2021 vs. 2018 Systematic Reviews
Summary of Changes

Legend

Text	Indication
Red text	Indicates changes from 2018 conclusions
is associated	Significant difference between groups
may be associated	Trend towards a difference between groups
has no effect	Insignificant difference between groups

Topic #	Topic Name	2018 Systematic Review Conclusions	New articles	2021 Systematic Review Conclusions	Total articles	To revise in the next update: Revised topic #	To revise in the next update: Revised topic name
1.0	The use of Enteral Nutrition vs Parenteral Nutrition	1) The use of EN compared to PN is not associated with a reduction inmortality in critically ill patients. 2) The use of EN compared to PN is associated with a reduction in the number of infectious complications in the critically ill in trials where patients in the PN group received more calories than in the EN group. 3) The use of EN compared to PN was may be associated with a significant reduction in ICU LOS and ventilator days, but it has no effect on hospital LOS. Significant heterogeneity limits the inferences from these aggregated analyses. 4) The use of EN compared to PN may not be associated with an improvement in calories due to underfeeding in both groups 5) The use of EN may be associated with increased episodes of vomiting. 6) The use of EN compared to PN has no effect on patient reported outcomes.	1	The use of EN compared to PN: 1) has no effect on mortality in critically ill patients. 2) is associated with a reduction in the number of infectious complications in the critically ill in trials where patients in the PN group received more calories than in the EN group. 3) may be associated with a reduction in ICU LOS and ventilator days and hospital LOS. Significant heterogeneity limits the inferences from these aggregated analyses. 4) may not be associated with an improvement in calories due to underfeeding in both groups 5) may be associated with increased episodes of vomiting. 6) There is no difference between EN and PN in terms of patient reported outcomes	21	2.0	The use of Enteral Nutrition vs Parenteral Nutrition
2.0	Early vs Delayed EN	1)Early enteral nutrition compared to delayed nutrient intake may be associated with a trend towards a reduction in mortality in critically ill patients. 2)Early enteral nutrition compared to delayed nutrient intake is associated with a in infectious complications. 3)Early enteral nutrition compared to delayed nutrient intake has no effect on ICU or hospital length of stay. 4)Early enteral nutrition compared to delayed nutrient intake is associated with improved nutritional intake	2	Early enteral nutrition compared to delayed nutrient intake: 1) is associated with a significant reduction in mortality in critically ill patients. 2) is associated with a significant reduction in infectious complications. 3) has no effect on ICU or hospital length of stay. 4) is associated with improved nutritional intake.	19	3.1	Early vs. Delayed EN
3.1	Indirect calorimetry vs predictive equations	1) The use of indirect calorimetry compared to predictive equations to meet enteral nutrition needs has no effect on mortality. 2) The use of indirect calorimetry compared to predictive equations as a guide to supplement EN with PN is associated with a reduction hospital mortality. 3) The use of indirect calorimetry compared to predictive equations as a guide to supplement EN with PN may be associated with a higher incidence of infections. 4) The use of indirect calorimetry compared to predictive equations as a guide to supplement EN with PN may be associated with a longer ICU length of stay, and duration of ventilation. 5) The use of indirect calorimetry compared to predictive equations may be associated with improved nutritional intake.	7	1) The use of indirect calorimetry compared to predictive equations to meet nutrition needs has no effect on mortality 2) The use of indirect calorimetry compared to predictive equations as a guide to nutritional delivery has no effect on infections or ventilator associated pneumonia. 3) The use of IC compared to predictive equations as a guide to nutritional delivery has no effect on hospital, ICU length of stay, or duration of ventilation. 4) The use of IC compared to predictive equations may be associated with improved nutritional intake.	9	1.0	Indirect calorimetry vs. Predictive equations

3.2	Achieving Target Dose of EN	1) Early enhanced EN, compared to slower rate of advancement of EN, has no effect on ICU mortality but may be associated with an increase in hospital and overall mortality. 2) Early enhanced EN, compared to slower rate of advancement of EN, has no effect on infections, ICU LOS, hospital LOS or ventilator duration in the critically ill patient. 3) Early enhanced EN, compared to a slower rate of advancement of EN, is associated with higher calorie and protein intake in critically ill patients. 4) Early enhanced EN, compared to a slower rate of advancement of EN, may be associated with better long term QOL, especially in patients with hypophosphatemia at ICU admission.	3	In heterogenous critically ill patient populations, achieving target dose of EN, compared to standard underfeeding with EN: 1)Is associated with higher calorie and protein intake. 2)Has no effect on ICU mortality but may be associated with an increase in hospital and overall mortality. 3)Has no effect on infections, ICU LOS or ventilator duration but may increase hospital LOS. 4)May be associated with better long term QOL in patients with hypophosphatemia at ICU admission but there seems to be no effect in other critically ill patients.	11	3.2	Achieving Target Dose of EN
3.3a	Trophic vs full feeds	1.The use of trophic vs full feeds has no effect on mortality in critically ill patients 2.The use of trophic vs full feeds has no effect on VAP in critically ill patients 3.The use of trophic vs full feeds may be associated with underfeeding but better gastrointestinal tolerance in critically ill patients. 4.The use of trophic vs full feeds has no effect on long-term physical or cognitive function or survival but may be associated with poorer functional outcome at 12 months.	1	The use of trophic vs. full feeds: 1. has no effect on mortality in critically ill patients 2. has no effect on VAP in critically ill patients 3.has no effect on hospital, ICU length of stay or mechanical ventilation duration. 4. may be associated with underfeeding but better gastrointestinal tolerance in critically ill patients. 5.has no effect on long-term physical or cognitive function or survival but may be associated with poorer functional outcome at 12 months.	3	3.2a	EN: Trophic vs Full Feeds
3.3b	Hypocaloric EN	1.The use of hypocaloric enteral nutrition vs full feeds is not associated with a reduction in overall and hospital mortality but may be associated with a reduction in ICU mortality. 2.The use of hypocaloric enteral nutrition vs full feeds has no effect on ICU or hospital LOS. 3.The use of hypocaloric enteral nutrition vs full feeds has no effect on infectious complications. 4.The use of hypocaloric enteral nutrition vs full feeds may be associated with a decrease in length of ventilator support.	1	No changes	7	3.2b	Hypocaloric EN
4.1a	Supplemental Arginine and Select Other Nutrients	1.Diets supplemented with arginine and other nutrients have no effect on overall mortality in critically ill patients. 2.Diets supplemented with arginine and other nutrients have no effect on rate of infectious complications in critically ill patients. 3.Diets supplemented with arginine and other nutrients have no effect on hospital length of stay and ICU length of stay 4. Diets supplemented with arginine and other nutrients may be associated with a reduction in duration of mechanical ventilation in critically ill patients but the presence of significant heterogeneity limits this inference.	1	No changes	27	4.1a	Composition of EN: Arginine and other nutrients

4.1bi	Fish oil, borage oil and antioxidants	1) When compared to a standard/high fat formula, the use of an enteral formula with fish oil/borage oil and antioxidants administered continuously is associated with a reduction in mortality in patients with ALI/ARDS or sepsis. 2) When compared to a standard/high fat formula, the use of an enteral formula with fish oil/borage oil and antioxidants has no effect on infectious complications. 3) When compared to a standard/high fat formula, the use of an enteral formula with fish oil/borage oil and antioxidants may be associated with a reduction in ICU LOS. 4) When compared to a standard/high fat formula, the use of an enteral formula with fish oil/borage oil and antioxidants is associated with a reduction in ventilator dependent days.	0	No changes	10		4.1b(i)	Composition of EN: Fish oils, borage oils, & antioxidants
4.1bii	Fish oil supplementation	1. Fish oil supplementation vs placebo has no effect on mortality or infections in patients with ALI/ARDS. 2. Fish oil supplementation vs placebo has no effect on ICU length of stay or hospital length of stay. 3. Fish oil supplementation vs placebo may be associated with a reduction in duration of mechanical ventilation	1	In critically ill patients with lung injury, burns or sepsis, EN supplemented with fish oils: 1. Has no significant effect on mortality or and no consistent effect on infectious complications. 2.May be associated with a significant reduction in ICU length of stay, however this is limited by heterogeneity. There is no effect on hospital length of stay. 3. May be associated with a reduction in duration of mechanical ventilation but the data are inconclusive.	4		4.1b(ii)	Composition of EN: Fish oils alone
4.1c	EN Glutamine	1) Glutamine supplemented enteral nutrition is associated with a reduction in mortality in burn patients, but inconclusive in other critically ill patients. 2) Glutamine supplemented enteral nutrition may be associated with a reduction in infectious complications in burn and trauma patients. 3) Glutamine supplemented enteral nutrition is associated with a reduction in hospital length of stay in burn and other critically ill patients but not in trauma patients and may be associated with a reduction in ICU LOS in trauma patients.	3	Glutamine supplemented enteral nutrition: 1) is associated with a reduction in mortality in burn patients, but inconclusive in other critically ill patients. 2) may be associated with a reduction in infectious complications in burn and trauma patients. 3) is associated with a reduction in hospital length of stay in burn and other critically ill patients but not in trauma patients and may be associated with a reduction in ICU LOS in trauma patients. 4) has no effect on duration of mechanical ventilation in critically ill patients.	16		4.1c	Composition of EN: Glutamine
4.1d	OKG	EN supplementation of OKG has no effect on mortality in critically ill burn patients. 2) EN supplementation of OKG may be associated with improved nutritional indices and may be associated with improved wound healing in burn patients.	0	No changes	3		4.1d	Composition of EN: Ornithine KetoGlutarate (OKG)
4.2a	High fat/low CHO	1) A high fat, low CHO enteral formula may be associated with a reduction in ventilated days in medical ICU patients with respiratory failure and better glycemic control in critically ill patients with hyperglycemia. 2) A high fat, low CHO enteral formula has no effect on mortality, infections or LOS found between the critically ill patients receiving high fat/low CHO formula or standard.	2	A high fat, low CHO enteral formula: 1) may be associated with a reduction in ventilated days in medical ICU patients with respiratory failure and better glycemic control in critically ill patients with hyperglycemia. 2) has no effect on mortality, infections or LOS found between the critically ill patients receiving high fat/low CHO formula or standard. 3) may be associated with less diarrhea in critically ill patients	9		4.2a	Composition of EN: CHO/Fat: High fat/Low CHO
4.2b	Low fat/high CHO	Low fat enteral feeding may be associated with lower incidences of pneumonia and a reduction in LOS in burn patients.	0	No changes	1		4.2b	Composition of EN: CHO/Fat: Low fat/High CHO

4.2c	*High/low protein*	*1) A higher protein formula has no effect on mortality in critically ill patients. 2) A higher protein formula has no effect on and infectious complications in critically ill head injured patients. 3) A higher protein formula has no effect on ICU length of stay, hospital length of stay or duration of mechanical ventilation in critically ill patients.*	*XX*	*Paper in progress*		4.2c	Composition of EN: High Protein vs. Low Protein
4.2d	Fat modified	1) A fat modified enteral nutrition formula has no effect on mortality, LOS or ventilator days. 2) A fat modified enteral nutrition formula may be associated with	0	No changes	1	4.3b	Composition of EN: Fat Modified
4.3	Protein vs peptides	1)A peptide based vs. standard EN formula has no effect on mortality, infections, or length of stay in ICU patients. 2)A peptide based vs. standard EN formula has no effect on diarrhea in ICU patients. 3)A peptide based vs. standard EN formula has no effect on energy or protein intake in ICU patients.	2	No changes	8	4.3a	Composition of EN: Protein/peptides
4.4	pH	Low pH feeds, when compared to standard formula, have no effect on clinical outcomes in the critically ill adult.	0	No changes	3	4.4	Composition of EN: pH
4.5	Fibre	1) Enteral feeds with fibre compared to standard feeds have no effect on diarrhea 2) Enteral feeds with fibre compared to standard feeds may be associated with a reduction in mortality and hospital length of stay. 3) Enteral feeds with fibre compared to standard feeds have no effect on ICU length of stay.	2	Enteral feeds with fibre compared to standard feeds 1) have no effect on diarrhea 2) may be associated with a trend towards a reduction in mortality and ICU length of stay 3) have no effect on hospital length of stay.	12	4.5	Composition of EN: Fiber
5.1	Feeding protocols	1) Feeding protocols/algorithms may be associated with a reduction in hospital mortality and hospital length of stay. 2) Feeding protocols/algorithms do result in an earlier start of EN and improved overall nutritional adequacy.	4 (2 from 2018 section 3.2)	In the critical care setting, implementing a feeding protocol: 1)Does not affect mortality or infectious complications. 2)May reduce ICU length of stay 3)Results in an earlier start of EN and improved overall nutritional adequacy.	7	5.1a	Feeding Protocols
5.2a	Motility agent use	1) Motility agents have no effect on mortality, or infectious complications, LOS or ventilation duration in critically ill patients.	4	Motility agents 1) have no effect on mortality, infectious complications, LOS or ventilation duration in critically ill patients. 2) may improve nutritional intake and/or reduce enteral feeding intolerance.	16	5.2a	Use of Motility Agents
5.2b	Motility agents vs intestinal feeds	1) Intestinal feeds have no effect on mortality, VAP, LOS or ventilator days. 2) Intestinal feeds may be associated with improved feeding tolerance and amount of EN received.	0	No changes	2	5.2b	Motility Agents vs Intestinal Feeding
5.3	Small bowel vs gastric	1) Small bowel feeding, compared to gastric feeding may be associated with a reduction in pneumonia in critically ill patients. 2)Small bowel feeding, compared to gastric feeding has no effect on mortality or ventilator days in critically ill patients receiving small bowel vs. gastric feedings. 3)Small bowel feeding is associated with improved calorie and protein intake and with less time taken to reach target rate of enteral nutrition when compared to gastric feeding.	3	Small bowel feeding, compared to gastric feeding 1)is associated with a reduction in pneumonia in critically ill patients. 2)may be associated with a reduction in duration on ventilation in critically ill patients. 3)has no effect on mortality, and ICU and hospital length of stays. 4)is associated with improved calorie and protein intake and with less time taken to reach target rate of enteral nutrition	20	6.2	EN: Small Bowel vs. Gastric Feeding

5.4	Body position	1) Semi-recumbent position may be associated with a reduction in pneumonia in critically ill patients. 2) Semi-recumbent position has no effect on mortality, ICU length of stay or duration of mechanical ventilation.	0	No changes	2		5.1b	Body Position
5.5	Use and Threshold of GRVs	1. GRVs of 500 mLs vs 250 mLs have no effect on mortality, infections or ICU LOS 2. Not checking GRVs vs checking GRVs > 250 ml threshold has no effect on mortality, infections, ICU/hospital length of stay 3. Monitoring GRVs every 4 hours vs up to every 8 hours has no effect on mortality, VAP or ICU LOS but may be associated with a reduction in hospital LOS. 4. GRVs of 500 mLs vs 250 mLs are not associated with increased gastrointestinal complications 5. GRVs of 500 mLs vs 250 mLs are associated with better nutrition delivery. 6. Not checking GRVs vs checking GRVs > 250 ml threshold is associated with better caloric delivery. 7. Monitoring GRVs every 4 hours vs up to every 8 hours is associated with a reduction in vomiting/regurgitation but had no effect on nutrition delivery.		Section separated into 3 new subsections below:			
5.5a	GRV Threshold	New section in 2021	1	**5.5a. Gastric Residual Volume Threshold** In critically ill patients receiving enteral nutrition, using a higher GRV vs. lower GRV threshold: 1. Has no effect on mortality, infections or ICU LOS 2. Is not associated with increased gastrointestinal complications 3. Is associated with better nutrition delivery	2		5.3a	GRVs Thresholds
5.5b	GRV Monitoring	New section in 2021	1	**5.5b. Gastric Residual Volume Monitoring** In critically ill patients receiving enteral nutrition, not monitoring GRVs compared to 250 mL GRV threshold: 1. Has no effect on mortality, infections or ICU/hospital length of stay 2. May be associated with a trend towards a reduction in duration of mechanical ventilation 3. May be associated with a lower calorie deficit which is of questionable clinical significance. 4. May be associated with higher rates of vomiting.	2		5.3b	GRVs Monitoring
5.5c	GRV Frequency	New section in 2021	1	**5.5.c. GRV Frequency of GRV Monitoring** In critically ill patients receiving enteral nutrition, less frequent checking of gastric residual volumes (q8 hrs) compared to more frequent (q4 hrs): 1. Has no effect on mortality, VAP or length of stay indices 2. Has no effect on enteral nutrition delivery 3 May be associated with more gastrointestinal intolerance	2		5.3c	GRVs Frequency

5.6	Discarding GRVs	1. Re-feeding GRVs is not associated with more gastric complications when compared to discarding GRVs.	0	Section renamed as 5.5d No changes in conclusions	1		5.3d	Discarding GRVs
All subsequent sections have been renumbered								
5.7	Fasting	1) A shorter fasting time pre-operatively has no effect on mortality, LOS or ventilator days. 2) A shorter fasting time pre-operatively may be associated with better caloric delivery in the 24h period pre-operatively.	0	No changes	1		5.1c	Fasting
6.1	Closed vs open system	Closed system/aseptic techniques of enteral nutrition compared to open/routine are associated with a reduction in diarrhea in critically ill patients.	0	No changes	1		6.1	EN: Closed vs. Open Systems
6.2	Probiotics	1) The addition of probiotics to enteral nutrition has no effect on hospital or ICU mortality. 2) The addition of probiotics to enteral nutrition is associated with a reduction in overall infectious complications, though this was only seen in a subgroup of lower quality studies. Probiotic supplementation is associated with a reduction in the incidence of VAP. 3) The addition of probiotics to enteral nutrition had no effect on hospital length of stay or diarrhea, but may be associated with a reduction in ICU LOS.	2	The addition of probiotics to enteral nutrition: 1) has no effect on overall hospital or ICU mortality. 2) is associated with a reduction in overall infectious complications. 3) may be associated with a reduction in the incidence of VAP. 4) has no effect on hospital LOS but may be associated with a reduction in ICU LOS. 5) has no effect on diarrhea	33		4.6	Composition of EN: Prebiotics/Probiotics/Synbiotics
6.3	Continuous vs Other	1) Providing EN continuously over 24 hours vs by another method has no effect on mortality in ICU patients. 2) Providing EN continuously over 24 hours vs by another method is associated with increased occurrence of aspiration pneumonia in the critically ill. There is insufficient evidence to comment on the occurrence of other infections. 3) Providing EN continuously over 24 hours vs by another method has no effect on ICU LOS. 4) Providing EN continuously over 24 hours vs by another method may be associated with a reduction in diarrhea occurrence but it has no effect on nutritional adequacy or elevated gastric residual volumes.	1	Compared to intermittent/bolus feedings, providing EN continuously over 24 hours, 1) May be associated with a reduction in overall mortality in ICU patients. 2) Is not associated with a difference in aspiration or pneumonia. There is insufficient evidence to comment on the occurrence of other infections. 3) Is not associated with a difference in ICU LOS. 4) Is inconclusive with respect to its impact on diarrhea. 5) Is not associated with a difference in nutritional adequacy or elevated gastric residual volumes.	6		6.3	EN: Continuous vs. Other Methods of Administration
6.4	Gastroctomy vs NG	1) Early enteral feeding after intubation via percutaneous gastrostomy has no effect on mortality in critically ill patients. 2) Early enteral feeding after intubation via percutaneous gastrostomy is associated with a decrease in ventilator-associated pneumonia in critically ill patients	0	No changes	1		6.4	EN: Gastrostomy vs. Nasogastric Feeding

6.5	HMB	1)Supplementation with ß hydroxyl methyl butyrate (HMB) has no effect on mortality or duration of mechanical ventilation. 2)Supplementation with ß hydroxyl methyl butyrate (HMB) may be associated with an increase in ICU length of stay. 3)Supplementation with ß hydroxyl methyl butyrate (HMB) is associated with a significant increase in hospital length of stay. 4)Supplementation with ß hydroxyl methyl butyrate (HMB) is associated with better nitrogen balance in trauma patients.	1	Compared to standard enteral nutrition, Supplementation with ß hydroxyl methyl butyrate (HMB) 1) has no effect on mortality or duration of mechanical ventilation. 2) has no effect on ICU length of stay. 3)has no effect on hospital length of stay. 4) may be associated with better nitrogen balance in trauma patients. 5) does not inhibit femoral muscle loss in heterogenous ICU patients.	2	4.7	Composition of EN: HMB
7.1	EN + PN	1)PN in combination with EN has no effect on mortality in critically ill patients 2)PN in combination with EN has no effect on infectious complications in critically ill patients 3)PN in combination with EN may be associated with a reduction in hospital length of stay but has no effect on ICU LOS in critically ill patients 4)PN in combination with EN has no effect on duration of ventilation in critically ill patients. 5)PN in combination with EN may be associated with some improvements in long-term physical function of surviving critically ill patients. 6)PN in combination with EN is associated with a higher cost compared to EN alone.	1	In critically ill patients, the combined use of EN and PN, compared to EN alone, 1) may be associated greater amounts of macronutrients administered 2) has no effect on mortality, infectious complications, duration of mechanical ventilation, ICU and Hospital LOS. 3) may be associated with some improvements in long-term physical function of surviving critically ill patients. 4) may be associated with a trend towards reduced mortality in nutritionally at-risk patients but data are too sparse to make any conclusions really.	12	7.1	Combination of Enteral and Parenteral Nutrition
7.2	Early vs delayed sPN	Compared to late initiation of PN (day 8) in patients receiving EN, early supplemental PN 1) has no effect on mortality in critically ill patients. 2) may be associated with an increase in infectious complications in critically ill patients. 3) may be associated with a longer ICU and hospital length of stay in critically ill patients. 4) may be associated with an increase in duration of ventilation in critically ill patients. 5) may be associated with higher total health care costs per patient. 6) has no effect on functional status outcomes in critically ill patients.	0	No changes	1	7.2	Early vs. Delayed Supplemental Parenteral Nutrition
8	PN vs SOC	Compared to standard of care, 1) Parenteral nutrition has no effect on mortality in critically ill patients. 2) Parenteral nutrition has no effect on infectious complications in critically ill patients. 3) Parenteral nutrition has no effect on hospital stay. 4) Parenteral nutrition may be associated with decreased time on the ventilator. 5) Parenteral nutrition is associated with improved quality of life following critical illness but has no effect on physical function.	0	No changes	3	8.1	PN vs. Standard Care

9.1	BCAA	Supplementation with higher amounts of BCAA 1) may be associated with a reduction in mortality when compared to standard amounts of BCAA in ICU patients. 2) has no effect on infections, LOS or ventilated days in ICU patients.	0	No changes	6		9.1b	Composition of PN: Branched Chain Amino Acids
9.2	*Type of Lipids*	*1) LCT reducing strategies, also known as soybean oil sparing strategies, have no effect on mortality or infections in critically ill adults.* *2) LCT reducing strategies may be associated with a reduction in hospital LOS and duration of ventilation.* *3) LCT reducing strategies are associated with a reduction in ICU LOS.* *4) LCT + MCT emulsions, compared to LCT, have no effect on mortality or ICU length of stay in critically ill patients.* *5) IV fish oils/fish oil containing emulsions vs LCT + MCT or LCT (or vs no IV soybean oil) have no effect on mortality or hospital LOS.* *6) IV fish oils/fish oil containing emulsions vs LCT + MCT or LCT (or vs no IV soybean oil) are associated with a reduction in ICU LOS and infections.* *7) IV fish oils/fish oil containing emulsions vs LCT + MCT or LCT (or vs no IV soybean oil) may be associated with a reduction in duration of ventilation.* *8) Olive Oil containing emulsions, compared to LCT, have no effect on mortality or ICU/hospital LOS.* *9) Olive Oil containing emulsions, compared to LCT, may be associated with increased infections.* *10) Olive Oil containing emulsions, compared to LCT, are associated with a reduction in duration of ventilation.*	*2*	*Paper in progress*			9.3	Composition of PN: Type of lipids
9.3	Zinc	Zinc supplementation given IV/PN (either alone or in combination with other antioxidants) may be associated with a reduction in mortality in critically ill patients.	0	No changes	5		12.3	Antioxidant Nutrients: Parenteral Zinc (alone or in combination)
9.4a	PN Glutamine	1) IV glutamine supplementation may be associated with a reduction in overall mortality and is associated with a significant reduction in hospital mortality but the observed treatment effect is observed exclusively in small, single center studies. 2) IV glutamine supplementation may be associated with a reduction in infectious complications but has no effect on ventilator associated pneumonia. 3) IV glutamine supplementation may be associated with a reduction in ICU LOS and is associated with a reduction in hospital LOS. 4) There is no difference between IV glutamine supplementation given as free glutamine vs dipeptides or isonitrogenous vs non isonitrogenous feeding. 5) IV glutamine supplementation has no effect on quality of life in the critically ill.	1	1) IV glutamine supplementation may be associated with a reduction in overall mortality, infectious complications, ICU and hospital length of stay but the observed treatment effect is observed exclusively in small, single center studies. 2)There is no difference between IV glutamine supplementation given as free glutamine vs dipeptides or isonitrogenous vs. non isonitrogenous feeding. 3) IV glutamine supplementation has no effect on quality of life in the critically ill.	33		9.2a	Composition of PN: Glutamine Supplementation

9.4b	EN+PN Glutamine	No new articles	0	No changes	2		9.2b	Composition of PN: Glutamine Supplementation + EN Supplementation
9.4c	EN vs PN glutamine	No new articles	0	No changes	2		9.2c	omposition of PN: EN + PN Glutamine
9.5	PN Protein and Amino Acids	1) A higher vs lower IV amino acid dose has no effect on ICU and hospital mortality, ICU and hospital LOS and mechanical ventilation duration in critically ill patients. 2) A higher vs lower IV amino acid dose may be associated with improved muscle mass, strength and functional performance	1	A higher vs lower IV amino acid dose: 1) has no effect on ICU and hospital mortality, ICU and hospital LOS and mechanical ventilation duration in critically ill patients. 2) may be associated with improved muscle mass, strength, functional performance and improved nitrogen balance.	3		9.1a	Composition of PN: Protein and Amino Acids
10.1	PN dose	1) Low dose parenteral nutrition without lipids maybe associated with a reduction in infections in critically ill patients. 2) Insufficient data to comment on the effects of low dose parenteral nutrition in obese patients.	0	No changes	4		10.1	Strategies to optimize PN: Hypocaloric vs Standard PN
10.2	Lipid Use	1) Withholding lipids high in soybean oil has no effect on mortality. 2) Withholding lipids high in soybean oil is associated with a reduction in infections in critically ill patients 3) Withholding lipids high in soybean oil may reduce LOS and duration of ventilation in trauma patients	0	No changes	2		10.2	Strategies to optimize PN: Use of lipids vs No lipids
10.3	Mode of lipid delivery	Lipids via TNA or via piggyback has no effect on infections in critically ill patients.	0	No changes	1		10.3	Strategies to optimize PN: Mode of lipid delivery
10.4a	Optimal glucose control: insulin	1) Intensive insulin therapy may be associated with a reduction in overall mortality. 2) Intensive insulin therapy has no effect on infections. 3) Intensive insulin therapy is associated with a reduction in ICU length of stay and duration of ventilation. 4) Intensive insulin therapy has no effect on hospital length of stay. 5) Intensive insulin therapy is associated with an increase in hypoglycemia.	0	No changes	26		11.1	Optimal glucose control: Insulin therapy
10.4b	Optimal glucose control: insulin vs CHO restriction	1) Carbohydrate restricted formula plus insulin therapy aimed at blood sugar range (<180 mmol/L) vs intensive insulin therapy to maintain blood sugars < 150 mmol/L, has no effect on mortality, incidence of pneumonia or ICU length of stay in critically ill patients. 2) Carbohydrate restricted formula plus insulin therapy aimed at blood sugar range (<180 mmol/L) vs, vs intensive insulin therapy to maintain blood sugars < 150 mmol/L, is associated with a decrease in hypoglycemia in critically ill patients	0	No changes	1		11.2	Optimal glucose control: Carbohydrate restricted formula + insulin therapy

11.1	Vitamins and trace elements	1) Antioxidant nutrients are associated with a reduction in overall mortality in critically ill patients. 2) Antioxidant nutrients may be associated with a reduction in overall infectious complications in critically ill patients. 3) Antioxidant nutrients have no effect on ICU length of stay in critically ill patients. 4) Antioxidant nutrients have no effect on hospital length of stay in critically ill patients. 5) Antioxidant nutrients are associated with a reduction in duration of ventilation in critically ill patients. 6) Antioxidant nutrients are not associated with improvements in QOL in critically ill patients.	0	No changes	28		12.1	Antioxidant Nutrients: Combined Vitamins and Trace Elements
11.2	PN Selenium	1) IV/parenteral selenium supplementation (alone or in combination with other antioxidants) has no effect on mortality in critically ill patients 2) IV/parenteral selenium supplementation (alone or in combination with other antioxidants) may be associated with a reduction in infectious complications in the critically ill but if real, the treatment effect is likely small. 3) IV/parenteral selenium supplementation (alone or in combination with other antioxidants) has no effect on ICU length of stay or hospital length of stay 4) IV/parenteral selenium supplementation (alone or in combination with other antioxidants) may be associated with a reduction in ventilator days. 5) IV/parenteral selenium supplementation (alone or in combination with other antioxidants) has no effect on the QOL of critically ill patients	0	No changes	22		12.2	Antioxidant Nutrients: Parenteral Selenium (alone or in combination)
11.3	*Vitamin C*	*1) IV Vit C supplementation may be associated with lower 28 day mortality in critically ill patients.* *2) IV Vit C supplementation has no effect on ICU LOS or ventilator free days in critically ill patients.*	*11*	*Paper in progress*			12.4	Vitamin C
12.0	*Vitamin D*	*1) Vitamin D3 supplementation in critically ill adult patients may be associated with a reduction in hospital mortality, 28-day mortality and 6-month mortality, particularly in patients with a severe reduction in Vit D levels (<12 ng/ml or <30 nmol/L).* *2) Vitamin D3 supplementation in critically ill adult patients may be associated with a reduction in duration of mechanical ventilation.* *3) Vitamin D3 supplementation in critically ill adult patients has no effect on infections and ICU and hospital length of stay.*	*7*	*Paper in progress*			12.5	Vitamin D
13.0	Thiamine	1) Thiamine supplementation has no effect on mortality, LOS or ventilator days in the general septic critically ill patient. 2) Thiamine supplementation is associated with reduced mortality in critically ill septic patients with thiamine deficiency.	0	No changes	1		12.6	Thiamine