Study	Kerlin 2013[24]
Exclusion criteria	Readmission to the ICU (first admission analysed), no APACHE III score, brief ICU admission which did not include a night
Recruitment/selection of patients	All admissions
Age, gender and ethnicity	Age - Median (IQR): Intervention - 60 (IQR: 48-69), Control - 60 (IQR: 48-69); Gender (M:F): Intervention – 55:45 Control - 54:46; Ethnicity: Black 40%, White 50%, Asian 1%, Other 9%
Further population details	Median APACHE III score: 67 (IQR: 47-91). Median LoS in ICU: 52.7 hours (IQR: 29.0-113.4)
Extra comments	Mortality - Patients discharged to in-hospital hospice categorised as dead. While patients discharged to home hospice categorised as alive
Indirectness of population	No indirectness
Interventions	Intervention (n=824) – Exposure on day of admission to ICU to a single night-time (7pm – 7am) intensivist in addition to usual the 3 night-time medical residents. Night-time intensivists were drawn voluntarily from the pool of daytime intensivists (excluding those on service) and assumed primary responsibility for all ICU patients during the night. Allocation was randomised in consecutive 7-day blocks, within a 2 week strata which followed daytime intensivist schedules (14 day blocks). Cumulative exposure to night-time intensivist for intervention admissions had a median of 100% (IQR: 67-100). Control (n=778) – usual practice, daytime staffing consisted of 2 teams each of which comprises 1 intensivist, 1 critical care fellow, 6 medical residents and 1 advanced practitioner, all of whom are typically present from 7am through at least 6pm. Daytime intensivists were rotated in 14 day blocks and on control nights in addition to the critical care fellows maintained primary responsibility for patients and were available by telephone to in-hospital residents and nurses. For control group cumulative exposure to night-time intensivist had a median of 0% (IQR: 0-33).
Funding	University of Pennsylvania Health System and others; NCT01434823
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ICU 24 HOURS CONSULTANT versus ICU DAYTIME CONSULTANT Protocol outcome 1: Mortality - Actual outcome: In-hospital mortality: Group 1: 203/820, Group 2: 177/778; Risk of bias: All domain - High, Selection - High, Blinding - Very high, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low, Other 1 - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4, Reason: missing APACHE III data; Group 2 Number missing: 7, Reason: missing APACHE III data Protocol outcome 2: Length of stay in hospital	

Study	Kerlin 2013[24]
- Actual outcome: rate ratio of length of stay: in hours, between ICU admission to hospital discharge: 0.91 (0.82 to 1.01); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - High, Measurement - High, Crossover - Low, Subgroups - Low, Other 1 - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4, Reason: missing APACHE III data; Group 2 Number missing: 7, Reason: missing APACHE III data	
Protocol outcomes not reported by the study	Quality of life within the study period; Patient and/or carer satisfaction within the study period; Number of diagnostic tests within the study period; Adverse events within the study period; Family satisfaction within the study period; Number of readmissions up to 30 days

Study	Singh 2012[34]
Study type	Before/ after study
Number of studies (number of participants)	Not stated
Countries and setting	Conducted in United Kingdom; Setting: Gastroenterology ward, The Royal Bolton Hospital.
Line of therapy	Not applicable
Duration of study	Intervention time: 12 months
Method of assessment of guideline condition	Adequate method of assessment
Stratum	Overall: Primary diagnosis was gastroenterological in 90% of cases
Subgroup analysis within study	Not applicable
Inclusion criteria	None given
Exclusion criteria	None given
Recruitment/selection of patients	Unknown
Age, gender and ethnicity	Age – not given. Gender (M:F): not stated. Ethnicity: not stated
Further population details	No population details given
Extra comments	The Royal Bolton Hospital is part of a Foundation Trust delivery secondary care to a population of 260000.
Indirectness of population	No indirectness
Interventions	(n=1072) Intervention 1: Consultant ward round- Once daily. Daily consultant ward rounds, followed by an MDT meeting. Duration 12 months. In September 2009, an alternative model was designed and subsequently implemented in December 2009, with the introduction of daily consultant wards, followed by an MDT meeting. One consultant now takes sole responsibility for

Study	Singh 2012[34]
	the gastroenterology ward. Clinical ward rounds take place Monday to Friday between 09:15 and 11:45. At 11:45, there is an MDT meeting for the ward, lasting 30-40 minutes, involving the nursing staff, alcohol specialist nurses, physiotherapists, occupational therapists, social workers and dieticians. It is patient-centred, each problem being prioritised and discussed, with input from all relevant healthcare professionals. A predicted date of discharge is reviewed daily, so that individual members of the team complete their responsibilities in parallel rather than in series. While covering the wards, the consultant is now free from all other programmed activities. Hence, in the afternoon, they can visit the MAU/ HDU, see referrals from other specialties, cover emergencies in endoscopy, meet relatives on the ward and review the progress of gastroenterology ward patients. With 1 consultant accepting the inpatient workload for 2 weeks at a time, the other 3 consultants are free to focus on outpatient clinics, endoscopy and all other supporting activity, without interruption from the acute inpatient workload. (n=827) Control: Consultant ward round- twice weekly. As with most doctors, the consultant job plans included 2 ward rounds a week. Duration 12 months. Four consultant gastroenterologists cover the workload, supported by an associate specialist, a staff grade physician, 1 registrar, a nurse consultant, 2 nurse endoscopists and 4 specialists' nurses. The gastroenterology ward is a 26-bed unit. Historically, 2 consultants were on at any time, each covering 13 patients. Responsibility was also assumed for medical outliers on 2 surgical wards. As with most doctors, the consultant job plans included 2 ward rounds a week.
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CONSULTANT WARD ROUND- ONCE DAILY. FOLLOWED BY AN MDT MEETING. versus CONSULTANT WARD ROUND- TWICE WEEKLY Protocol outcome 1: Mortality - Actual outcome: 30 day mortality; Group 1: 87/1072, Group 2: 121/827; Risk of bias: All domain - High, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Very high, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 2: Readmission up to 30 days - Actual outcome: Readmission at 30 days; Group 1: 121/1072, Group 2: 89/827; Risk of bias: All domain - High, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Very high, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life within the study period; Patient and/or carer satisfaction within the study period; Number of diagnostic tests within the study period; Adverse events within the study period; Family satisfaction within the study period;

Study	Singh 2012[34]
	Number of readmissions up to 30 days

Appendix E: Economic evidence tables

Study	Ahmad 2015[2]			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost effectiveness**
Economic analysis: CCA (health outcome: mortality, hospital readmissions, length of stay) **Study design:** observational study (before and after analysis) **Approach to analysis:** Before and after comparative analysis of the mean monthly and annual number of investigations per patient using one-way analysis of variance. Unit costs of investigations applied to calculate mean annual cost. Mean annual and monthly pharmacy cost per patient over the same period were also calculated and compared. **Perspective:** UK NHS **Follow-up**: 4 years (2 years before and 2 years after, 2007-2011)). **Treatment effect duration:** 2 years **Discounting:** NR	**Population:** Patients admitted to two general medical wards from A&E, acute admissions unit and the clinical at Royal Liverpool University Teaching hospital. **Cohort settings:** Start age: NR, Male: NR **Intervention 1:** Twice weekly consultant ward rounds in two general medical wards. **Intervention 2:** Twice daily consultant ward rounds implemented in 2 general medical wards. The intervention delivered daily consultant input in clinical decision making as well as bedside teaching and supervision of junior staff.	**Total costs (mean per patient):** Incremental (2−1): -£108 (95% CI: NR; p=NR) **Currency & cost year:** 2007-2011 UK pounds **Cost components incorporated:** Investigations (urea and electrolytes, liver function tests, full blood count, chest X-ray, CT, MRI, ventilation/ perfusion scan, endoscopy and colonoscopy) Medications Staff costs and overheads assumed equal	**Mortality (mean per patient):** 1: 2.9%, 2: 2.7% (2−1): -0.2% (95% CI: NR; p p>0.05) **Readmission (mean per patient):** 1: 18.8%, 2: 19.3%, (2−1): 0.5% (95% CI: NR; p >0.05) **Length of stay (mean per patient):** 1: 9.7 days, 2: 5.2 days (2−1): -4.5 days, (95% CI: NR; p <0.01) **Total number of investigations (mean per patient):** 1: 9.96, 2: 4.68, (2−1): - 5.28 (95% CI: NR; p=NR) **Patient throughput (Annual mean):** 1: 1827, 2: 3116 I (2−1): 1289 (95% CI: NR; p <0.01)	**ICER:** Twice daily dominates twice weekly **Analysis of uncertainty:** No sensitivity analysis reported
Data sources				
Health outcomes: Data on mortality, readmissions, length of stay were collected from hospital records over 4 years period. **Quality-of-life weights:** NA **Cost sources:** Royal Liverpool University Teaching hospital finance department and pharmacy department provided information regarding test unit costs, total investigation costs and total medication costs.				
Comments				
Source of funding: self-funded study. **Applicability and limitations:** QALYs are not used as an outcome measure. Cost data collected over 4 years (2007-2011) but no discounting is reported. An observational, before and after study with no adjustment for confounding or temporal variation. Evidence of intervention effectiveness is based on 1 study, so not reflecting all				

evidence in this area. No patient reported health outcomes included in the study. Local unit costs were used and it is not clear whether they are reflective of National unit costs. No sensitivity analysis reported.
Overall applicability[(a)]: Partially applicable **Overall quality[(b)]:** Potentially serious limitations

Abbreviations: 95% CI: 95% confidence interval; BNF: British national formulary; CUA: cost–utility analysis; EQ-5D: Euroqol 5 dimensions (scale: 0.0 [death] to 1.0 [full health], negative values mean worse than death); ICER: incremental cost-effectiveness; NR: not reported; PSSRU: personal social services research unit; QALYs: quality-adjusted life years.

(a) Directly applicable / Partially applicable / Not applicable.

(b) Minor limitations / Potentially serious limitations / Very serious limitations.

Appendix F: Grade tables

Table 9: ICU: 24 hour consultant versus daytime consultant

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	24 hour consultant	Daytime consultant	Relative (95% CI)	Absolute		
Mortality (follow-up 90 days; assessed with: in-hospital mortality)												
1	Randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	203/820 (24.8%)	22.8%	RR 1.09 (0.91 to 1.3)	21 more per 1000 (from 21 fewer to 68 more)	⊕⊕OO LOW	CRITICAL
Length of stay (follow-up 90 days; Better indicated by lower values)												
1	Randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	820	778	-	Rate ratio 0.91 higher (0.82 to 1.01 higher)	⊕⊕OO 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.
[2] Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 10: General medical ward: Weekly consultant and daily registrar versus geriatric medicine consultation-only service

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Weekly consultant + daily registrar	Geriatric medicine consultation-only service	Relative (95% CI)	Absolute		
Mortality (follow-up 7 years; assessed with: in-hospital mortality)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	serious[3]	none	21/447 (4.7%)	7.7%	RR 0.61 (0.36 to	30 fewer per 1000 (from 49 fewer to 2	⊕OOO VERY	CRITICAL

									1.02)	more)	LOW	
Length of stay (follow-up 7 years; Better indicated by lower values)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	serious[3]	none	447	504	-	MD 0.5 lower (2.57 lower to 1.57 higher)	⊕OOO VERY LOW	CRITICAL
Avoidable adverse events (follow-up 7 years)												
1	observational studies	very serious[1]	no serious inconsistency	serious[2]	serious[3]	none	221/447 (49.4%)	71%	RR 0.7 (0.62 to 0.78)	213 fewer per 1000 (from 156 fewer to 270 fewer)	⊕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.
[2] Downgraded by 1 increment for indirectness as registrar ward rounds and control is PRN service.
[3] Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs.

Table 11: General medical ward : Once daily rounds versus twice weekly

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Once daily rounds**	**Twice weekly**	**Relative (95% CI)**	**Absolute**		
Mortality (follow-up 30 days)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	87/1072 (8.1%)	14.6%	RR 0.55 (0.43 to 0.72)	66 fewer per 1000 (from 41 fewer to 83 fewer)	⊕OOO VERY LOW	CRITICAL
Readmission (follow-up 30 days)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	129/1072 (12%)	12%	RR 1.01 (0.79 to 1.29)	1 more per 1000 (from 25 fewer to 35 more)	⊕OOO VERY LOW	IMPORTANT

[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.
[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: Stroke unit : 7 day rounds versus less than 7 days

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	7 day rounds	Less than 7 days	Relative (95% CI)	Absolute		
Mortality (follow-up 7 days)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	1814/32388 (5.6%)	7.2%	RR 0.78 (0.73 to 0.83)	16 fewer per 1000 (from 12 fewer to 19 fewer)	⊕OOO VERY LOW	CRITICAL
Mortality (follow-up 30 days)												
1	observational studies	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	3822/32388 (11.8%)	14.9%	RR 0.79 (0.76 to 0.83)	31 fewer per 1000 (from 25 fewer to 36 fewer)	⊕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.
[2] 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 13: Studies excluded from the clinical review

Study	Exclusion reason
Ahmed 2010[3]	No outcomes of interest
Anderson 1988[5]	Observes how to decrease bed days in hospital
Beckett 2013[6]	Incorrect intervention. Does not look at frequency of ward rounds
Blucher 2014[7]	Intervention is ward round checklists
Boyle 2008[8]	Incorrect intervention. Does not look at frequency of ward rounds
Braide 2013 [9]	Incorrect study design
Bray 2013[11]	Examines the organisation of services
Campbell 2012[12]	Editorial
Duffin 2010[13]	Newspaper article
Dy 2011[14]	Intervention is MDT care and not frequency of ward rounds
Gilligan 2008[17]	Article
Guggenheim 1982[18]	Incorrect intervention. Ward round teaching models
Hakim 1998[19]	No control group
Halpern 2014[20]	Editorial
Harrington 2013 [21]	Incorrect study design
Hutchings 2012 [22]	No extractable outcomes
Kajdacsyballa 2014[23]	Observational cohort. RCT identified for intervention of interest
Looi 2008[26]	Incorrect intervention. Looks at how often medication charts are reviewed on ward rounds
Martin 2015[27]	Report
Montague 2004[29]	Qualitative paper. Views of staff on daily ward rounds
Montague 2006[28]	Qualitative study. Questionnaire to assess patients' perceptions of ward rounds
Navani 2014 [30]	Incorrect population
Radcliffe 2012[31]	Newspaper article
Reineck 2013[32]	Retrospective cohort. RCT identified for intervention of interest
Rowlands 2014[33]	No outcome of interest
Smith 2015[35]	Article
Story 2013[36]	Incorrect intervention. No consultant input. Surgical patients
Wallace 2012[32]	Retrospective cohort. RCT identified for intervention of interest
Western 2011[37]	No control group
Wild 2004[38]	Incorrect invention. Interdisciplinary ward rounds
Yoo 2014[39]	No outcomes of interest. Intervention is looking at MDTs

Appendix H: Excluded economic studies

No studies were excluded.