 2003[26] Before and after study	Introduction of an explicit rounding approach: Before (1088 surveys from 155 separate bedside rounds).	Before-and-after staff satisfaction survey (n=2,654) on explicit rounding in a 15-bed medical/surgical ICU in a 440-bed tertiary care	Staff satisfaction.	Intervention: flow-chart of the ideal ICU rounds process designed, including shorter and earlier handover rounds in the mornings; drug reorders, transfer

Study	Intervention and comparison	Population	Outcomes	Comments
	Versus After (1566 surveys from 225 separate bedside rounds).	teaching hospital in Vancouver, Canada. 'Before' data collected on 12 days in July 1997 and 'after' data on 19 days in January and February 1999.		notes and orders, and discussions with consultants to be carried out before attending rounds; bedside presentations during attending rounds consisting of summary of major events in the last 24 hours and system-oriented synthesis of active issues and plans by the responsible resident; development and maintenance of a common problem and plan list kept at bedside. Before intervention: no clear allocation of time for handover of information between residents; no clear expectations about the content of the bedside presentations. Seasonal difference when the before and after data was collected. Unadjusted data.
Gausvik 2015[29] Prospective cohort study	Survey of staff: Patient- and family-centred use of structured interdisciplinary bedside rounds (SIBR) on staff (n=24) on an acute care for the elderly unit. Versus Perceptions by staff (n=38) on traditional physician-centric rounding on 4 non-	Comparative survey of staff (n=62) on the use of SIBR on an acute care for the elderly unit in a 555-bed metropolitan community hospital in Cincinnati, USA, compared to control units.	Job satisfaction.	Survey sent to the same staff groups for both study arms. Control data collected on 4 non-intensive care hospital units (medical/surgery and telemetry). Intervention: 'validated structure that operationalises interdisciplinary communication between many care providers at the bedside.'

Study	Intervention and comparison	Population	Outcomes	Comments
	intensive care hospital units.			Control: physician examines computerised laboratory and vital signs information, examines and talks to the patient and enters a note in the electronic health record which may or may not involve the physician discussing issues with nursing staff. Unadjusted data.
Narasimhan 2006[57] Before and after study	Implementation of a standardised ICU daily goals worksheet: Before Versus After	Before-and-after study of patients (n=n/a) admitted to the medical ICU of a 697-bed teaching hospital in New York, USA, during 9 month after implementation compared to 9 month period a year before.	Length of stay (narrative only).	Unadjusted analysis, no patient information given (including patient numbers).
O'Leary 2010[62] Non-randomised comparative study	Structured inter-disciplinary rounds (SIDR-combined structured format for communication with a forum for regular interdisciplinary meetings) on a medical teaching unit. Versus Control medical teaching unit without the use of SIDR	Comparative study of patients (n=1812) admitted to and staff (n=147) working on 2 medical teaching units at an 897-bed tertiary care teaching hospital in Chicago, USA. Data was collected over 6 months.	Length of stay; professionals' ratings of team work (surrogate for staff satisfaction).	Intervention: the nurse manager and a unit medical director jointly led rounds each day; SIDR were attended by all nurses and resident physicians caring for patients in the unit, as well as the pharmacist, social worker, and case manager assigned to the unit. Control: unclear what it entails. It is likely to be ward rounds that are both unstructured and not attended by a multi-disciplinary team. Unadjusted analysis.
O'Leary 2011[64]	Structured inter-disciplinary rounds	Comparative study of patients (n=370)	Adverse events.	Retrospective medical record review of

Study	Intervention and comparison	Population	Outcomes	Comments
Non-randomised comparative study	(SIDR-combined structured format for communication with a forum for regular interdisciplinary meetings) on a medical teaching unit. Versus Control medical teaching unit without the use of SIDR.	admitted to 2 medical teaching units at a 897-bed tertiary care teaching hospital in Chicago, USA, from 28th July 2008 to 11th January 2009.		randomly selected teaching service unit compared to a control unit. During SIDR a structured communication tool was used for newly admitted patients (in previous 24 hours). As in the other O'Leary studies it is unclear what the ward round standard was before the implementation of SIDR. Adjusted rate ratio.
O'Leary 2011A[66] Controlled before and after study	Structured inter-disciplinary rounds (SIDR-combined structured format for communication with a forum for regular interdisciplinary meetings) on a medicine/hospitalist unit. Versus Control medicine/hospitalist unit without the use of SIDR	Comparative study of patients (n=1499) admitted to and staff (n=49) working on 2 hospitalist units at an 897-bed tertiary care teaching hospital in Chicago, USA. Data was collected over 24 weeks starting in August 2008.	Length of stay, professionals' ratings of team work (surrogate for staff satisfaction).	As in the other O'Leary studies it is unclear what the ward round standard was before the implementation of SIDR. This study was done on a hospitalist unit not a teaching unit as the other studies by the same author included in this review. Survey used to assess teamwork climate, Safety Attitudes Questionnaire (SAQ). The SAQ teamwork climate domain includes 14 questions using a 5-point Likert-type scale and generates a score ranging from 0 to 100. Better indicated by higher values. Unadjusted analysis.
O'Leary 2015[65] Before and after study	Implementation of structured inter-disciplinary rounds (SIDR): Before	Before-and-after study involving patients (n=1379) admitted to and staff (n=387) working on 5	Adverse events; professionals' ratings of team work (surrogate for staff satisfaction).	As in the other O'Leary studies it is unclear what the ward round standard was before the implementation of SIDR.

Study	Intervention and comparison	Population	Outcomes	Comments
	Versus After	general medical units at an 854-bed tertiary care teaching hospital in Chicago, USA, between 1st March 2009 and 28th February 2011.		Survey used to assess teamwork climate, Safety Attitudes Questionnaire (SAQ). The SAQ teamwork climate domain includes 14 questions using a 5-point Likert-type scale and generates a score ranging from 0 to 100. Better indicated by higher values. Adverse events adjusted analysis, teamwork ratings unadjusted.
Weiss 2011[84] Non-randomised comparative study	Implementation of a daily rounding checklist: Prompted use (n=140). Versus Un-prompted use (n=125).	Prospective concurrently controlled cohort study involving patients (n=265) in a medical ICU of a tertiary care university hospital in Chicago, USA; that were admitted on or after 25th June 2009 and discharged on or before 15th September 2009.	ICU mortality, hospital mortality, ICU length of stay, missed or delayed treatments.	In both arms the checklist was used. The intervention consisted of a non-care-providing resident physician to prompt the MICU team (using scripted questions) if any of 6 parameters under investigation had been overlooked. Mortality data is adjusted OR narrative data is unadjusted.
Weiss 2013[83] RCT	Clinical trial comparing: Non-care providing physician prompting. Versus Unprompted automated electronic checklist.	Randomised controlled trial involving critically ill patients in the medical ICU (MICU) treated with at least 1 day of empirical antibiotics (n=296) in North western Memorial Hospital, a tertiary care urban university-affiliated hospital. All patients admitted to the MICU on or after June 27 2011 and discharged on or prior to October 7	ICU length of stay, hospital length of stay, hospital mortality.	The MICU teams were randomised to the interventions. The team that used the prompting method also had a paper checklist with several parameters as well empirical antibiotics. They also had access to the electronic checklist but where not shown how to use it. Could not extract data for ICU length of stay and hospital length of stay, as only median and range is reported. Narrative data is

Study	Intervention and comparison	Population	Outcomes	Comments
		2011 were included.		unadjusted.
Wild 2004A[86] RCT	Clinical trial comparing: Interdisciplinary rounds (n=42). Versus Non-interdisciplinary rounds/standard care (n=42).	Randomised controlled trial conducted in April and May 2000 at Griffin Hospital in Derby, Connecticut, a community hospital with 160 beds, using 84 patients in a telemetry unit.	Length of stay.	They used the length of stay values to create a correlation matrix for potential confounders including factors such as readmission, age and hospitalisations. No information given about standard care. They also distributed questionnaires to staff about staff satisfaction. Questions were about "improved communication" and "optimising timing of discharge". Unable to extract these results as they were only graphically presented. Unadjusted data for length of stay.
Wright 2009[88] Before and after study	Post-take ward round (PTWR) medical records audit of previously admitted patients: No proforma (100 notes of patients previously admitted). Versus With new structured proforma (n=70).	Before-and-after study conducted in a 400-bed city hospital. 100 notes of patients previously admitted were initially audited without the proforma and 70 were then audited with the new structured proforma.	Missed or delayed treatments, missed or delayed investigations (surrogate= compliance with care).	Location of hospital not provided. Unadjusted audit data.
Young 1998[90] Prospective cohort study	Descriptive study comparing: Before implementation of a multidisciplinary approach Versus	This prospective study took place in a 12-bed medical-surgical ICU in a non-teaching tertiary referral centre in Ogden, Utah. It involved 469 consecutive	Total days in ICU, total days in hospital.	Patients who were treated in 1991 were identified through retrospective record review and located them using ventilation patient charges. 1992-May 1995 patients were identified and

Study	Intervention and comparison	Population	Outcomes	Comments
	After implementation of a multidisciplinary approach.	intensive care patients requiring mechanical ventilation for longer than 72 hours over a 54-month period, starting in 1991.		evaluated prospectively. Team member for multidisciplinary team included principal care givers: critical care physician, respiratory therapist, clinical social worker and a critical care pharmacist. Unadjusted data.

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Table 3: Clinical evidence summary: Checklist versus no checklist

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Checklist versus no checklist (95% CI)
Adherence to care - unadjusted (Missed or delayed investigations) – Diagnosis	170 (1 study) not stated	⊕⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 2.46 (1.94 to 3.14)	Moderate	
				400 per 1000	584 more per 1000 (from 376 more to 856 more)
Adherence to care - unadjusted (Missed or delayed investigations) – Investigations	170 (1 study) not stated	⊕⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 1.65 (1.38 to 1.98)	Moderate	
				570 per 1000	370 more per 1000 (from 217 more to 559 more)
Adherence to care - unadjusted (Missed or delayed investigations) - Further tests	170 (1 study) not stated	⊕⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness, imprecision	RR 1.51 (1.21 to 1.89)	Moderate	
				520 per 1000	265 more per 1000 (from 109 more to 463 more)
Adherence to care - unadjusted (missed or delayed treatments) - Management plan	170 (1 study) not stated	⊕⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness, imprecision	RR 1.23 (1.12 to 1.36)	Moderate	
				810 per 1000	186 more per 1000 (from 97 more to 292 more)
Adherence to care - unadjusted (missed or delayed treatments) - DVT prophylaxis	170 (1 study) not stated	⊕⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 8.81 (3.93 to 19.74)	Moderate	
				60 per 1000	469 more per 1000 (from 176 more to 1000 more)
Mortality	1285 (1 study) 3 months	⊕⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 1.13 (0.38 to 3.34)	Moderate	
				53 per 1000	7 more per 1000 (from 30 fewer to 124 more)
Overall adherence to care - adjusted (missed or delayed treatments)	141- baseline	⊕⊖⊖⊖ VERY LOW[a,b]	OR 6.38 (5.06 to	Moderate	
					Could not be calculated

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Checklist versus no checklist (95% CI)
	152 - intervention (1 study) follow-up not stated	due to risk of bias, indirectness	8.05)		

(a) All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.
(b) Downgrade by 1 increment if the majority of evidence had indirect outcomes.
(c) Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 4: Clinical evidence summary: Daily rounding checklist-prompted versus daily rounding checklist-unprompted

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Prompted versus unprompted (95% CI)
Mortality (adjusted OR) - ICU mortality	0 (1 study) not stated	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	OR 0.36 (0.13 to 1)	Moderate	
					Could not be calculated
Mortality (adjusted OR) - Hospital mortality	0 (1 study) not stated	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	OR 0.34 (0.15 to 0.77)	Moderate	
					Could not be calculated
ICU length of stay	265 (1 study) not stated	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean ICU length of stay in the control groups was 4.9	The mean ICU length of stay in the intervention groups was 1.4 lower (2.82 lower to 0.02 higher)
Hospital mortality	296	⨁⊖⊖⊖	RR 0.73	Moderate	

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Prompted versus unprompted (95% CI)
	(1 study) 6 months	VERY LOW[a,b] due to risk of bias, imprecision	(0.47 to 1.15)	240 per 1000	65 fewer per 1000 (from 127 fewer to 36 more)

(a) Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias. All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

(b) Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 5: Clinical evidence summary: Explicit rounding approach versus standard rounding approach

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Explicit rounding versus standard rounding (95% CI)
Patient satisfaction (overall satisfaction)	507 (1 study) unclear	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	RR 1.49 (1.05 to 2.1)	Moderate	
				486 per 1000	238 more per 1000 (from 24 more to 535 more)
Staff satisfaction	2459 (1 study) 12 days before and 19 days after	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 1.1 (1.07 to 1.03)	Moderate	
				863 per 1000	86 more per 1000 (from 26 more to 60 more)

(a) All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

(b) Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 6: Clinical evidence summary: Structured interdisciplinary bedside rounds versus standard physician-centred rounds

Outcomes	No of Participants (studies)	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Structured interdisciplinary bedside versus standard physician-centred rounds (95% CI)

	Follow up				
Job satisfaction	62 (1 study) not stated	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean job satisfaction in the control group was 2.868	The mean job satisfaction in the intervention groups was 0.76 higher (0.49 to 1.03 higher)

(a) All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

Table 7: Clinical evidence summary: Structured interdisciplinary rounds (SIDR) versus control (unknown)

Outcomes	**No of Participants (studies) Follow up**	**Quality of the evidence (GRADE)**	**Relative effect (95% CI)**	**Anticipated absolute effects**	
				Risk with Control	**Risk difference with Structured interdisciplinary rounds (SIDR) versus control (unknown) (95% CI)**
Teamwork climate score (staff satisfaction) – unadjusted Scale from: 0-100	534 (2 studies) 6 months and 2 years	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean teamwork climate score (staff satisfaction) - unadjusted in the control groups was 76.75	The mean teamwork climate score (staff satisfaction) - unadjusted in the intervention groups was 3.15 higher (0.84 to 5.45 higher)
Adverse events (adjusted rate ratio) - Any adverse events	0 (2 studies) 5.5 months and 2 years	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, imprecision, inconsistency	0.78 (0.39 to 1.53)	Moderate	
					Could not be calculated
Adverse events (adjusted rate ratio) - Preventable adverse events	0 (2 studies) 5.5 months and 2 years	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, imprecision, inconsistency	0.55 (0.15 to 2.01)	Moderate	
					Absolute effect cannot be calculated
Adverse events (adjusted rate ratio) - Serious adverse events	0 (1 study) 2 years	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias,	0.86 (0.39 to 1.9)	Moderate	
					Absolute effect cannot be calculated

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Control	Risk difference with Structured interdisciplinary rounds (SIDR) versus control (unknown) (95% CI)
		imprecision			
ICU length of stay	938 (1 study) 1991 - 1995	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean ICU length of stay in the control groups was 19.2 days	The mean ICU length of stay in the intervention groups was 4.2 lower (5.8 to 2.6 lower)
Hospital length of stay	4249 (3 studies) 1991 – 1995, 6 months and 24 weeks	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean hospital length of stay in the control groups was 13.5 days	The mean hospital length of stay in the intervention groups was 0.03 standard deviations lower(0.09 lower to 0.03 higher)
Length of stay (RCT)	84 (1 study) (baseline)	⨁⨁⊖⊖ LOW[a,b] due to risk of bias, imprecision		The mean length of stay in the control group was 2.7 days	The mean length of stay (RCT) in the intervention groups was 0.34 higher (0.43 lower to 1.11 higher)

(a) All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

(b) Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

(c) Downgraded by 1 or 2 increments because the heterogeneity is I^2=87%, unexplained by subgroup analysis.

Narrative data

Length of stay

One before-and-after study found that the average length of stay for all patients managed on a coaching model of structured, interdisciplinary team rounds was 4.23 days compared to 4.71 days (p=0.029) for patients managed on the unit before the introduction of this rounding model[4].

Another before-and-after study found that a daily goals worksheet shortened the length of stay of patients in the intensive care unit (mean 4.3 days, SD 0.63 days) compared to not using a daily goals worksheet (mean 6.4 days, SD 2.5 days) previously[57].

ICU length of stay

One randomised controlled trial found that there was no difference in median for the length of stay of patients in the intensive care unit between prompted and electronic checklist groups (2.6 [1.5-6.9] days versus 2.8 [1.7-6.5] days)[83].

Hospital length of stay

One randomised controlled trial found that there was a difference in median for length of stay of patients in hospital between prompted and electronic checklist groups (11.8 [5.9-22.8] days versus 9.6 [5.9-15.8] days)[83].

Staff satisfaction

A comparative study found that nurses' ratings of teamwork climate was higher on a hospitalist unit where structured interdisciplinary rounds were used (median 85.7, interquartile range 75.0-92.9) compared to a control hospitalist unit (median 61.6, interquartile range 48.2-83.9; p=0.008)[66].

28.4 Economic evidence

Published literature

No relevant health economic studies were identified.

The economic article selection protocol and flow chart for the whole guideline can found in the guideline's Appendix 41A and Appendix 41B.

In the absence of health economic evidence, unit costs were presented to the committee – see Chapter 41 Appendix I.

28.5 Evidence statements

Clinical

Check lists versus no check-lists

Three studies comprising 2649 people evaluated check-lists to improve processes and outcomes in adults and young people at risk of an AME, or with a suspected or confirmed AME. The evidence suggested that check-lists may provide a benefit in adherence to care (2 studies reported separately, very low quality). The evidence suggested there was no effect on mortality (1 study, very low quality).

Daily rounding checklist-prompted versus daily rounding checklist -unprompted

One study comprising 296 people evaluated daily rounding checklist- prompted to improve processes and outcomes in adults and young people at risk of an AME, or with a suspected or confirmed AME. The evidence suggested that daily rounding checklist- prompted may provide a benefit in reduced ICU length of stay, ICU mortality and hospital mortality (very low quality).

Explicit rounding approach versus standard rounding approach

Two studies comprising 2966 people evaluated explicit rounding approach to improve processes and outcomes in adults and young people at risk of an AME, or with a suspected or confirmed AME. The evidence suggested that explicit rounding approach may provide a benefit in improved patient satisfaction (1 study, very low quality) and staff satisfaction (1 study, very low quality).

Structured interdisciplinary bedside rounds versus standard physician centred rounds

One study comprising 62 people evaluated structured interdisciplinary bedside rounds to improve processes and outcomes in adults and young people at risk of an AME, or with a suspected or confirmed AME. The evidence suggested that structured interdisciplinary bedside rounds had no effect on job satisfaction (very low quality).

Structured interdisciplinary rounds versus control

Four studies comprising 4333 people evaluated structured interdisciplinary rounds to improve processes and outcomes in adults and young people at risk of an AME, or with a suspected or confirmed AME. The evidence suggested structured interdisciplinary rounds may provide a benefit in improved staff satisfaction (2 studies, very low quality), adverse events (2 studies, very low quality) and reduced ICU length of stay (1 study, very low quality). The evidence suggested there was no difference on length of hospital stay (3 studies, very low quality), length of stay - unadjusted RCT (1 study, low quality) and adverse events (2 studies, very low quality).

Economic

- No relevant economic evaluations were identified.

28.6 Recommendations and link to evidence

Recommendations	15. Use standardised and structured approaches to ward rounds, for example, with checklists or other clinical decision support tools.
Research recommendation	-
Relative values of different outcomes	The committee considered mortality, avoidable adverse events, length of stay/time to discharge, quality of life and patient and/or carer satisfaction to be critical outcomes. Missed or delayed investigations, missed or delayed treatments and staff satisfaction were considered to be important outcomes.
Trade-off between benefits and harms	Sixteen studies were included in the review, 2 randomised controlled trials and 14 observational studies. There was a variety of interventions used to provide structure to the ward round. The evidence was presented across separate intervention types: **Use of checklist versus no checklist** The intervention for these studies involved the use of either a paper checklist/worksheet or electronic checklist. Outcomes were measured prior to implementation of the checklist and compared with results after the use of a checklist/worksheet. The evidence suggested that checklists may provide a benefit in adherence to care (a surrogate for missed or delayed treatments). The evidence suggested there was no effect on mortality. No evidence was identified for avoidable adverse events, quality of life, patients and/or carer satisfaction, length of stay and staff satisfaction. **Daily rounding check-list -prompted versus daily rounding check-list unprompted** The intervention for these studies consisted of a non-care providing or resident physician prompting the rounding team with questions about patients' conditions in order to aid the ward round. This intervention was carried out in an ICU. The evidence suggested that daily rounding checklist-prompted may provide a benefit in reduced ICU length of stay, ICU mortality and hospital mortality. No evidence was identified for avoidable adverse events, quality of life, patient and/or carer satisfaction, missed or delayed investigations and staff satisfaction. **Explicit rounding versus standard rounding** These interventions involved using a flow chart demonstrating the ideal ICU ward round and how the processes that make up the ward round should be delivered for example, morning handover or bedside presentations. Actions were discussed in a team meeting. The evidence suggested that explicit rounding may provide a benefit in improved patient and staff satisfaction. No evidence was identified for mortality, avoidable adverse events, quality of life, carer satisfaction, length of stay/time of discharge, missed or delayed investigations, missed or delayed treatments and staff satisfaction. **Structured interdisciplinary bedside rounding (SIBR) versus standard physician-centred rounding** The intervention in this study consisted of a ward round involving all health and social care staff involved in the patient care including doctors, nurses, pharmacist, social worker and case manager. The SIBR was patient-and-family centred and this

Recommendations	15. Use standardised and structured approaches to ward rounds, for example, with checklists or other clinical decision support tools.
Research recommendation	-
	was compared with the standard physician-centric rounding. The evidence suggested SIBR had no effect on job satisfaction. No evidence was identified for mortality, avoidable adverse events, quality of life, patient and/or carer satisfaction, length of stay/time of discharge, missed or delayed investigations and missed or delayed treatments. **Structured interdisciplinary rounding (SIDR) versus control (unknown)** The intervention for these studies consisted of the use of an interdisciplinary team (including a consultant, nurse, social worker, pharmacist and case manager) for ward rounds. Three of the included studies for this comparison were before-and-after studies comparing outcomes prior to implementation of the intervention. The evidence suggested that SIDR may provide a benefit in improved staff satisfaction, adverse events (any) and reduced ICU length of stay. The evidence suggested there was no difference for hospital length of stay, length of stay (from unadjusted RCT) and adverse events. No evidence was identified for mortality, quality of life, patient and/or carer satisfaction, missed or delayed investigations and missed or delayed treatments. The committee felt that the evidence showed a benefit for structured ward rounds and made a recommendation for their use. The ward round is the key driver in the progression and management of patients. Although a routine part of clinical practice, rounds are nevertheless a complex intervention involving many components and multiple points for communication and data exchange, particularly for patients with complex conditions and multi-morbidity. It was felt that providing structure to the ward round would ensure that all aspects of care are delivered and this should result in better outcomes. The committee recommended that a checklist could be used as an option as there was some evidence of benefit. However, the committee recognised that checklists could also be a constraint and might add delays to an otherwise efficient process, particularly if they attempted to be too comprehensive, or inhibited the use of heuristics by experienced staff. For example, the care of low-complexity patients should not be delayed by completion of a checklist with redundant items. They should therefore be used as practice aids, not as rigid tools, to ensure harmonisation of best practice, promoting more reliable care throughout the whole patient pathway, reducing error, promoting timely discharge and minimising readmissions.
Trade-off between net effects and costs	No economic studies were identified. Unit costs of staff (Chapter 41 Appendix I) reported in the evidence were provided to aid consideration of cost effectiveness, although it was unclear from the evidence whether more or less staff time would be required. Interventions using structured ward round checklists and daily charts are unlikely to be resource-intensive compared with unstructured ward rounds. The main costs associated with these interventions are the initial implementation costs including staff training and designing and changing checklists and charts. For electronic checklists, this could include the cost of the devices and servers to store data. These costs are not standardised and

Recommendations	15. Use standardised and structured approaches to ward rounds, for example, with checklists or other clinical decision support tools.
Research recommendation	-
	would vary across trusts. Studies included in the evidence review show that these interventions may reduce the time taken to record and retrieve notes and could therefore potentially be cost saving. On-going training for new and existing staff must also be considered, as there will be a need to continually develop the checklist as processes change or evolve. Some studies also looked at interventions that would include changes to staffing and staff time. Major changes in staffing involved in ward rounds may lead to an increase in costs and uncertainty around the cost-effectiveness of the intervention. However, there is more likely to be a reallocation staff time, rather than the cost of additional staffing. A few of the studies suggested that length of hospital or ICU stay could be reduced. This would at least partially offset any increased costs. The committee concluded that structured ward rounds were • unlikely to increase costs substantially • likely to promote more reliable care throughout the whole patient pathway and reduce error, • likely to promote timely discharge • and therefore were likely to be cost-effective.
Quality of evidence	Fourteen observational studies and 2 randomised controlled trials were included. Nine of the observational studies were before-and-after studies. One of the randomised controlled trials was very low quality (downgraded due to risk of bias and imprecision). The other RCT was low quality (downgraded due to risk of bias). The 14 observational studies were very low quality; reasons for downgrading included risk of bias, imprecision, inconsistency and indirectness of outcomes. Some studies reported adherence to care, which was used as a surrogate outcome for missed or delayed treatments but downgraded for indirectness. Much of the positive evidence came from ICU ward rounds where the nursing and medical staff to patient ratio is high, the patients have high acuity, direct communication with patients may be impaired, and decision-making involves consultation with families. However, the committee felt that the evidence could be extrapolated and the principles could be adapted for medical wards. There were no economic studies included in the review.
Other considerations	The committee agreed that a standardised checklist could be incorporated in structured ward rounds, but the format and the way in which such lists might be used should be determined by local experience, and preferably following a gap analysis to determine maximal opportunities for process improvement. The committee noted that the studies comparing prompting to non-prompting had done so as an adjunct to a checklist. The committee commented that other 'tools' for a structured ward round could include prompting: one way to achieve this in practice without employing a 'prompter' would be to ensure that all members of the team were focused on the task in hand, and were empowered to offer reminders.

Recommendations	**15. Use standardised and structured approaches to ward rounds, for example, with checklists or other clinical decision support tools.**
Research recommendation	**-**
	The committee recognised that introducing structured ward round models/tools effectively in routine practice would likely involve a change in attitudes and behaviours amongst clinical staff, including explicit support from senior staff, a willingness to adopt greater standardisation of processes amongst team members, and a flattening of hierarchies. A checklist on its own will not achieve much[10,25]; conversely, once the value of a checklist as a decision-support tool has been recognised and incorporated in practice, the need to 'tick off' every component becomes superfluous, and indeed might even be counter-productive.

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References

1 'Daily rounding' checklist improves ICU compliance. Hospital Peer Review. 2008; 33(4):56-57

2 Al-Mahrouqi H, Oumer R, Tapper R, Roberts R. Post-acute surgical ward round proforma improves documentation. BMJ Quality Improvement Reports. 2013; 2(1)

3 Alamri Y, Frizelle F, Al-Mahrouqi H, Eglinton T, Roberts R. Surgical ward round checklist: does it improve medical documentation? A clinical review of Christchurch general surgical notes. ANZ Journal of Surgery. 2016; 86(11):878-882

4 Artenstein AW, Higgins TL, Seiler A, Meyer D, Knee AB, Boynton G et al. Promoting high value inpatient care via a coaching model of structured, interdisciplinary team rounds. British Journal of Hospital Medicine. 2015; 76(1):41-45

5 Aung TH, Judith Beck A, Siese T, Berrisford R. Less is more: a project to reduce the number of PIMs (potentially inappropriate medications) on an elderly care ward. BMJ Quality Improvement Reports. 2016; 5(1):w4260

6 Baba J, Thompson MR, Berger RG. Rounds reports: early experiences of using printed summaries of electronic medical records in a large teaching medical hospital. Health Informatics Journal. 2011; 17(1):15-23

7 Bhamidipati VS, Elliott DJ, Justice EM, Belleh E, Sonnad SS, Robinson EJ. Structure and outcomes of interdisciplinary rounds in hospitalized medicine patients: a systematic review and suggested taxonomy. Journal of Hospital Medicine. 2016; 11(7):513-523

8 Blucher KM, Dal Pra SE, Hogan J, Wysocki AP. Ward safety checklist in the acute surgical unit. ANZ Journal of Surgery. 2014; 84(10):745-747

9 Boland X. Implementation of a ward round pro-forma to improve adherence to best practice guidelines. BMJ Quality Improvement Reports. 2015; 4(1)

10 Bosk CL, Dixon-Woods M, Goeschel CA, Pronovost PJ. Reality check for checklists. The Lancet. 2009; 374(9688):444-445

11 Brosey LA, March KS. Effectiveness of structured hourly nurse rounding on patient satisfaction and clinical outcomes. Journal of Nursing Care Quality. 2015; 30(2):153-159

12 Butcher BW, Vittinghoff E, Maselli J, Auerbach AD. Impact of proactive rounding by a rapid response team on patient outcomes at an academic medical center. Journal of Hospital Medicine. 2013; 8(1):7-12

13 Byrnes MC, Schuerer DJ, Schallom ME, Sona CS, Mazuski JE, Taylor BE et al. Implementation of a mandatory checklist of protocols and objectives improves compliance with a wide range of evidence-based intensive care unit practices. Critical Care Medicine. 2009; 37(10):2775-2781

14 Calder LA, Kwok ESH, Adam Cwinn A, Worthington J, Yelle JD, Waggott M et al. Enhancing the quality of morbidity and mortality rounds: the Ottawa M&M model. Academic Emergency Medicine. 2014; 21(3):314-321

15 Cao V, Horn F, Laren T, Scott L, Giri P, Hidalgo D et al. 1080: patient-centered structured interdisciplinary bedside rounds in the medical ICU. Critical Care Medicine. 2016; 44(12 Suppl 1):346

16 Carlos WG, Patel DG, Vannostrand KM, Gupta S, Cucci AR, Bosslet GT. Intensive care unit rounding checklist implementation. Effect of accountability measures on physician compliance. Annals of the American Thoracic Society. 2015; 12(4):533-538

17 Ciccu-Moore R, Grant F, Niven BA, Paterson H, Stoddart K, Wallace A. Care and comfort rounds: improving standards. Nursing Management. 2014; 20(9):18-23

18 Cohn A. The ward round: what it is and what it can be. British Journal of Hospital Medicine. 2014; 75(Suppl 6):C82-C85

19 Conroy KM, Elliott D, Burrell AR. Testing the implementation of an electronic process-of-care checklist for use during morning medical rounds in a tertiary intensive care unit: a prospective before-after study. Annals of Intensive Care. 2015; 5(1):60

20 Cook EJ, Randhawa G, Guppy A, Large S. A study of urgent and emergency referrals from NHS Direct within England. BMJ Open. 2015; 5(5):e007533

21 Cornell P, Gervis MT, Yates L, Vardaman JM. Impact of SBAR on nurse shift reports and staff rounding. Medsurg Nursing. 2014; 23(5):334-342

22 Cornell P, Townsend-Gervis M, Vardaman JM, Yates L. Improving situation awareness and patient outcomes through interdisciplinary rounding and structured communication. Journal of Nursing Administration. 2014; 44(3):164-169

23 Damiani LP, Cavalcanti AB, Moreira FR, Machado F, Bozza FA, Salluh JIF et al. A cluster-randomised trial of a multifaceted quality improvement intervention in Brazilian intensive care units (Checklist-ICU trial): statistical analysis plan. Critical Care and Resuscitation. 2015; 17(2):113-121

24 Dhillon P, Murphy RKJ, Ali H, Burukan Z, Corrigan MA, Sheikh A et al. Development of an adhesive surgical ward round checklist: a technique to improve patient safety. Irish Medical Journal. 2011; 104(10):303-305

25 Dixon-Woods M, Leslie M, Tarrant C, Bion J. Explaining Matching Michigan: an ethnographic study of a patient safety program. Implementation Science. 2013; 8:70

26 Dodek PM, Raboud J. Explicit approach to rounds in an ICU improves communication and satisfaction of providers. Intensive Care Medicine. 2003; 29(9):1584-1588

27 Dubose J, Teixeira PGR, Inaba K, Lam L, Talving P, Putty B et al. Measurable outcomes of quality improvement using a daily quality rounds checklist: one-year analysis in a trauma intensive care unit with sustained ventilator-associated pneumonia reduction. Journal of Trauma. 2010; 69(4):855-860

28 DuBose JJ, Inaba K, Shiflett A, Trankiem C, Teixeira PGR, Salim A et al. Measurable outcomes of quality improvement in the trauma intensive care unit: the impact of a daily quality rounding checklist. Journal of Trauma. 2008; 64(1):22-29

29 Gausvik C, Lautar A, Miller L, Pallerla H, Schlaudecker J. Structured nursing communication on interdisciplinary acute care teams improves perceptions of safety, efficiency, understanding of

care plan and teamwork as well as job satisfaction. Journal of Multidisciplinary Healthcare. 2015; 8:33-37

30 Ham PB, Anderton T, Gallaher R, Hyrman M, Simmerman E, Ramanathan A et al. Development of electronic medical record-based "rounds report" results in improved resident efficiency, more time for direct patient care and education, and less resident duty hour violations. American Surgeon. 2016; 82(9):853-859

31 Hasibeder WR. Does standardization of critical care work? Current Opinion in Critical Care. 2010; 16(5):493-498

32 Have ECMT, Nap RE. Mutual agreement between providers in intensive care medicine on patient care after interdisciplinary rounds. Journal of Intensive Care Medicine. 2014; 29(5):292-297

33 Henneman EA, Kleppel R, Hinchey KT. Development of a checklist for documenting team and collaborative behaviors during multidisciplinary bedside rounds. Journal of Nursing Administration. 2013; 43(5):280-285

34 Herring R, Caldwell G, Jackson S. Implementation of a considerative checklist to improve productivity and team working on medical ward rounds. Clinical Governance. 2011; 16(2):129-136

35 Herring R, Desai T, Caldwell G. Quality and safety at the point of care: how long should a ward round take? Clinical Medicine. 2011; 11(1):20-22

36 Hewson KM, Burrell AR. A pilot study to test the use of a checklist in a tertiary intensive care unit as a method of ensuring quality processes of care. Anaesthesia and Intensive Care. 2006; 34(3):322-328

37 Hoke N, Falk S. Interdisciplinary rounds in the postanesthesia care unit. A new perioperative paradigm. Anesthesiology Clinics. 2012; 30(3):427-431

38 Holton R, Patel R, Eggebrecht M, Von Hoff B, Garrison O, McHale S et al. Rounding on rounds: creating a checklist for patient- and family-centered rounds. American Journal of Medical Quality. 2015; 30(5):493

39 Huynh E, Basic D, Gonzales R, Shanley C. Structured interdisciplinary bedside rounds do not reduce length of hospital stay and 28-day re-admission rate among older people hospitalised with acute illness: an Australian study. Australian Health Review. 2016;

40 Jacobowski NL, Girard TD, Mulder JA, Ely EW. Communication in critical care: family rounds in the intensive care unit. American Journal of Critical Care. 2010; 19(5):421-430

41 Jitapunkul S, Nuchprayoon C, Aksaranugraha S, Chaiwanichsiri D, Leenawat B, Kotepong W et al. A controlled clinical trial of multidisciplinary team approach in the general medical wards of Chulalongkorn Hospital. Journal of the Medical Association of Thailand. 1995; 78(11):618-623

42 Karalapillai D, Baldwin I, Dunnachie G, Knott C, Eastwood G, Rogan J et al. Improving communication of the daily care plan in a teaching hospital intensive care unit. Critical Care and Resuscitation. 2013; 15(2):97-102

43 Krepper R, Vallejo B, Smith C, Lindy C, Fullmer C, Messimer S et al. Evaluation of a standardized hourly rounding process (SHaRP). Journal for Healthcare Quality. 2014; 36(2):62-69

44 Lehnbom EC, Adams K, Day RO, Westbrook JI, Baysari MT. iPad use during ward rounds: an observational study. Studies in Health Technology and Informatics. 2014; 204:67-73

45 Lepee C, Klaber RE, Benn J, Fletcher PJ, Cortoos PJ, Jacklin A et al. The use of a consultant-led ward round checklist to improve paediatric prescribing: an interrupted time series study. European Journal of Pediatrics. 2012; 171(8):1239-1245

46 Levett T, Caldwell G. Leadership training for registrars on ward rounds. Clinical Teacher. 2014; 11(5):350-354

47 Mansell A, Uttley J, Player P, Nolan O, Jackson S. Is the post-take ward round standardised? Clinical Teacher. 2012; 9(5):334-337

48 Mant T, Dunning T, Hutchinson A. The clinical effectiveness of hourly rounding on fall-related incidents involving adult patients in an acute care setting: a systematic review. JBI Database of Systematic Reviews and Implementation Reports. 2012; 10:S63-S74

49 Mathias JM. Rounding tool off to a good start in improving patient satisfaction. OR Manager. 2014; 30(3):1-9

50 Meade CM, Bursell AL, Ketelsen L. Effects of nursing rounds: on patients' call light use, satisfaction, and safety. American Journal of Nursing. 2006; 106(9):58-1

51 Meade CM, Kennedy J, Kaplan J. The effects of emergency department staff rounding on patient safety and satisfaction. Journal of Emergency Medicine. 2010; 38(5):666-674

52 Mercedes A, Fairman P, Hogan L, Thomas R, Slyer JT. The effectiveness of structured multidisciplinary rounding in acute care units on length of hospital stay and satisfaction of patients and staff: a systematic review protocol. JBI Database of Systematic Reviews and Implementation Reports. 2015; 13(8):41-53

53 Mitchell MD, Lavenberg JG, Trotta RL, Umscheid CA. Hourly rounding to improve nursing responsiveness: a systematic review. Journal of Nursing Administration. 2014; 44(9):462-472

54 Mohan N, Caldwell G. A considerative checklist to ensure safe daily patient review. Clinical Teacher. 2013; 10(4):209-213

55 Monaghan J, Channell K, McDowell D, Sharma AK. Improving patient and carer communication, multidisciplinary team working and goal-setting in stroke rehabilitation. Clinical Rehabilitation. 2005; 19(2):194-199

56 Mosher HJ, Lose DT, Leslie R, Pennathur P, Kaboli PJ. Aligning complex processes and electronic health record templates: a quality improvement intervention on inpatient interdisciplinary rounds. BMC Health Services Research. 2015; 15:265

57 Narasimhan M, Eisen LA, Mahoney CD, Acerra FL, Rosen MJ. Improving nurse-physician communication and satisfaction in the intensive care unit with a daily goals worksheet. American Journal of Critical Care. 2006; 15(2):217-222

58 Newnham A, Hine C, Agwu JC. Impact of standardised documentation on post take ward round. Archives of Disease in Childhood. 2012; 97(Suppl 1):A108-A109

59 Newnham AL, Hine C, Rogers C, Agwu JC. Improving the quality of documentation of paediatric post-take ward rounds: the impact of an acrostic. Postgraduate Medical Journal. 2015; 91(1071):22-25

60 Norgaard K, Ringsted C, Dolmans D. Validation of a checklist to assess ward round performance in internal medicine. Medical Education. 2004; 38(7):700-707

61 O'Hare JA. Anatomy of the ward round. European Journal of Internal Medicine. 2008; 19(5):309-313

62 O'Leary KJ, Wayne DB, Haviley C, Slade ME, Lee J, Williams MV. Improving teamwork: impact of structured interdisciplinary rounds on a medical teaching unit. Journal of General Internal Medicine. 2010; 25(8):826-832

63 O'Leary KJ, Boudreau YN, Creden AJ, Slade ME, Williams MV. Assessment of teamwork during structured interdisciplinary rounds on medical units. Journal of Hospital Medicine. 2012; 7(9):679-683

64 O'Leary KJ, Buck R, Fligiel HM, Haviley C, Slade ME, Landler MP et al. Structured interdisciplinary rounds in a medical teaching unit: improving patient safety. Archives of Internal Medicine. 2011; 171(7):678-684

65 O'Leary KJ, Creden AJ, Slade ME, Landler MP, Kulkarni N, Lee J et al. Implementation of unit-based interventions to improve teamwork and patient safety on a medical service. American Journal of Medical Quality. 2015; 30(5):409-416

66 O'Leary KJ, Haviley C, Slade ME, Shah HM, Lee J, Williams MV. Improving teamwork: impact of structured interdisciplinary rounds on a hospitalist unit. Journal of Hospital Medicine.: Wiley Subscription Services, Inc., A Wiley Company. 2011; 6(2):88-93

67 Pitcher M, Lin JTW, Thompson G, Tayaran A, Chan S. Implementation and evaluation of a checklist to improve patient care on surgical ward rounds. ANZ Journal of Surgery. 2016; 86(5):356-360

68 Pucher PH, Aggarwal R, Qurashi M, Singh P, Darzi A. Randomized clinical trial of the impact of surgical ward-care checklists on postoperative care in a simulated environment. British Journal of Surgery. 2014; 101(13):1666-1673

69 Reimer N, Herbener L. Round and round we go: rounding strategies to impact exemplary professional practice. Clinical Journal of Oncology Nursing. 2014; 18(6):654-660

70 Richmond C, Merrick E, Green T, Dinh M, Iedema R. Bedside review of patient care in an emergency department: the Cow Round. EMA - Emergency Medicine Australasia. 2011; 23(5):600-605

71 Savel RH, Goldstein EB, Gropper MA. Critical care checklists, the Keystone Project, and the Office for Human Research Protections: a case for streamlining the approval process in quality-improvement research. Critical Care Medicine. 2009; 37(2):725-728

72 Sharma S, Peters MJ, PICU/NICU Risk Action Group. 'Safety by DEFAULT': introduction and impact of a paediatric ward round checklist. Critical Care. 2013; 17(5):R232

73 Shaughnessy L, Jackson J. Introduction of a new ward round approach in a cardiothoracic critical care unit. Nursing in Critical Care. 2015; 20(4):210-218

74 Shoeb M, Khanna R, Fang M, Sharpe B, Finn K, Ranji S et al. Internal medicine rounding practices and the Accreditation Council for Graduate Medical Education core competencies. Journal of Hospital Medicine. 2014; 9(4):239-243

75 Simpson SQ, Peterson DA, O'Brien-Ladner AR. Development and implementation of an ICU quality improvement checklist. AACN Advanced Critical Care. 2007; 18(2):183-189

76 Sobaski T, Abraham M, Fillmore R, McFall DE, Davidhizar R. The effect of routine rounding by nursing staff on patient satisfaction on a cardiac telemetry unit. Health Care Manager. 2008; 27(4):332-337

77 Teixeira PGR, Inaba K, Dubose J, Melo N, Bass M, Belzberg H et al. Measurable outcomes of quality improvement using a daily quality rounds checklist: two-year prospective analysis of sustainability in a surgical intensive care unit. Journal of Trauma and Acute Care Surgery. 2013; 75(4):717-721

78 Thomas EJ, Sexton JB, Neilands TB, Frankel A, Helmreich RL. The effect of executive walk rounds on nurse safety climate attitudes: a randomized trial of clinical units. BMC Health Services Research. 2005; 5:28

79 Thomas EJ, Sexton JB, Neilands TB, Frankel A, Helmreich RL. Correction: The effect of executive walk rounds on nurse safety climate attitudes: a randomized trial of clinical units [ISRCTN85147255]. BMC Health Services Research. 2005; 5:46

80 Thompson AG, Jacob K, Fulton J, McGavin CR. Do post-take ward round proformas improve communication and influence quality of patient care? Postgraduate Medical Journal. 2004; 80(949):675-676

81 Van Eaton EG, Horvath KD, Lober WB, Rossini AJ, Pellegrini CA. A randomized, controlled trial evaluating the impact of a computerized rounding and sign-out system on continuity of care and resident work hours. Journal of the American College of Surgeons. 2005; 200(4):538-545

82 Van Eaton EG, McDonough K, Lober WB, Johnson EA, Pellegrini CA, Horvath KD. Safety of using a computerized rounding and sign-out system to reduce resident duty hours. Academic Medicine. 2010; 85(7):1189-1195

83 Weiss CH, Dibardino D, Rho J, Sung N, Collander B, Wunderink RG. A clinical trial comparing physician prompting with an unprompted automated electronic checklist to reduce empirical antibiotic utilization. Critical Care Medicine. 2013; 41(11):2563-2569

84 Weiss CH, Moazed F, McEvoy CA, Singer BD, Szleifer I, Amaral LAN et al. Prompting physicians to address a daily checklist and process of care and clinical outcomes: a single-site study. American Journal of Respiratory and Critical Care Medicine. 2011; 184(6):680-686

85 Weiss CH, Persell SD, Wunderink RG, Baker DW. Empiric antibiotic, mechanical ventilation, and central venous catheter duration as potential factors mediating the effect of a checklist prompting intervention on mortality: an exploratory analysis. BMC Health Services Research. 2012; 12:198

86 Wild D, Nawaz H, Chan W, Katz DL. Effects of interdisciplinary rounds on length of stay in a telemetry unit. Journal of Public Health Management and Practice. 2004; 10(1):63-69

87 Wilson FEJ, Newman A, Ilari S. Innovative solutions: optimal patient outcomes as a result of multidisciplinary rounds. Dimensions of Critical Care Nursing. 2009; 28(4):171-173

88 Wright DN. Does a post-take ward round proforma have a positive effect on completeness of documentation and efficiency of information management? Health Informatics Journal. 2009; 15(2):86-94

89 Wright S, Bowkett J, Bray K. The communication gap in the ICU--a possible solution. Nursing in Critical Care. 1996; 1(5):241-244

90 Young MP, Gooder VJ, Oltermann MH, Bohman CB, French TK, James BC. The impact of a multidisciplinary approach on caring for ventilator-dependent patients. International Journal for Quality in Health Care. 1998; 10(1):15-26

91 Zhang R. Investigating the prevention of hospital-acquired infection through standardized teaching ward rounds in clinical nursing. Genetics and Molecular Research. 2015; 14(2):3753-3759

Appendices

Appendix A: Review protocol

Table 8: Review protocol: Structured ward rounds

Review question: Do structured ward rounds improve processes and patient outcomes?	
Rationale	Often the way the ward rounds are performed is not efficient - ward rounds are often done in a geographical order rather than on the basis of patient priority. Each patient does not always get all the components of the ward round because generally there is no structure and it depends on individual preference, personalities and recall. The components of the ward round (for example, examination, VTE risk assessment or review, medication review or explanation to the patient) are the same for each patient thus the process of the ward round could be structured. The provision of a ward round checklists and/or daily goal charts will ensure all components are delivered and therefore should ensure optimum care is provided. We are looking at systems rather than conditions so we will not be looking at condition-specific checklists.
Topic code	T6-6.
Population	Adults and young people (16 years and over) admitted to hospital with a suspected or confirmed AME. No strata (checklists and charts).
Intervention	Structured ward round models including using: • Ward round checklists (generic checklists, not condition-specific). • Daily goals charts.
Comparison	No ward round checklists or daily goal charts.
Outcomes	• Mortality (critical) • Avoidable adverse events (critical) • Quality of life (critical) • Patient and/or carer satisfaction (critical) • Length of stay/time to discharge (critical) • Missed of delayed investigations (important) • Missed or delayed treatments (important) • Staff satisfaction (important)
Exclusion	Operating theatres (surgical literature can be referenced in other considerations if necessary).
Search criteria	The databases to be searched are: Medline, Embase, the Cochrane Library. Date limits for search: 1990. Language: English.
The review strategy	Systematic reviews (SRs) of RCTs, RCTs, observational studies only to be included if no relevant SRs or RCTs are identified.
Analysis	Data synthesis of RCT data. Meta-analysis where appropriate will be conducted. Studies in the following subgroup populations will be included in subgroup analysis: • No sub-groups identified.

Review question: Do structured ward rounds improve processes and patient outcomes?	
	In addition, if studies have pre-specified in their protocols that results for any of these subgroup populations will be analysed separately, then they will be included in the subgroup analysis. The methodological quality of each study will be assessed using the Evibase checklist and GRADE.
Exclusions	Countries: Non- OECD.
Key papers	None identified.

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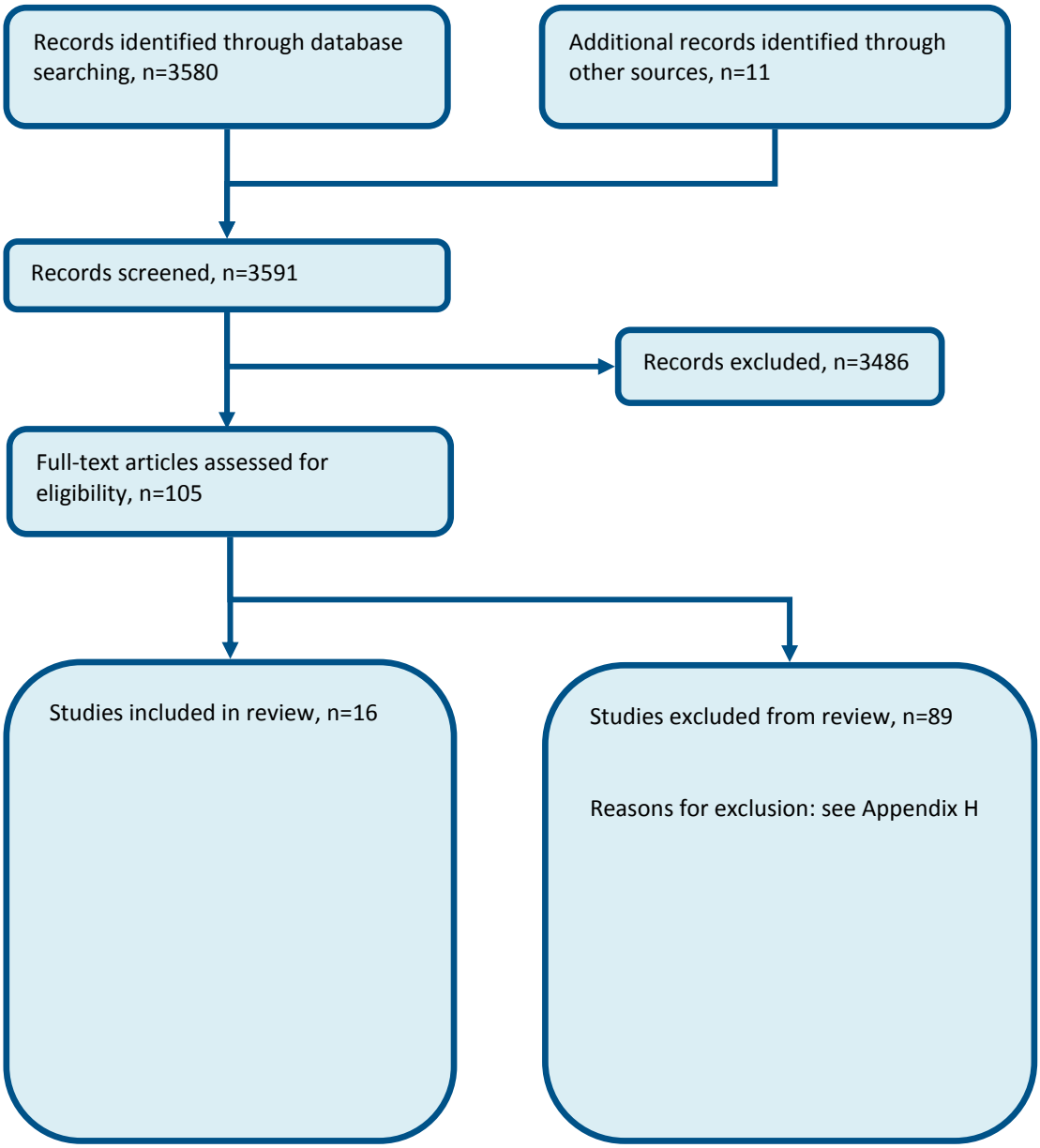
Appendix B: Clinical article selection

Figure 1: Flow chart of clinical article selection for the review of structured ward rounds



Appendix C: Forest plots

C.1 Checklist versus no checklist

Figure 2:Adherence to care – adjusted OR (Missed or delayed treatments)

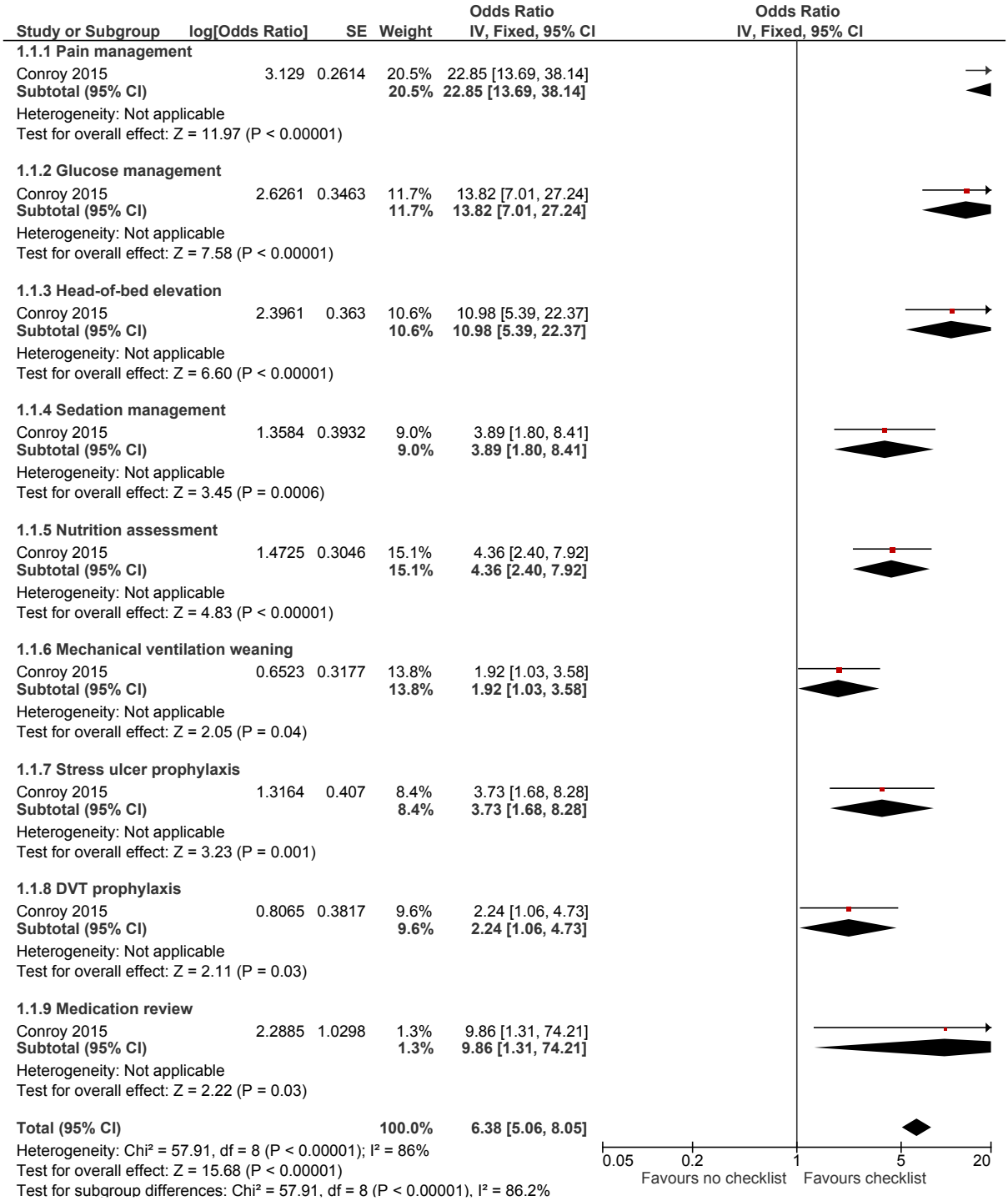


Figure 3: Adherence to care – unadjusted (missed or delayed investigations)

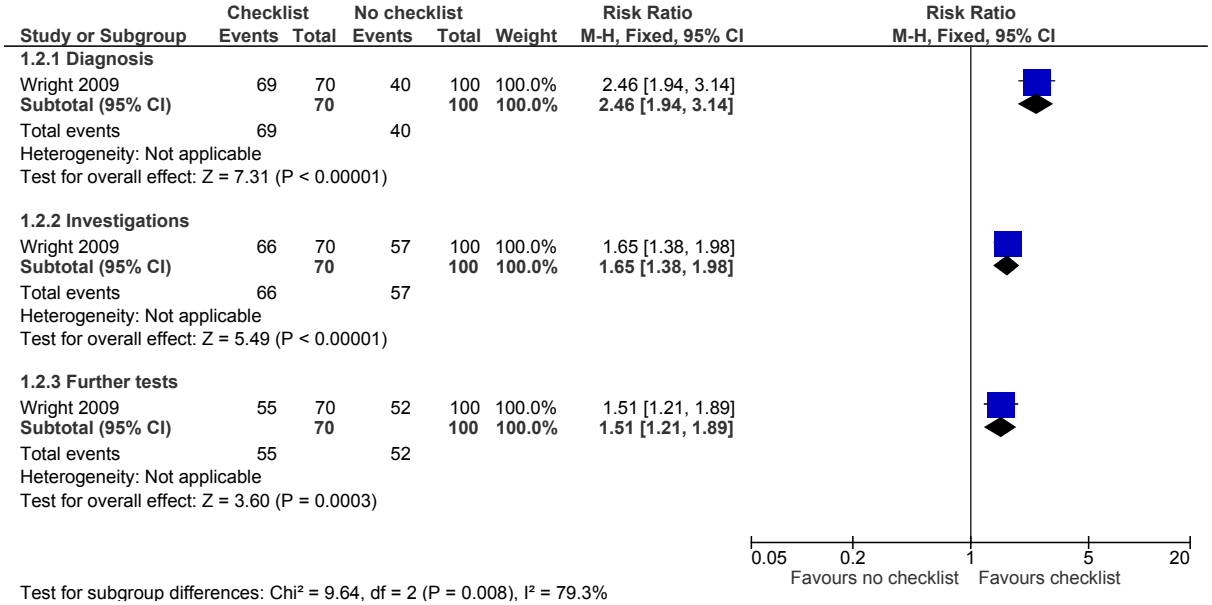


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Figure 4: Adherence to care – unadjusted (missed or delayed treatments)

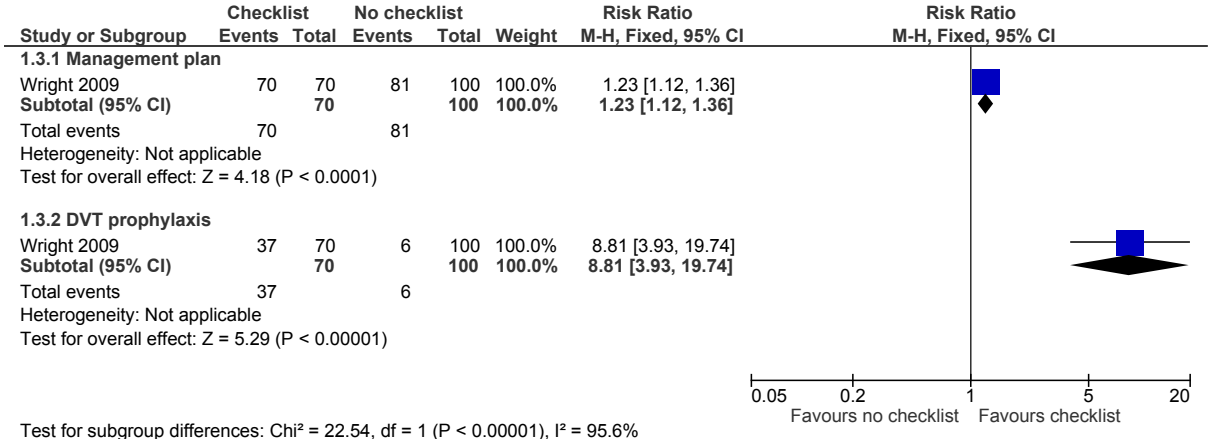

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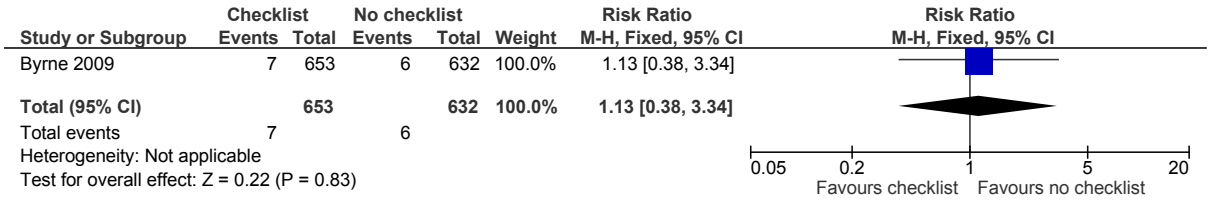
Figure 5: Mortality



C.2 Prompted versus unprompted

Figure 6: Mortality (adjusted OR)

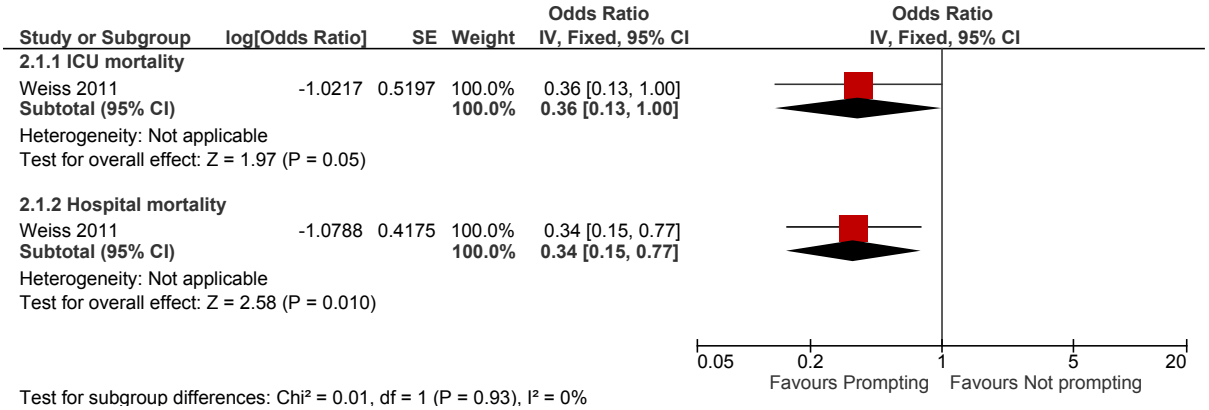


Figure 7: ICU length of stay

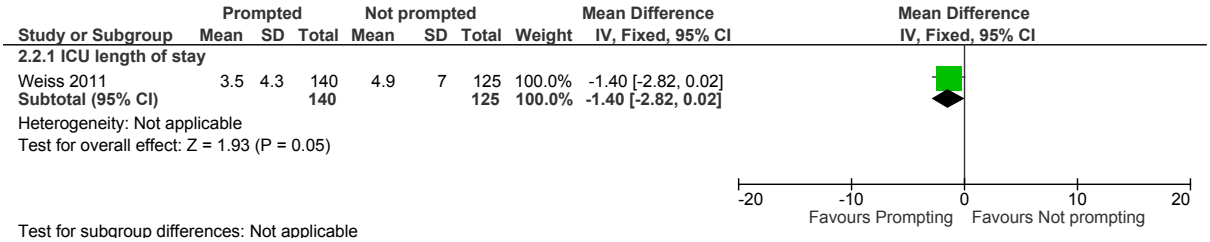


Figure 8: Hospital mortality

C.3 Explicit rounding approach versus standard rounding approach

Figure 9: Staff satisfaction

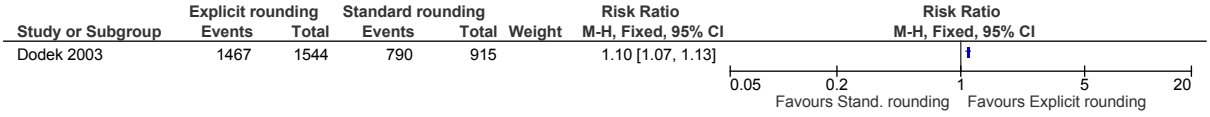
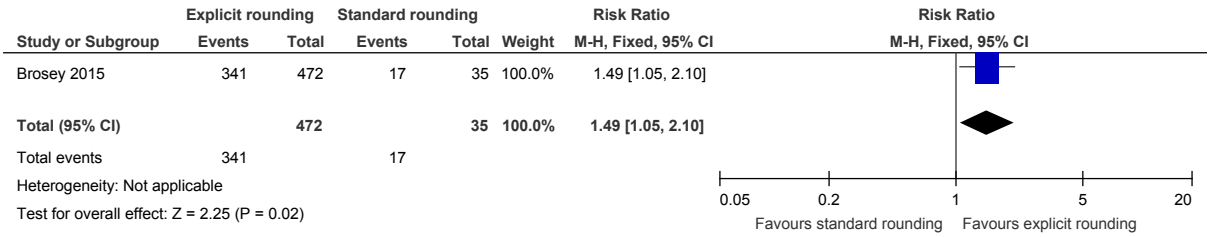
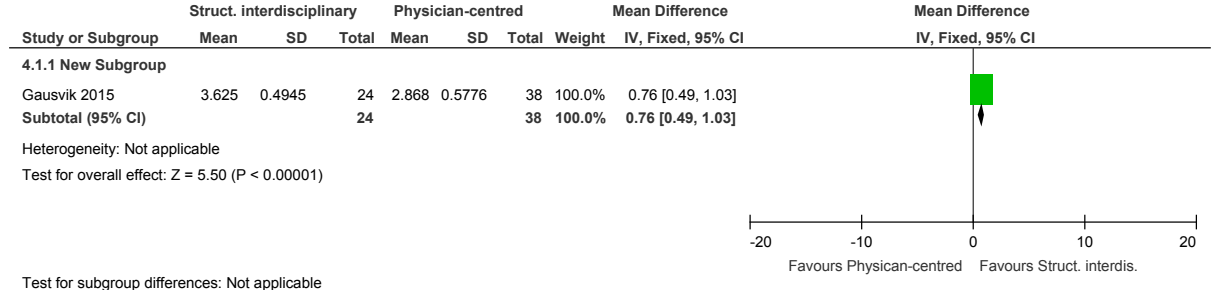


Figure 10: Patient satisfaction (overall)



C.4 Structured interdisciplinary bedside rounds versus standard physician-centred rounds

Figure 11: Job satisfaction



C.5 Structured interdisciplinary rounds (SIDR) versus control (unknown)

Figure 12: Teamwork climate score (staff satisfaction) – unadjusted (score 0-100)

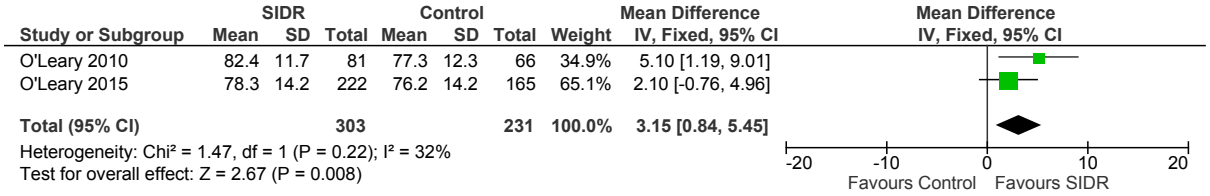


Figure 14: Length of stay (unadjusted) – RCT

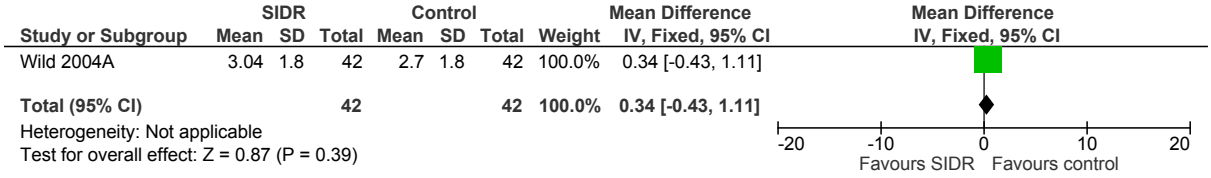


Figure 15: Adverse events (adjusted rate ratio)

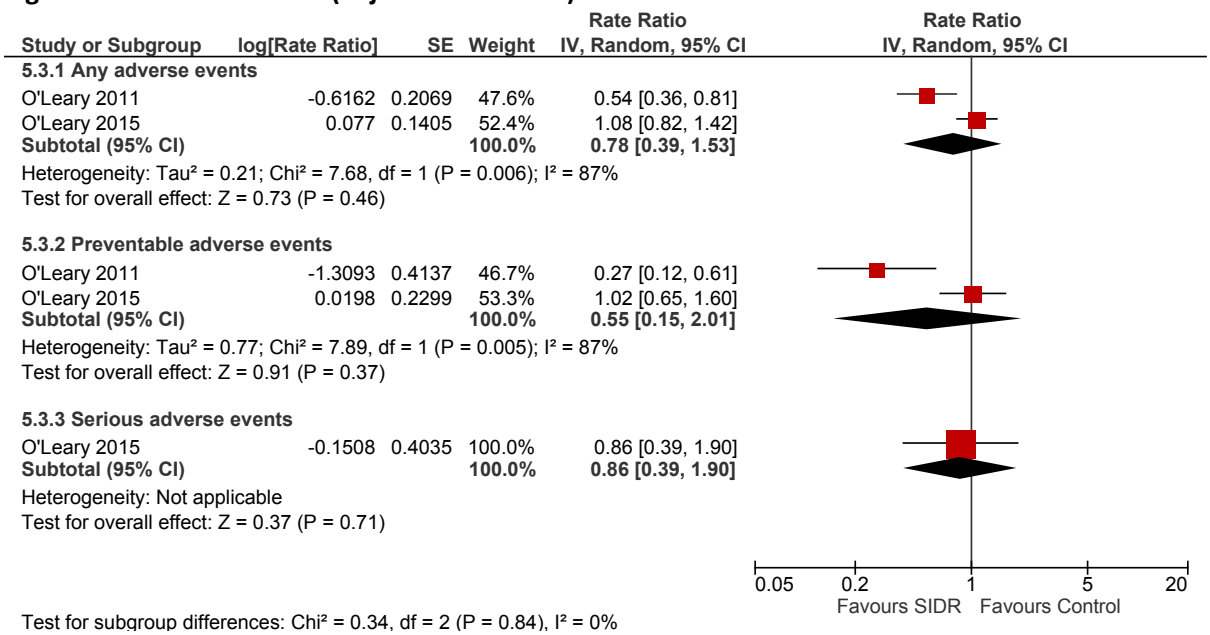


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Figure 16: ICU length of stay

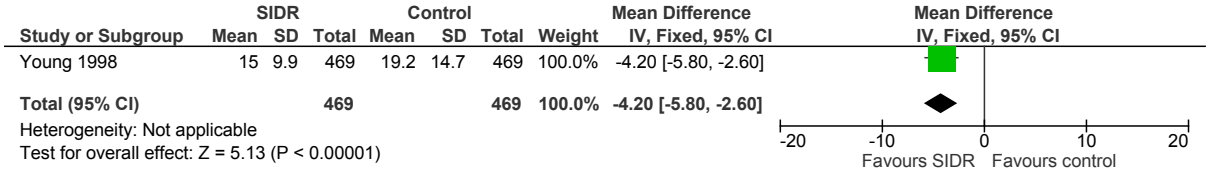

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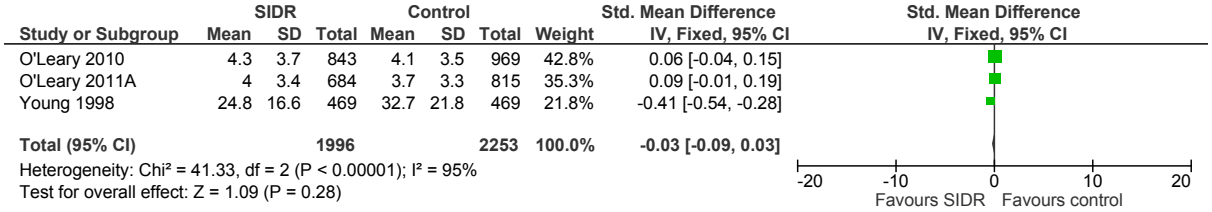
Figure 17: Hospital length of stay



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Appendix D: Clinical evidence tables

Study	Coaching model of structured interdisciplinary rounds trial: Artenstein 2015[4]
Study type	Before and after study.
Number of studies (number of participants)	1 (n=739).
Countries and setting	Conducted in USA; setting: before-and-after comparison pilot study of patients on 1 general medical/surgical ward of a 716-bed tertiary, academic medical centre in Springfield, USA. Data collected for 3 months post-implementation in 2013 compared to data from the same ward in the same 3 month period in 2012. The pilot ward comprises 32 beds primarily managing adult inpatients with respiratory-related diagnoses and also general medical patients.
Line of therapy	1st line.
Duration of study	Other: 3 months before and 3 months after intervention introduction (same time of year).
Method of assessment of guideline condition	Unclear method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	All adult inpatients on the pilot ward during the time of data collection.
Exclusion criteria	To control for outliers, patients with a length of stay 20 or more days were excluded from the analysis. Patients seen by the same consultant of the Broder service but located on other wards were not included in the analysis.
Recruitment/selection of patients	All adult inpatients on the pilot ward during the time of data collection. To control for outliers, patients with a length of stay 20 or more days were excluded from the analysis. Patients seen by the same consultant of the Broder service but located on other wards were not included in the analysis.
Age, gender and ethnicity	Age - Other: not provided. Gender (M:F): not provided. Ethnicity: n/a.
Further population details	1. Critical care patients: not applicable (respiratory and general medical ward). 2. Frail elderly: not stated. 3. Speciality/profession: not applicable (respiratory and general medical ward).
Extra comments	Data collection was from mid-September to mid-December on a mainly respiratory ward.
Indirectness of population	No indirectness.
Interventions	(n=381) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Broder/coaching service: Broder service rounds were conference room-based and occurred 7 days a week at 11am. They included the consistent participation of the Broder physician (an experienced physician coach), 2 ward-assigned, recently appointed consultants, 2 case managers, the nurse manager, a social worker, pharmacist, respiratory therapist and bedside nurses. The room had access to electronic patient records. Rounds were scripted

Study	Coaching model of structured interdisciplinary rounds trial: Artenstein 2015[4]
	and standardised to address patient progress, anticipated day of discharge, potential discharge needs and barriers and review of selected quality indicators (such as VTE prophylaxis or indwelling urinary catheter utilisation). The script was limited to the follow-up plan for patients who were being discharged that day. The Broder physician did not provide in-depth clinical input about patients but facilitated rounds, redirecting team members to focus on the script, and used case-specific issues to provide coaching on progress optimisation and on the relative value, or lack thereof, of specific clinical decisions. The Broder physicians comprised 5 internists and subspecialists with at least 10 years of post-training experience caring for inpatients. Duration: 3 months. Concurrent medication/care: n/a. (n=358) Intervention 2: No round checklists or daily goal charts - no ward rounds. Control group: paper does not describe what came before the introduction of the Broder service. Assuming there were 'normal' interdisciplinary ward rounds. Duration: 3 months during same season of the previous year. Concurrent medication/care: n/a. Comments: It is not described what came before the pilot of the Broder service.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BRODER/COACHING ROUNDING SERVICE (SCRIPTED AND STANDARDISED) versus 'NORMAL' ROUNDING SERVICE (NOT DESCRIBED IN PAPER). Protocol outcome 1: Length of stay. - Actual outcome: Length of stay on the unit at 3 months before and 3 months after; Risk of bias: All domain - Very high, Selection - Very high, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Structured hourly nurse rounds trial: Brosey 2015[11]
Study type	Before and after study.
Number of studies (number of participants)	1 (n=116).
Countries and setting	Conducted in unknown; setting: a 24-bed medical surgical nursing unit with private and semiprivate rooms.
Line of therapy	1st line.
Duration of study	Follow up (post intervention): 1 year.
Method of assessment of guideline condition	-

Study	**Structured hourly nurse rounds trial: Brosey 2015[11]**
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Not stated.
Exclusion criteria	Not stated.
Recruitment/selection of patients	Selection of unit on the basis of its need for improvement in patient satisfaction scores.
Age, gender and ethnicity	Age: not stated. Gender (M:F): not stated. Ethnicity: not stated.
Further population details	1. Critical care patients: not stated 2. Frail elderly: not stated 3. Speciality/profession: not stated.
Indirectness of population	-
Interventions	(n=81) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Hourly nurse rounding was considered to have been performed when a staff member entered the patient's room, evaluated the patient for pain, elimination, environment and position (PEEP), and documented the activity on designated flow sheets. Duration: on-going (unclear). Concurrent medication/care: process of implementation included development of a structured approach to staff education, historical data analysis, observations of staff workflow, evaluation of the current state of hourly nurse rounding and development of guidelines for structured hourly nurse rounding. A fact sheet was presented to the staff for their reference. (n=35) Intervention 2: No round checklists or daily goal charts - no ward rounds. Standard nurse ward round - details not given about how they were completed prior to implementation. Duration: baseline. Concurrent medication/care: None given. (n=472) Intervention 3: Structured ward round models - ward round checklists (generic checklists, not condition specific). Hourly nurse rounding was considered to have been performed when a staff member entered the patient's room, evaluated the patient for pain, elimination, environment and position (PEEP), and documented the activity on designated flow sheets. Duration: 1 year (follow-up). Concurrent medication/care: process of implementation included development of a structured approach to staff education, historical data analysis, observations of staff workflow, evaluation of the current state of hourly nurse rounding and development of guidelines for structured hourly nurse rounding. A fact sheet was presented to the staff for their reference.
Funding	No funding.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: POSTIMPLEMENTATION OF HOURLY NURSE ROUNDING versus FOLLOW-UP AFTER IMPLEMENTATION OF HOURLY NURSE ROUNDING.	

Study	Structured hourly nurse rounds trial: Brosey 2015[11]
Protocol outcome 1: Patient/family satisfaction. - Actual outcome: Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Domain: Overall satisfaction at Unclear; Comments: Pre-implementation = 48.6% (n=35); 1 year after project implemenation = 72.2% (n=472) Percentage of "always", "yes" and "9 or 10" responses; Risk of bias: All domain - Very high, Selection - Very high, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Length of stay; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Electronic checklist trial: Conroy 2015[19]
Study type	Before and after study
Number of studies (number of participants)	1 (n=293)
Countries and setting	Conducted in Australia; setting: 19-bed general ICU and high dependency unit (HDU) within a tertiary hospital located in Metropolitan NSW, Australia. Closed medical model with patients admitted under the care of intensive care specialist physicians. A 1:1 nurse-patient-ratio was the model of care used. (1:2 for high dependency patients). At the time of the study, the ICU was funded for 13 ICU beds and 5 high dependency beds, case mix was flexible. The unit was separated into 2 physical pods, both with central nursing stations. During morning ward rounds, medical staff were divided into 2 groups, each commencing in a different pod.
Line of therapy	1st line.
Duration of study	Intervention + follow up: baseline and intervention period: 6 weeks each.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Each participant involved in completion of the e-checklist was a senior medical officer (intensive care physician, senior registrar or registrar). Recipients of the checklist were all applicable adult ICU patients (16 years and over) admitted to the ICU during the study periods.
Exclusion criteria	Checklist was completed for each patient once per day during morning rounds; patients not present at the time of morning rounds (for example, for procedure) were excluded for that day.
Recruitment/selection of patients	Each participant involved in completion of the e-checklist was a senior medical officer (intensive care physician, senior registrar or registrar). Recipients of the checklist were all applicable adult ICU patients (16 years and over) admitted to the ICU during the study periods. Checklist was completed for each patient once per day during morning rounds;

Study	Electronic checklist trial: Conroy 2015[19]
	patients not present at the time of morning rounds (for example, for procedure) were excluded for that day.
Age, gender and ethnicity	Age - Mean (SD): 57 (20) years. Gender (M:F): 1/1. Ethnicity: n/a.
Further population details	1. Critical care patients: (intensive care unit and high dependency unit). 2. Frail elderly: no frail elderly 3. Speciality/profession: profession-specific handover (ward round team consisted of 1 consultant physician and/or senior registrar, a registrar and 1 or 2 junior medical officers.).
Indirectness of population	No indirectness.
Interventions	(n=152) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Electronic process-of-care checklist: the unit was separated into 2 physical pods, both with central nursing stations. During morning ward rounds, medical staff were divided into 2 groups, each commencing in a different pod. Ward round team consisted of 1 consultant physician and/or senior registrar, a registrar and 1 or 2 junior medical officers. The e-checklist was designed as a practice delivery tool with a series of prompts (via a Palm personal digital assistant (PDA)). The e-checklist contained 9 core 'process of care' statements for the medical team to explore for each individual patient (that is, the checklist was not designed to replace clinical decision-making). The checklist was used during medical morning ward rounds to document either the delivery or clinical reasons for non-delivery of cares. It was completed by senior medical staff members at the end of each patient assessment as a 'challenge-and-answer' tool. Duration: 6 weeks. Concurrent medication/care: n/a. (n=141) Intervention 2: No round checklists or daily goal charts - no ward rounds. Usual ward rounds: no information given as to the procedure of the ward rounds before implementation of checklist. Assuming the same staff did the ward round but without checklist. Duration 6 weeks. Concurrent medication/care: n/a.
Funding	Other.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: WARD ROUND CHECKLISTS (GENERIC CHECKLISTS, NOT CONDITION SPECIFIC) versus NO CHECKLIST. Protocol outcome 1: Missed of delayed treatments. - Actual outcome: Pain management at 6 weeks before and 6 weeks after; OR 22.85 (95%CI 13.69 to 38.16); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Glucose management at 6 weeks before and 6 weeks after; OR 13.82 (95%CI 7.01 to 27.27); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Sedation management at 6 weeks before and 6 weeks after; OR 3.89 (95%CI 1.8 to 8.42); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Head-of-bed elevation at 6 weeks before and 6 weeks after; OR 10.98 (95%CI 5.39 to 22.35); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual	

Study	Electronic checklist trial: Conroy 2015[19]
outcome: Nutrition assessment at 6 weeks before and 6 weeks after; OR 4.36 (95%CI 2.4 to 7.92); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Mechanical ventilation weaning at 6 weeks before and 6 weeks after; OR 1.92 (95%CI 1.03 to 3.59); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Stress ulcer prophylaxis at 6 weeks before and 6 weeks after; OR 3.73 (95%CI 1.68 to 8.28); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: DVT prophylaxis at 6 weeks before and 6 weeks after; OR 2.24 (95%CI 1.06 to 4.7); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Medication review at 6 weeks before and 6 weeks after; OR 9.86 (95%CI 1.31 to 74.33); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Length of stay; Staff satisfaction; Missed of delayed investigations.

1

Study	Explicit approach to rounds trial: Dodek 2003[26]
Study type	Before and after study.
Number of studies (number of participants)	1 (n=380).
Countries and setting	Conducted in Canada; setting: before-and-after staff satisfaction survey on explicit rounding in a 15-bed medical/surgical ICU in a 440-bed tertiary care teaching hospital in Vancouver, Canada. 'Before' data collected on 12 days in July 1997 and 'after' data on 19 days in January and February 1999.
Line of therapy	1st line.
Duration of study	-
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Not mentioned but assuming used for all patients on the ICU.
Exclusion criteria	Not mentioned.
Recruitment/selection of patients	Not mentioned.
Age, gender and ethnicity	Age - --: information not provided. Gender (M:F): information not provided. Ethnicity: n/a.

Study	Explicit approach to rounds trial: Dodek 2003[26]
Further population details	1. Critical care patients: critical care patients (ICU). 2. Frail elderly: not stated. 3. Speciality/profession: inter-professional handover (Interdisciplinary rounding).
Indirectness of population	No indirectness.
Interventions	(n=1566) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Explicit approach to bedside rounds: flow-chart of the ideal ICU rounds process designed, including shorter and earlier handover rounds in the mornings; drug reorders, transfer notes and orders, and discussions with consultants to be carried out before attending rounds; bedside presentations during attending rounds consisting of summary of major events in the last 24 hours and system-oriented synthesis of active issues and plans by the responsible resident; development and maintenance of a common problem and plan list kept at bedside. Duration: 19 days. Concurrent medication/care: n/a. Comments: 1566 surveys of staff from 225 separate bedside rounds. (n=1088) Intervention 2: No round checklists or daily goal charts - no ward rounds. Before intervention: no clear allocation of time for handover of information between residents; no clear expectations about the content of the bedside presentations. Duration: 12 days. Concurrent medication/care: n/a. Comments: 1088 surveys from 155 separate bedside rounds.
Funding	-
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXPLICIT APPROACH TO BEDSIDE ROUNDS versus NO EXPLICIT APPROACH TO BEDSIDE ROUNDS. Protocol outcome 1: Staff satisfaction. - Actual outcome: Satisfied with process and outcome of rounds at 12 (before) and 19 (after) days; Group 1: 1467/1544, Group 2: 790/915; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Very high, Outcome reporting - High, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No patient details provided. No details on staff completing the survey provided either.; Group 1 Number missing: 22, Reason: surveys returned without bed identifier and/or no profession; Group 2 Number missing: 173, Reason: surveys returned without bed identifier and/or no profession	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events ; Quality of life; Patient/family and/or carer satisfaction; Length of stay; Missed of delayed treatments; Missed of delayed investigations.

Study	Structured nursing communication trial: Gausvik 2015[29]
Study type	Prospective cohort study.

Study	Structured nursing communication trial: Gausvik 2015[29]
Number of studies (number of participants)	1 (n=n/a).
Countries and setting	Conducted in USA; setting: acute care for the elderly (ACE) unit in a 555-bed metropolitan community hospital awarded Magnet certification in 2011 for excellence in nursing innovation and practice in Cincinnati, Ohio, USA. The ACE unit provides acute care to geriatric patients in the hospital where the goal is to prevent functional decline and reduce rates of hospital-related adverse events. The Christ hospital opened a 10-bed ACE unit in September 2013 with a focus on interdisciplinary care and team-based bedside rounds.
Line of therapy	1st line.
Duration of study	n/a.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: acute care unit for the elderly.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	The ACE unit accepts patients over 70 years of age admitted from home and requiring acute hospitalisation.
Exclusion criteria	n/a.
Recruitment/selection of patients	The ACE unit accepts patients over 70 years of age admitted from home and requiring acute hospitalisation. Since ACE is newly created it has structured interdisciplinary bedside rounds (SIBR) in place from the outset. The survey on staff satisfaction with SIBR was given to volunteer subjects on this unit as well as control units that do not use SIBR (staff included nurses, social workers, physical and occupational therapists, and PCAs).
Age, gender and ethnicity	Age: 70 and above (no specific details provided). Gender (M:F): information not provided. Ethnicity: n/a.
Further population details	1. Critical care patients: critical care patients (acute care for the elderly unit). 2. Frail elderly: frail elderly (70 years and above). 3. Speciality/profession: inter-professional handover (interdisciplinary bedside rounds).
Indirectness of population	No indirectness.
Interventions	(n=24) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Structured interdisciplinary bedside rounds (SIBR): provide validated structure that operationalises interdisciplinary communication while bringing together many care providers involved in the patient's care at the bedside, including an emphasis on including the patient and family. The interaction with the health care team provides an opportunity for anyone to raise questions and concerns in a level-playing field. The interdisciplinary team includes a nurse practitioner, geriatrician, social worker, nurses, physical and occupational therapists and patient care assistants. Dietary, speech and language therapists are consulted on an as needed basis. Duration: n/a. Concurrent medication/care: n/a. Comments: 24 is the number of staff completing the survey. The paper does not give information regarding the number of patients seen.

Study	Structured nursing communication trial: Gausvik 2015[29]
	(n=38) Intervention 2: No round checklists or daily goal charts - no ward rounds. Standard physician-centred rounds, in which the attending physician examines computerised laboratory and vital sign information, examines and talks to the patient and enters a note in the electronic health record, which may or may not involve the physician discussing issues with nursing staff. In contrast to SIBR, there is no operationalised method for physicians to draw information in a multidirectional manner of communication from nursing staff. Duration: n/a. Concurrent medication/care: n/a. Comments: the number of patients was not mentioned in the paper. 38 is the number of staff who completed the survey on staff satisfaction. The volunteers were staff from 4 non-intensive care hospital units (medical/surgery and telemetry units) to be used as control groups.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRUCTURED INTERDISCIPLINARY WARD ROUND versus STANDARD PHYSICIAN-CENTRED ROUND. Protocol outcome 1: Staff satisfaction. - Actual outcome: Job satisfaction (unadjusted) at n/a; Group 1: mean 3.625 (SD 0.4945); n=24, Group 2: mean 2.868 (SD 0.5776); n=38; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Low, Outcome reporting - High, Measurement - Low, Crossover - Low; Indirectness of outcome: Very serious indirectness, Comments: Interdisciplinary ward round that is structured compared to standard physician-centred rounding which may not involve nurses. So very different intervention that differs not only due to the structure but also composition of the team.; Baseline details: no patient information given; Key confounders: unadjusted analysis	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Length of stay; Missed of delayed treatments; Missed of delayed investigations.

Study	ICU daily goals sheet trial: Narasimhan 2006[57]
Study type	Before and after study.
Number of studies (number of participants)	1 (n=n/a).
Countries and setting	Conducted in USA; setting: before-and-after study of patients admitted to the medical ICU of a 697-bed teaching hospital in New York, USA, during 9 month after implementation of daily goals chart compared to 9 month period a year before. 16-bed closed unit with a full-time nurse manager and a medical director, staffed by full-time attending physicians trained in pulmonary and critical care medicine, fellows in training in the same areas and residents training in internal medicine. Nurse to patient ratio is 1:2. No computerised order entry or data system was in place at the time of the study.

Study	ICU daily goals sheet trial: Narasimhan 2006[57]
Line of therapy	1st line.
Duration of study	Intervention time: 9 months after intervention introduction, plus 9 months in the same period of previous year.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Not specifically mentioned but assuming patients on the unit during the time period of data collection.
Exclusion criteria	Not mentioned.
Recruitment/selection of patients	Not mentioned.
Age, gender and ethnicity	Age - Other: not provided. Gender (M:F): not provided. Ethnicity: n/a.
Further population details	1. Critical care patients: critical care patients (Medical ICU). 2. Frail elderly: not stated. 3. Speciality/profession: (ICU).
Indirectness of population	No indirectness.
Interventions	(n=1) Intervention 1: Structured ward round models - daily goal chards. Daily goals worksheet: designed with input from ICU nurses, fellows and attending. Each worksheet was discarded the day after use and was not included in the permanent medical record. The worksheet covered: test/procedures, medications, sedation/analgesia, catheters, consults, nutrition, mobilisation, family discussion/consents, transfer and other. Duration: 9 months. Concurrent medication/care: for each patient, daily bedside ward rounds are conducted with attending, fellow and house staff assigned to the ICU, together with the nurse assigned to the patient. During teaching rounds a mean of 30 minutes is spent with the patient and the patient's condition, intercurrent events, pathophysiology, differential diagnosis and plan of care for the day are reviewed. Each patient is also seen by a full-time nutritionist, a social worker and physiotherapist and a respiratory therapist as needed. Comments: Patient numbers not provided by authors. (n=1) Intervention 2: No round checklists or daily goal charts - no ward rounds. Before the introduction of the daily goals chart. Duration: 9 months. Concurrent medication/care: for each patient daily bedside ward rounds are conducted with attending, fellow, and house staff assigned to the ICU, together with the nurse assigned to the patient. During teaching rounds a mean of 30 minutes is spent with the patient and the patient's condition, intercurrent events, pathophysiology, differential diagnosis and plan of care for the day are reviewed. Each patient is also seen by a full-time nutritionist, a social worker and physiotherapist and a respiratory therapist as needed. Comments: No patient information (including numbers) provided by the paper.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DAILY GOAL CHART versus NO DAILY GOALS CHART.	

Study	ICU daily goals sheet trial: Narasimhan 2006[57]
Protocol outcome 1: Length of stay. - Actual outcome: Length of stay in ICU at 9 months; before- 6.4 days (SD not reported); after -4.3 days (SD not reported); Risk of bias: All domain - Very high, Selection - Very high, Blinding - high, Incomplete outcome data - Low, Outcome reporting - low, Measurement - Low, Crossover - Low; Indirectness of outcome: no indirectness,	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	SIDR on a medical teaching unit trial: O'Leary 2010[62]
Study type	Non-randomised comparative study.
Number of studies (number of participants)	1 (n=1812).
Countries and setting	Conducted in USA; setting: the study was conducted at an 897-bed tertiary care teaching hospital in Chicago, USA. One of 2 similar teaching service units was randomly selected for the intervention, while the other served as a control unit. The intervention was implemented in August 2008 and data were collected over a 6-month study period. Each teaching service consisted of 30 beds and was equipped with continuous cardiac telemetry monitoring. Teaching service physician teams consisted of 1 attending, 1 resident, 1 or 2 interns, and 1 or 2 third year medical students.
Line of therapy	1st line.
Duration of study	Intervention time: 6 months.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	The structured communication tool was used in structured interdisciplinary rounds (SIDR) for all patients newly admitted to the unit (in previous 24 hours).
Exclusion criteria	The daily plan of care for all other patients (not newly admitted) was also discussed at SIDR, but without the aid of a structured communication tool.
Recruitment/selection of patients	Providers working on the intervention and control units during the study period were administered a survey to assess ratings of collaboration and teamwork. Resident physicians received the survey at the completion of each 4 week clinical rotation. Nurses were surveyed 16-20 weeks after implementation of SIDR.
Age, gender and ethnicity	Age - Mean (SD): intervention unit: 59.8 (19.4); control unit: 59.9 (19.0). Gender (M:F): 1/1. Ethnicity: 48% White, 38%

Study	SIDR on a medical teaching unit trial: O'Leary 2010[62]
	Black, 7% Hispanic, 1% Asian, Other 6%.
Further population details	1. Critical care patients: critical care patients 2. Frail elderly: not stated 3. Speciality/profession: inter-professional handover.
Indirectness of population	-
Interventions	(n=81) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Structured inter-disciplinary rounds (SIDR): SIDR combined a structured format for communication and a forum for regular interdisciplinary meetings. A working group, consisting of nurses resident physicians, pharmacists, and the unit social worker and case manager met weekly for 12 weeks prior to implementation. The working group determined the optimal timing, frequency and location for SIDR and finalised a structured communication tool used during SIDR. SIDR took place every weekday at 11am in the unit nursing report room and lasted 30-40 minutes. The nurse manager and a unit medical director co-led rounds each day. SIDR were attended by all nurses and resident physicians caring for patients in the unit, as well as the pharmacist, social worker and case manager assigned to the unit. The structured communication tool was used in SIDR for all patients newly admitted to the unit (previous 24 hours). The daily care plan for all other patients was also discussed but without the aid of a structured communication tool. Duration 6 months. Concurrent medication/care: n/a. Comments: n=81 refers to the health care providers taking care in the survey. This corresponds to assessment of n=843 patients. (n=66) Intervention 2: No round checklists or daily goal charts - no ward rounds. Control: unclear what it entails (very serious indirectness). It is likely to be ward rounds that are both unstructured and not attended by a multi-disciplinary team. Duration: 6 months. Concurrent medication/care: n/a. Comments: n=66 refers to the health care providers taking care in the survey. This corresponds to assessment of n=969 patients.
Funding	Academic or government funding (North western Memorial hospital).
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRUCTURED INTERDISCIPLINARY ROUNDING PLUS THE USE OF A STRUCTURED COMMUNICATION TOOL versus UNCLEAR: NO STRUCTURE AND/OR NO INTERDISCIPLINARY ROUNDING. Protocol outcome 1: Length of stay. - Actual outcome: Length of stay (patients) at 6 months; Group 1: mean 4.3 days (SD 3.7); n=843, Group 2: mean 4.1 days (SD 3.5); n=969; Comments: The total numbers randomised correspond to the health care providers not the patients. Because the study reports two different parts a study there was no other way to enter the data. No analysed equals no randomised for this outcome. Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - High, Outcome reporting - High, Measurement - Low, Crossover - Low; Indirectness of outcome: no indirectness; Baseline details: Intervention unit contained slightly more patients with heart failure and renal failure	

Study	SIDR on a medical teaching unit trial: O'Leary 2010[62]
Protocol outcome 2: Staff satisfaction. - Actual outcome: Teamwork climate score (staff) at 6 months; Group 1: mean 82.4 (SD 11.7); n=81, Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: no indirectness ; Baseline details: details of health care providers not reported other than % of nurses and physicians - Actual outcome: Safety climate score (staff) at 6 months; Group 1: mean 76.5 (SD 13); n=81, Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: -- ; Baseline details: details of health care providers not reported otehr than % of nurses and physicians	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse event ; Quality of life; Patient/family and/or carer satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Structured interdisciplinary rounds: Improving patient safety trial: O'Leary 2011[64]
Study type	Non-randomised comparative study.
Number of studies (number of participants)	1 (n=370).
Countries and setting	Conducted in USA; setting: retrospective medical record review of patients (n=370) admitted to 2 units at a 897-bed tertiary care teaching hospital in Chicago, USA, from 28th July 2008 to 11th January 2009. One of 2 similar teaching service units was randomly selected for the intervention, while the other served as a control unit. Each teaching service consisted of 30 beds and was equipped with continuous cardiac telemetry monitoring. Teaching service physician teams consisted of 1 attending, 1 resident, 1 or 2 interns, and 1 or 2 third year medical students.
Line of therapy	1st line.
Duration of study	Intervention time: 5.5 months.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Medical record review of randomly selected patients (n=370) admitted to the intervention and control teaching service units. The structured communication tool was used in structured interdisciplinary rounds (SIDR) for all patients newly admitted to the unit (in previous 24 hours).
Exclusion criteria	The daily plan of care for all other patients (not newly admitted) was also discussed at SIDR, but without the aid of a structured communication tool.
Recruitment/selection of patients	A medical record abstraction was done on 370 randomly selected patients admitted to the intervention and control

Study	Structured interdisciplinary rounds: Improving patient safety trial: O'Leary 2011[64]
	teaching units.
Age, gender and ethnicity	Age - Mean (SD): intervention: 59.5 (19.2); control: 58.0 (19.1). Gender (M:F): 1/1. Ethnicity: White 51%, Other 49%.
Further population details	1. Critical care patients: 2. Frail elderly: 3. Speciality/profession:
Indirectness of population	-
Interventions	(n=185) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Structured inter-disciplinary rounds (SIDR): SIDR combined a structured format for communication and a forum for regular interdisciplinary meetings. A working group, consisting of nurses resident physicians, pharmacists and the unit social worker and case manager met weekly for 12 weeks prior to implementation. The working group determined the optimal timing, frequency and location for SIDR and finalised a structured communication tool used during SIDR. SIDR took place every weekday at 11am in the unit nursing report room and lasted 30-40 minutes. The nurse manager and a unit medical director co-led rounds each day. SIDR were attended by all nurses and resident physicians caring for patients in the unit, as well as the pharmacist, social worker and case manager assigned to the unit. The structured communication tool was used in SIDR for all patients newly admitted to the unit (previous 24 hours). The daily care plan for all other patients was also discussed but without the aid of a structured communication tool. Duration: 5.5 months. Concurrent medication/care: n/a. (n=185) Intervention 2: No round checklists or daily goal charts - no ward rounds. Control: unclear what it entails. It is likely to be ward rounds that are both unstructured and not attended by a multi-disciplinary team. Duration: 5.5 months. Concurrent medication/care: n/a.
Funding	Academic or government funding (funding from the hospital).
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRUCTURED INTERDISCIPLINARY ROUNDING PLUS THE USE OF A STRUCTURED COMMUNICATION TOOL versus UNCLEAR: NO STRUCTURE AND/OR NO INTERDISCIPLINARY ROUNDING. Protocol outcome 1: Avoidable adverse events. - Actual outcome: Any adverse events at 5.5 months; RR 0.54 (95%CI 0.36 to 0.83);(Comments: incidence rate ratio); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: mostly similar characteristics but slightly different case mix - Actual outcome: Preventable adverse events at 5.5 months; RR 0.27 (95%CI 0.12 to 0.62); (Comments: Incidence rate ratio) Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: mostly similar characteristics but slightly different case mix;	
Protocol outcomes not reported by the study	Mortality; Quality of life; Patient/family and/or carer satisfaction; Length of stay; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Structured interdisciplinary rounds in a hospitalist unit trial: O'Leary 2011[66]
Study type	Controlled before and after study.
Number of studies (number of participants)	1 (n=1499).
Countries and setting	Conducted in USA; setting: this controlled before-and-after study was conducted at an 897-bed tertiary care teaching hospital in Chicago, USA over a 24 week study period beginning in August 2008. One of 2 similar medicine units was randomly selected for the intervention, while the other served as a control unit. Each unit consisted of 30 beds and was equipped with continuous cardiac telemetry monitoring. Units were also identical in physical structure and staffing of non-physician personnel. The intervention unit included a heart failure-hospitalist co-management service. Patients followed at the centre for heart failure were preferentially admitted to this service. All other patients were admitted to units based on bed availability in a quasi-randomised fashion. Hospitalists worked 7 consecutive days while on service and cared for patients primarily on the units involved in this study. Therefore, hospitalists cared for patients on both the intervention and control units during their weeks of service.
Line of therapy	1st line.
Duration of study	Intervention time: 24 weeks.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Patients followed at the centre for heart failure were preferentially admitted to this service. All other patients were admitted to units based on bed availability in a quasi-randomised fashion.
Exclusion criteria	n/a.
Recruitment/selection of patients	Patients followed at the centre for heart failure were preferentially admitted to this service. All other patients were admitted to units based on bed availability in a quasi-randomised fashion.
Age, gender and ethnicity	Age - Mean (SD): intervention post-SIDR: 64.1 (17.2); control: 63.8 (16.0). Gender (M:F): 1/1. Ethnicity: White 50%; Black 36%; Hispanic 6%, Asian 1%, Other 7%.
Further population details	1. Critical care patients: critical care patients 2. Frail elderly: not applicable 3. Speciality/profession: inter-professional handover.
Extra comments	A survey was also given to the hospitalists and nurses working on the units to assess teamwork climate.
Indirectness of population	No indirectness.
Interventions	(n=684) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Structured inter-disciplinary rounds (SIDR): combined a structured format for communication with a forum

Study	Structured interdisciplinary rounds in a hospitalist unit trial: O'Leary 2011[66]
	for regular interdisciplinary meetings. Unit medical directors were selected with nursing leadership input to partner with established unit nurse managers to improve quality and safety for their units. The unit co-leaders received specific training over a 12 week period. Working groups, consisting of nurses, resident physicians, pharmacists and the unit social worker and case manager met weekly for 12 weeks prior to implementation. The working group determined the optimal timing, frequency and location for SIDR and finalised a structured communication tool used during SIDR. SIDR took place every weekday at 11am in the unit conference room and lasted about 30 minutes. The nurse manager and a unit medical director co-led rounds each day. SIDR were attended by all nurses and resident physicians caring for patients in the unit, as well as the pharmacist, social worker and case manager assigned to the unit. The structured communication tool was used in SIDR for all patients newly admitted to the unit (previous 24 hours). The daily care plan for all other patients was also discussed but without the aid of a structured communication tool. Duration: 24 weeks. Concurrent medication/care: n/a. Comments: n=684 is the number of patients in the post-intervention group. (n=815) Intervention 2: No round checklists or daily goal charts - no ward rounds. Unclear: no structure and/or no interdisciplinary rounding. Duration: 24 weeks. Concurrent medication/care: n/a. Comments: n=815 is the number of patients in the control unit.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRUCTURED INTERDISCIPLINARY ROUNDING PLUS THE USE OF A STRUCTURED COMMUNICATION TOOL versus UNCLEAR: NO STRUCTURE AND/OR NO INTERDISCIPLINARY ROUNDING. Protocol outcome 1: Length of stay. - Actual outcome: length of stay (unadjusted) at 24 weeks; Group 1: mean 4 days (SD 3.4); n=684, Group 2: mean 3.7 days (SD 3.3); n=815; Risk of bias: All domain - Very high, Selection - Very high, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events ; Quality of life; Patient/family and/or carer satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Improve teamwork and patient safety on a medical service trial: O'Leary 2015[65]
Study type	Before and after study.
Number of studies (number of participants)	1 (n=1380).

Study	Improve teamwork and patient safety on a medical service trial: O'Leary 2015[65]
Countries and setting	Conducted in USA; setting: this pre-versus post-intervention study compared results from patients and professionals on 5 general medical units at an 854-bed tertiary care teaching hospital in Chicago, USA. Four of the 5 units consisted of 30 beds and 1 had 23 beds. Two units were staffed by teaching service physician teams composed of 1 attending, 1 resident, 1 or 2 interns, and 0 to 3 medical students. Two units were staffed by hospitalist physicians who worked independently without the assistance of resident physicians. One unit was staffed by a combination of teaching service physician teams and hospitalists working independently without the assistance of resident physicians. As a result of a prior intervention, physicians worked on specific units in an effort to improve communication practices[62,64,66].
Line of therapy	1st line.
Duration of study	Intervention time: 2 years.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	The research group randomly selected 1380 patients admitted to the study units between 1st March 2009, and 28th February 2011 for identification of adverse events.
Exclusion criteria	n/a.
Recruitment/selection of patients	SIDR was implemented on 1st March 2010. The research group randomly selected 1380 patients admitted to the study units between 1st March 2009, and 28th February 2011 for identification of adverse events. An adapted version of a traditional 2-stage medical record review was done. For each patient with 1 or more potential AEs identified, 1 of 3 clinical research nurses abstracted the medical record and created a narrative summary for each potential AE, which was evaluated by 2 physician-researchers to determine occurrence of, preventability and severity of AEs.
Age, gender and ethnicity	Age - Mean (SD): Gender (M:F): 1/1. Ethnicity: white 53.5%; other 46.5%.
Further population details	1. Critical care patients: critical care patients 2. Frail elderly: not frail elderly 3. Speciality/profession: inter-professional handover.
Extra comments	A survey, to assess teamwork, was also administered to providers working on study units (n=387) during a 3 month period before implementation of the interventions and a similar 3 month period 1year after implementation.
Indirectness of population	No indirectness.
Interventions	(n=222) Intervention 1: Structured ward round models - ward round checklists (generic checklists, not condition specific). The INTERACT intervention had 2 components: structured inter-disciplinary rounds (SIDR) and prepared nurse-physician co-leadership. Unit medical directors were selected with nursing leadership input to partner with established unit nurse managers to improve quality and safety for their units. The unit co-leaders received specific

Study	Improve teamwork and patient safety on a medical service trial: O'Leary 2015[65]
	training over a 12 week period. SIDR combined a structured format for communication and a forum for regular interdisciplinary meetings. Unit co-leaders led working groups, with representatives from each professional type to determine the optimal timing, frequency and location for SIDR and finalised a structured communication tool used during SIDR. SIDR took place every weekday at 11am in unit conference rooms and lasted 30-40 minutes. The nurse manager and unit medical director co-led rounds each day. SIDR were attended by all nurses and resident physicians caring for patients in the unit, as well as the pharmacist, social worker and case manager assigned to the unit. The structured communication tool was used in SIDR for all patients newly admitted to the unit (previous 24 hours). The daily care plan for all other patients was also discussed but without the aid of a structured communication tool. Duration 2 years. Concurrent medication/care: n/a. Comments: n=222 refers to the number of health care providers taking part in the survey. This corresponds to assessment of n=690 patients. (n=165) Intervention 2: No round checklists or daily goal charts - no ward rounds. Control: unclear what it entails. It is likely to be ward rounds that are both unstructured and not attended by a multi-disciplinary team. Duration: 2 years. Concurrent medication/care: n/a. Comments: n=165 refers to the number of health care providers taking part in the survey. This corresponds to assessment of n=689 patients.
Funding	Academic or government funding (Agency for Healthcare Research and Quality).
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRUCTURED INTERDISCIPLINARY ROUNDING USING STRUCTURED FORMAT FOR COMMUNICATION versus UNCLEAR: NO STRUCTURE AND/OR NO INTERDISCIPLINARY ROUNDING. Protocol outcome 1: Avoidable adverse events. - Actual outcome: Any adverse events (adjusted incidence rate ratio) at 2 years; RR 1.08 (95%CI 0.82 to 1.43); Risk of bias: All domain - Very high, Selection - High, Blinding - Very high, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: some difference in age and payment method (private vs medicare) - Actual outcome: Preventable adverse events (adjusted incidence rate ratio) at 2 years; RR 1.02 (95%CI 0.65 to 1.6); Risk of bias: All domain - Very high, Selection - High, Blinding - Very high, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: some difference in age and payment method (private vs medicare) - Actual outcome: Serious adverse events (adjusted incidence rate ratio) at 2 years; RR 0.86 (95%CI 0.39 to 1.92); Risk of bias: All domain - Very high, Selection - High, Blinding - Very high, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: some difference in age and payment method (private vs medicare) Protocol outcome 2: Staff satisfaction. - Actual outcome: Teamwork climate score at 2 years; Group 1: mean 78.3 (SD 14.2); n=222, Group 2: mean 76.2 SD 14.2); n=165; Risk of bias: All domain - Very high, Selection - High, Blinding - Very high, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: some difference in age and payment method (private vs medicare)	

Study	Improve teamwork and patient safety on a medical service trial: O'Leary 2015[65]
Protocol outcomes not reported by the study	Mortality; Quality of life; Patient/family and/or carer satisfaction; Length of stay; Missed of delayed treatments; Missed of delayed investigations.

Study	Prompted checklist trial: Weiss 2011[84]
Study type	Non-randomised comparative study.
Number of studies (number of participants)	1 (n=265).
Countries and setting	Conducted in USA; setting: prospective concurrently controlled cohort study at medical intensive care unit (MICU) at a tertiary care urban university-affiliated hospital, Chicago, USA. The MICU is a closed-unit staffed by 2 separate teams, each with an independent patient census. The teams admit patients on alternating days. Each team consists of 1 pulmonary/critical care attending physician, 1 fellow, 1 pharmacist and several residents and interns.
Line of therapy	1st line.
Duration of study	Intervention time: 3 months.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	All patients admitted to the MICU service on or after 25th June 2009 and discharged on or before 15th September 2009 were eligible for inclusion. Only the first MICU admission was included for patients admitted more than once without intervening hospital discharge.
Exclusion criteria	Exclusion criteria included the following: patients physically located in a different ICU for more than the first 72 hours of their ICU stay, patients transferred from a different ICU service and patients transferred to another ICU service within 12 hours of MICU admission.
Age, gender and ethnicity	Age - Mean (SD): prompted 58.5 (17.8); control 57.3 (17.8). Gender (M:F): prompted 1/1; control 2/3. Ethnicity: White (52%), African American (34%), Hispanic/other (14%).
Further population details	1. Critical care patients: 2. Frail elderly: 3. Speciality/profession: Not stated.
Indirectness of population	No indirectness.
Interventions	(n=140) Intervention 1: Structured ward round models - Ward round checklists (generic checklists; not condition specific). Prompted checklist: a non-care providing resident physician (the prompter) initiated discussion with 1 of the MICU teams (prompted team) using scripted questions if any of 6 parameters under investigation were overlooked on

Study	Prompted checklist trial: Weiss 2011[84]
	daily work rounds. A verbal prompting script had been developed before commencing of the study. For example, if the team failed to discuss the presence or management of a central venous catheter, the prompter would ask 'the CVC has been in place for x days. Do you want to continue it?' Verbal prompting was directed at the attending and fellow. Any patient admitted to the prompted team was included regardless of whether the prompter was present during their ICU stay (for example, patients admitted and discharged over the weekend). Prompting began during the first rounds after a patient's MICU admission, occurred after a care-providing resident's presentation but before the MICU team entered the patient's room and continued daily (whenever the prompter was present) until MICU discharge. Duration: 3 months. Concurrent medication/care: n/a. Comments: a prompter was present on 67.9% of prompted group daily rounds during the 82 day intervention period. Unclear if the round was still considered prompted or not. (n=125) Intervention 2: Structured ward round models - ward round checklists (generic checklists; not condition specific). Unprompted checklist use: The unprompted MICU team, with availability of the identical checklist, served as control. Duration: 3 months. Concurrent medication/care: n/a.
Funding	Academic or government funding.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PROMPTED WARD ROUND CHECKLISTS (GENERIC CHECKLISTS; NOT CONDITION SPECIFIC) versus UN-PROMPTED WARD ROUND CHECKLISTS (GENERIC CHECKLISTS; NOT CONDITION SPECIFIC). Protocol outcome 1: Mortality. - Actual outcome: ICU mortality - adjusted OR at n/a; OR 0.36 (95%CI 0.13 to 0.96); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: unclear if unprompted patients in prompted group were analysed as 'prompted'; Key confounders: APACHE IV predicted hospital mortality - Actual outcome: Hospital mortality - adjusted OR at n/a; OR 0.34 (95%CI 0.15 to 0.76); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: unclear if unprompted patients in prompted group were analysed as 'prompted'; Key confounders: APACHE IV predicted hospital mortality Protocol outcome 2: Length of stay. - Actual outcome: ICU length of stay at n/a; Group 1: mean 3.5 (SD 4.3); n=140, Group 2: mean 4.9 (SD 7); n=125; Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: unclear if unprompted patients in prompted group were analysed as 'prompted'; Key confounders: APACHE IV predicted hospital mortality	
Protocol outcomes not reported by the study	Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Prompted ward round trial: Weiss 2013[83]
Study type	RCT (Patient randomised; Parallel).
Number of studies (number of participants)	(n=296).
Countries and setting	Conducted in USA; setting: medical intensive care unit (MICU) with high-intensity intensivist coverage at a tertiary care urban medical centre, North western Memorial Hospital (NMH).
Line of therapy	1st line.
Duration of study	Intervention time: 4 months.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	All patients admitted to MICU on or after June 27, 2011, discharged on or prior to October 7, 2011, and who received at least 1 day of empirical antibiotics were included.
Exclusion criteria	Patients transferred to and from a different ICU service and any MICU re-admissions without an intervening hospital discharge (first MICU admissions were included).
Age, gender and ethnicity	Age - Mean (range): 60.0-62.6 years. Gender (M:F): 77%/23%. Ethnicity: 45.1% White, 27.9% African American, Hispanic 9.6%.
Further population details	1. Critical care patients: critically ill patients 2. Frail elderly: not applicable 3. Speciality/profession: not applicable.
Indirectness of population	No indirectness.
Interventions	(n=125) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). One of the MICU teams used a checklist embedded within the electronic health record (EHR). Checklist was developed to provide a centralised source of information on antibiotic utilisation in addition to 6 other parameters. They were encouraged to use the checklist daily. No daily electronic prompt to complete the checklist was generated. Simplified paper checklist was also available to this team. Duration: 6 months. Concurrent medication/care: none given. (n=171) Intervention 2: No round checklists or daily goal charts - no ward rounds. A non-care providing resident physician joined daily bedside rounds of 1 of the MICU teams. If a patient was being treated with an antimicrobial agent and the team had not addressed this topic during the course of rounds, the prompter initiated discussion with the team using scripted questions. Team had a simplified paper checklist which included 6 other parameters in addition to empirical antibiotics. Duration: 6 months. Concurrent medication/care: prompters had no patient care

Study	Prompted ward round trial: Weiss 2013[83]
	responsibilities and there was no contact between prompters and patients. Prompting was directed at the attending and fellow and occurred after a care-providing resident's presentation but before the MICU team entered the patient's room. Prompting continued for each patient on a daily basis (whenever the prompter was present) until MICU discharge.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELECTRONIC CHECKLIST versus PHYSICIAN PROMPTING. Protocol outcome 1: Mortality - Actual outcome: Hospital mortality at 6 months; Group 1: 30/125, Group 2: 30/171; Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 2: Length of stay. - Actual outcome: ICU length of stay at 6 months; Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - High, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Hospital length of stay at 6 months; Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - High, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Avoidable adverse events ; Quality of life; Patient/family and/or carer satisfaction; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Interdisciplinary rounds trial: Wild 2004A[86]
Study type	RCT (Patient randomised; Parallel).
Number of studies (number of participants)	1 (n=84).
Countries and setting	Conducted in USA; setting: Griffin Hospital in Derby, Connecticut, a community hospital with 160 beds.
Line of therapy	1st line.
Duration of study	Intervention time: 1 month.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.

Study	Interdisciplinary rounds trial: Wild 2004A[86]
Subgroup analysis within study	Not applicable.
Inclusion criteria	Patients were included if they were admitted to the telemetry floor with the most common diagnoses (for example, chest pain, atrial fibrillation/flutter, stroke/TIA, congestive heart failure, and syncope).
Exclusion criteria	Patients who were at any point in the IR stay transferred to the intensive care unit or to the general medical ward due to other conditions were excluded, as were patients who died during the interdisciplinary rounds (IR) stay. Patients who were readmitted within the study period and who had already been randomised on a previous visit were also excluded.
Recruitment/selection of patients	Based on patients admitted to the telemetry floor (they were 102 eligible patients, 18 patients were removed from the analysis: 9 - randomisation error, 7 - transfer to ICU, general floor or surgery, 2 - discharged from ER).
Age, gender and ethnicity	Age - Mean (range): 69.8-71.3 years. Gender (M:F): 43/41. Ethnicity: 99% White, 1% Non-White.
Further population details	1. Critical care patients: not stated 2. Frail elderly: not applicable 3. Speciality/profession: inter-professional handover (daily ward rounds: resident physicians, nurses, a case manager, pharmacist, dietician and physical therapist met).
Indirectness of population	No indirectness.
Interventions	(n=42) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Interdisciplinary (IR) ward rounds - daily ward rounds, in which resident physicians, nurses, a case manager, pharmacist, dietician or physical therapist met to discuss patients on the team and to identify and address possible discharge problems. IRS were held for 30-45 minutes, with 2 to 5 minutes per patient. Duration: 1 month. Concurrent medication/care: none given. (n=42) Intervention 2: No round checklists or daily goal charts - no ward rounds. No details given. Duration: 1 month. Concurrent medication/care: n/a.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERDISCIPLINARY WARD ROUNDS versus STANDARD CARE. Protocol outcome 1: Length of stay. - Actual outcome: Length of stay (days) at Baseline; Group 1: mean 3.04 days (SD 1.8); n=42, Group 2: mean 2.7 days (SD 1.8); n=42; Risk of bias: All domain - high, Selection - High, Blinding - low, Incomplete outcome data - Low, Outcome reporting - low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Study	Post-take ward round proforma trial: Wright 2009[88]
Study type	Before and after study.
Number of studies (number of participants)	1 (n=170).
Countries and setting	Conducted in United Kingdom; setting: 170 sets of notes were audited for key items of information; 100 without use of the proforma and 70 with the new structured proforma. No information provided regarding location of hospital, ward type, date of data collection or patient information.
Line of therapy	1st line.
Duration of study	Not clear.
Method of assessment of guideline condition	Unclear method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	No information provided regarding location of hospital, ward type, date of data collection or patient information.
Exclusion criteria	n/a.
Recruitment/selection of patients	No information provided regarding location of hospital, ward type, date of data collection, patient information or selection of notes for audit.
Age, gender and ethnicity	Age - --: n/a. Gender (M:F): n/a. Ethnicity: n/a.
Further population details	1. Critical care patients: not stated 2. Frail elderly: not stated. 3. Speciality/profession: not stated.
Extra comments	It can only be inferred that the setting may be a medical assessment unit or a general ward as 1 of the questionnaire items assessing the form reads as 'the transfer of information from the medical assessment unit to the main ward'.
Indirectness of population	No indirectness.
Interventions	(n=70) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Post take ward round proforma was developed and introduced to improve completeness of documentation and efficiency of information management. Duration: not stated. Concurrent medication/care: not stated. (n=100) Intervention 2: No round checklists or daily goal charts - no ward rounds. No proforma used for the daily post take ward round. Duration: not stated. Concurrent medication/care: not stated.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: WARD ROUND PROFORMA versus NO WARD ROUND PROFORMA.	

Study	Post-take ward round proforma trial: Wright 2009[88]
Protocol outcome 1: Missed of delayed investigations. - Actual outcome: Investigations (recorded on notes) at not stated; Group 1: 66/70, Group 2: 57/100; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Very high, Outcome reporting - High, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: no patient information given, no setting and no time given of data collection - Actual outcome: Diagnosis (recorded on notes) at not stated; Group 1: 69/70, Group 2: 40/100; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Very high, Outcome reporting - High, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: no patient information given, no setting and no time given of data collection - Actual outcome: Further tests (recorded on notes) at not stated; Group 1: 55/70, Group 2: 52/100; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Very high, Outcome reporting - High, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: no patient information given, no setting and no time given of data collection Protocol outcome 2: Missed of delayed treatments. - Actual outcome: Management plan (recorded on notes) at not stated; Group 1: 70/70, Group 2: 81/100; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Very high, Outcome reporting - High, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: no patient information given, no setting and no time given of data collection - Actual outcome: DVT prophylaxis (recorded on notes) at not stated; Group 1: 37/70, Group 2: 6/100; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Very high, Incomplete outcome data - Very high, Outcome reporting - High, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: no patient information given, no setting and no time given of data collection	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Length of stay; Staff satisfaction.

1

Study	Structured interdisciplinary rounds trial: Young 1998[90]
Study type	Prospective cohort study.
Number of studies (number of participants)	(n=469)
Countries and setting	Conducted in USA; setting: the study was conducted in a 12-bed, mixed medical and surgical ICU at McKay-Dee Hospital, a 380-bed non-teaching tertiary referral hospital in Ogden, Utah.
Line of therapy	1st line.
Duration of study	Intervention time: 54 months.

Study	Structured interdisciplinary rounds trial: Young 1998[90]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	ICU patients on mechanical ventilation for longer than 72 hours who did not meet the exclusion criteria.
Exclusion criteria	Patients less than 14 years of age, acutely terminally ill patients (primarily patients' institutional brain-death criteria) and patients whose attending physician declined participation.
Recruitment/selection of patients	Patients treated from 1992 through May 1995 were identified and evaluated patients prospectively.
Age, gender and ethnicity	Age - Mean (range): 61.2-58.4 years. Gender (M:F): not stated. Ethnicity: not stated.
Further population details	1. Critical care patients: not stated 2. Frail elderly: not stated 3. Speciality/profession: not stated.
Indirectness of population	No indirectness.
Interventions	(n=469) Intervention 1: Structured ward round models - ward round checklists (generic checklists; not condition specific). Daily formal bedside rounds, personnel who routinely attended the daily rounds included the critical care physician, clinical dietician, respiratory therapist, pharmacist, and bedside nurse. They held a comprehensive review of all organ systems, laboratory findings and psychosocial issues. Less detailed evening rounds were also held. A social worker completed an initial evaluation within 24 hours of initiation of the protocol. Family conferences were held at least weekly. Duration: 3 years. Concurrent medication/care: the team coordinated areas of care by establishing interdisciplinary guidelines and standardised order sheets. (n=469) Intervention 2: No round checklists or daily goal charts - no ward rounds. In 1991, a multidisciplinary team was formed that included the principal care givers for patients who required prolonged mechanical ventilation. Team members included a critical care physician, a respiratory therapy, a physical therapist and a cardiac rehabilitation specialist. Duration: 1 year. Concurrent medication/care: n/a.
Funding	Funding not stated.

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY WARD ROUNDS versus BEFORE STRUCTURED WARD ROUNDS.

Protocol outcome 1: Length of stay.
- Actual outcome: Days in ICU at January 1991 - June 1995; Group 1: mean 15 days (SD 9.9); n=469, Group 2: mean 19.2 days (SD 14.7); n=469; Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome: Days in hospital at January 1991 - June 1995; Group 1: mean 32.7 days (SD 21.8); n=469, Group 2: mean 24.8 days (SD 16.6); n=469; Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low,

Study	Structured interdisciplinary rounds trial: Young 1998[90]
Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient/family and/or carer satisfaction; Staff satisfaction; Missed of delayed treatments; Missed of delayed investigations.

Appendix E: Economic evidence tables

No relevant health economic studies were identified.

Appendix F: GRADE tables

Table 9: Clinical evidence profile: Checklist versus no checklist

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Checklist versus no checklist	Control	Relative (95% CI)	Absolute		
Adherence to care - unadjusted (Missed or delayed investigations) - Diagnosis (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	no serious imprecision	None	69/70 (98.6%)	40%	RR 2.46 (1.94 to 3.14)	584 more per 1000 (from 376 more to 856 more)	⊕OOO VERY LOW	IMPORTANT
Adherence to care - unadjusted (Missed or delayed investigations) - Investigations (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	no serious imprecision	None	66/70 (94.3%)	57%	RR 1.65 (1.38 to 1.98)	370 more per 1000 (from 217 more to 559 more)	⊕OOO VERY LOW	IMPORTANT
Adherence to care - unadjusted (Missed or delayed investigations) - Further tests (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	serious[3]	None	55/70 (78.6%)	52%	RR 1.51 (1.21 to 1.89)	265 more per 1000 (from 109 more to 463 more)	⊕OOO VERY LOW	IMPORTANT
Adherence to care - unadjusted (missed or delayed treatments) - Management plan (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	serious[3]	None	70/70 (100%)	81%	RR 1.23 (1.12 to 1.36)	186 more per 1000 (from 97 more to 292 more)	⊕OOO VERY LOW	IMPORTANT
Adherence to care - unadjusted (missed or delayed treatments) - DVT prophylaxis (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	no serious imprecision	None	37/70 (52.9%)	6%	RR 8.81 (3.93 to 19.74)	469 more per 1000 (from 176 more to 1000 more)	⊕OOO VERY LOW	IMPORTANT

Mortality (follow-up 3 months)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	None	7/653 (1.1%)	5.3%	RR 1.13 (0.38 to 3.34)	7 more per 1000 (from 30 fewer to 124 more)	⊕OOO VERY LOW	CRITICAL
Overall adherence to care - adjusted (missed or delayed treatments) (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	no serious imprecision	None	-	0%	OR 6.38 (5.06 to 8.05)	-	⊕OOO VERY LOW	IMPORTANT

[1] All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.
[2] Downgrade by 1 increment if the majority of evidence had indirect outcomes.
[3] Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 10: Clinical evidence profile: Daily rounding checklist-prompted versus daily rounding checklist- unprompted

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Prompted versus unprompted**	**Control**	**Relative (95% CI)**	**Absolute**		
Mortality (adjusted OR) - ICU mortality (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	None	-	0%	OR 0.36 (0.13 to 1)	-	⊕OOO VERY LOW	CRITICAL
Mortality (adjusted OR) - Hospital mortality (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	None	-	0%	OR 0.34 (0.15 to 0.77)	-	⊕OOO VERY LOW	CRITICAL
ICU length of stay - ICU length of stay (follow-up not stated)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	None	140	125	-	MD 1.4 lower (2.82 lower to 0.02 higher)	⊕OOO VERY	CRITICAL

											LOW	
Hospital mortality (follow-up 6 months)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	None	30/171 (17.5%)	24%	RR 0.73 (0.47 to 1.15)	65 fewer per 1000 (from 127 fewer to 36 more)	⊕OOO VERY LOW	CRITICAL

[1] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias. All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias

[2] Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 11: Clinical evidence profile: Explicit rounding approach versus standard rounding approach

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Explicit rounding versus standard rounding**	**Control**	**Relative (95% CI)**	**Absolute**		
Patient satisfaction (overall satisfaction) (follow-up unclear)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	None	341/472 (72.2%)	48.6%	RR 1.49 (1.05 to 2.1)	238 more per 1000 (from 24 more to 535 more)	⊕OOO VERY LOW	CRITICAL
Staff satisfaction (follow-up 12 days before and 19 days after)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	None	1467/1544 (95%)	790/915 (86.3%)	RR 1.1 (1.07 to 1.03)	86 more per 1000 (from 26 more to 60 more)	⊕OOO VERY LOW	IMPORTANT

[1] All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

[2] Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 12: Clinical evidence profile: Structured interdisciplinary bedside rounds versus standard physician-centred rounds.

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Structured interdisciplinary bedside versus standard physician-centred rounds	Control	Relative (95% CI)	Absolute		
Job satisfaction (follow-up not stated; Better indicated by higher values)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	None	24	38	-	MD 0.76 higher (0.49 to 1.03 higher)	⊕OOO VERY LOW	IMPORTANT

[1] All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

Table 13: Clinical evidence profile: Structured interdisciplinary rounds (SIDR) versus control (unknown)

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Structured interdisciplinary rounds (SIDR) versus control (unknown)	Control	Relative (95% CI)	Absolute		
Teamwork climate score (staff satisfaction) - unadjusted (follow-up 6 months and 2 years; range of scores: 0-100; Better indicated by higher values)												
2	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	None	303	231	-	MD 3.15 higher (0.84 to 5.45 higher)	⊕OOO VERY LOW	IMPORTANT
Adverse events (adjusted rate ratio) - Any adverse events (follow-up 5.5 months and 2 years)												

2	observational studies	very serious[1]	serious[2]	no serious indirectness	very serious[3]	None	-	0%	0.78 (0.39 to 1.53)	-	⊕OOO VERY LOW	CRITICAL
Adverse events (adjusted rate ratio) - Preventable adverse events (follow-up 5.5 months and 2 years)												
2	observational studies	very serious[1]	serious[2]	no serious indirectness	very serious[3]	None	-	0%	0.55 (0.15 to 2.01)	-	⊕OOO VERY LOW	CRITICAL
Adverse events (adjusted rate ratio) - Serious adverse events (follow-up 2 years)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	None	-	0%	0.86 (0.39 to 1.9)	-	⊕OOO VERY LOW	CRITICAL
ICU length of stay (follow-up 1991 - 1995; Better indicated by lower values)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	None	469	469	-	MD 4.2 lower (5.8 to 2.6 lower)	⊕OOO VERY LOW	CRITICAL
Hospital length of stay (follow-up 1991 – 1995, 6 months and 24 weeks; Better indicated by lower values)												
3	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	None	1966	2253	-	SMD 0.03 lower (0.09 lower to 0.03 higher)	⊕OOO VERY LOW	CRITICAL
Length of stay (RCT) (follow-up (baseline); Better indicated by lower values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3] imprecision	None	42	42	-	MD 0.34 higher (0.43 lower to 1.11 higher)	⊕⊕OO LOW	CRITICAL

[1] All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias.

[2] Downgraded by 1 or 2 increments because the heterogeneity is I^2=87%, unexplained by subgroup analysis.

[3] Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Appendix G: Excluded clinical studies

Table 14: Studies excluded from the clinical review

Study	Exclusion reason
Al-mahrouqi 2013 [2]	Inappropriate study design- audit of post-acute consultant ward round before and after introduction of a proforma
Alamri 2016 [3]	Inappropriate study design- clinical review of surgical ward round checklist
Aung 2016 [5]	Inappropriate study design- quality improvement project to improve prescribing in the elderly.
Anonymous 2008B[1]	Commentary; no data
Baba 2011[6]	No outcome data
Bhamidipati 2016 [7]	Systematic review. Two references ordered
Blucher 2014[8]	Evaluation of ward safety checklist for the morning post-take ward round Incorrect study population (acute surgical unit)
Boland 2015A [9]	Inappropriate study design- audit to measure the impact of a ward round checklist.
Butcher 2013 [12]	Intervention does not meet inclusion criteria, there is not a distinct difference between the intervention and comparator
Calder 2014[14]	Survey conducted before and after the development, implementation, and evaluation of a rounds model No relevant outcomes
Carlos 2015[16]	Study on physician compliance with checklist use No comparison and no relevant outcomes
CAO2016[15]	Abstract only
Ciccu-Moore 2014[17]	Description of a checklist No outcome data in analysable format
Cohn 2014[18]	Narrative review
Cook 2015A [20]	Not related to structured ward round. A study about urgent and emergency referrals from NHS direct within England
Cornell 2014[21]	Before-and-after study of implementation of situation-background-assessment-recommendation protocol No relevant outcomes
Cornell 2014A[22]	Study on interdisciplinary rounding and structured communication (no physicians involved) No relevant outcomes and no relevant comparison
Damiani 2015[23]	RCT but from a non-OECD country (Brazil)
Dhillon 2011[24]	Incorrect study population (surgical ward) No relevant outcomes
DuBose 2008[28]	Evaluation of a daily quality rounding checklist Incorrect study population (trauma intensive care unit)

DuBose 2010[27]	Incorrect study population (trauma intensive care unit)
Ham 2016[30]	Incorrect intervention- effect of 'rounds report' on surgery residents
Hasibeder 2010[31]	Narrative review
Hale 2015 [38]	Inappropriate study design- quality improvement project involving the introduction of a ward round check list for daily use.
Have 2014[32]	Study on interdisciplinary rounds No relevant outcomes
Henneman 2013[33]	Description of development and reliability testing of checklist No intervention and no data
Herring 2011[35]	Description of ward round checklist No data
Herring 2011B[34]	Qualitative evaluation of development and testing of checklist for ward rounds No quantitative data
Hewson 2006[36]	Pilot study to evaluate the use of a checklist No comparison and no relevant outcomes
Hoke 2012[37]	Description of a perioperative paradigm used in interdisciplinary rounds Incorrect study population (post-anaesthesia care unit)
Holton 2015[38]	Brief summary of initial findings of a survey No relevant data
Huynh 2016[39]	No extractable outcomes
Jacobowski 2010[40]	Before and after study of introducing structured interdisciplinary family ward rounds versus structured interdisciplinary normal ward rounds Incorrect comparison (ward round was the same apart from attendance of the family who was able to ask questions and received a summary by the physician in lay language)
Jitapunkul 1995 [41]	Incorrect intervention. Study aimed to evaluate the effect of a MDT approach. Study considered for inclusion in the MDT review.
Karalapillai 2013[42]	Development and pro-forma of a daily care plan; targeted at nurses only No relevant outcomes/data
Krepper 2014[43]	Incorrect study population (vascular surgical unit)
Lehnbom 2014[44]	Slides of a PowerPoint presentation No relevant outcome data
Lepee 2012[45]	Incorrect study population (paediatric ward)
Levett 2014[46]	Survey of views post-induction of a structured checklist No comparison
Mansell 2012[47]	Summary of an audit after introduction of a ward round checklist No comparison and no data
Mant 2012[48]	Systematic review; protocol only
Mathias 2014[49]	No comparison No outcome data

Meade 2006 [50]	Unable to extract outcome data as patient numbers are not provided
Meade 2010[51]	No relevant intervention, comparison and analysis (Three types of ward rounds introduced on ED but treated as one intervention in the analyses and compared to before introduction of any ward round. Also, no variation data presented so would have been narrative results only.)
Mercedes 2015[52]	Highly relevant planned systematic review but at protocol stage only
Mitchell 2014[53]	Systematic review (references checked)
Mohan 2013[54]	Description of a checklist No data
Monaghan 2005[55]	Not relevant comparison (study compares ward rounds with different types of structured forms but no comparator of unstructured ward rounds)
Mosher 2015[56]	Quality improvement intervention of interdisciplinary rounds No relevant data in analysable format
Newnham 2015[59]	Evaluation of a mnemonic, created to reflect the aspects of care that should be documented after every ward round, on the completeness of note keeping Incorrect study population (paediatric ward)
Newnham 2012[58]	Evaluation of standardised documentation on post take ward rounds Incorrect study population (paediatric ward)
Norgaard 2004A[60]	Description of development and validation (content and construct) of checklist No comparison and no relevant outcomes
O'Hare 2008[61]	Narrative review of ward rounds
O'Leary 2012A[63]	No relevant outcomes to extract
Pitcher 2016 [67]	Incorrect intervention- structured checklist in a surgical ward round. Incorrect study design- quality assurance project
Pucher 2014A[68]	RCT but incorrect environment and patient population (simulation on post-surgical ward)
Reimer 2014[69]	Narrative review of rounding strategies
Richmond 2011[70]	Observational study of a centralised whiteboard handover followed by a multidisciplinary review of each patient No relevant intervention
Savel 2009[71]	Literature review
Sharma 2013[72]	Observational study investigating impact of checklist on ward rounds Incorrect study population (paediatric ICU)
Shaughnessy 2015[73]	Qualitative study after induction of a new ward round approach No quantitative data
Shoeb 2014[74]	No relevant outcomes No extractable data
Simpson 2007[75]	Description of development and implementation of a checklist

	No data
Sobaski 2008 [76]	No extractable data
Teixeira 2013[77]	Quality improvement using a daily quality rounds checklist Incorrect study population (surgical intensive care unit)
Thomas 2005A[79]	Correction for the Thomas 2005D paper No data
Thomas 2005D [78]	No relevant outcomes
Thompson 2004[80]	Brief summary of post-take ward round proforma implementation No relevant outcomes (only changes in rates of documentation)
Van Eaton 2010[82]	Evaluation of a computerised rounding and sign-out system Not relevant study population (more than 50% surgical patients, trauma and paediatrics)
Van Eaton 2005[81]	RCT evaluating a computerised rounding and sign-out system No relevant outcomes
Weiss 2012 [85]	No extractable data
Wilson 2009 [87]	No extractable data
Wild 2004 [86]	Incorrect intervention. Study evaluated the effect of interdisciplinary ward rounds. Study considered for inclusion in the MDT review
Wright 1996[89]	No outcome data No relevant comparison
Zhang 2015 [91]	No relevant outcomes

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Appendix H: Excluded health economic studies

No health economic studies were excluded from this review.