

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)

INDEX

- AAP recommendations 5–7, 136
- Adamkin, D.H. 30
- adipose tissue deposition
 - causes of excess 25, 176
 - current strategies promoting 102
 - and hepatic dysfunction 71
 - visceral fat in preterm infants 180–181
- albumin, measures of serum 149
- alkaline phosphatase, elevated levels of 147–149
- aluminum, and metabolic bone disease 46
- amino acids
 - early TPN administration of 37
 - benefits of 40–41
 - practical tips 41–42
 - prevention of metabolic shock 39–40
 - infant formulas replacing protein with 167–168
 - and prevention of hyperglycemia 25
 - role in fetal nutrition 39
- anemia, detrimental effects of 135
- antimicrobials 73, 170–171
- antioxidants
 - and iron toxicity 136
 - selenium 57
 - vitamin E 53–54
- arachidonic acid (ARA)
 - higher in breast-fed infants 119
 - link to improved vision 112
 - supplements 119–120
- assessment *see* nutritional assessment
- bilirubin binding 30–31
- biotin, signs of deficiency in 54
- body weight, assessment of 13, 144–145
- bowel-lengthening procedures 170
- Brans, Y.W. 30
- breast milk *see* human milk
- bronchopulmonary dysplasia (BPD) 21, 51
 - length measurements 146
 - vitamin A protecting against 53

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)**184** Index

- calcium (Ca) 45–46
 - clinical signs of deficiencies in 48, 132–133
 - low in soya formulas 125
 - in premature infant formulas 118
 - recommended intake 58
 - enteral guidance 131–134
 - TPN guidance 46
- calcium:phosphorus ratio 45, 47, 48, 118
- caloric intake for enteral feeding 18–19
- carbohydrates
 - dangers of excessive 19, 176
 - in infant formulas 118, 123, 138
 - intravenous administration 23–27
- carnitine supplementation 33, 34
- chloride (Cl⁻) electrolyte management 9
- chloride (Cl⁻), recommended intake 58
- cholestasis, TPN-associated 69–70
 - and excessive calories 71
 - medications for 73
 - parenteral and enteral nutrition 71–73
 - potential causes of 70–71
 - practical tips 74–75
- cholestyramine, SBS diarrhea 73, 170–171
- colon, effects of loss of 165
- colostrum 84, 91,
- copper (Cu)
 - monitoring of 75, 166
 - recommended intake of 58
- cow-milk-based formulas 123–124
- diarrhea
 - effect of drugs for SBS 170–171
 - fiber reducing 169
 - short bowel syndrome (SBS) 165
- diuretics, adverse effects of long-term use 46
- docosahexanoic acid (DHA)
 - higher in breast-fed infants 119
 - link to improved vision 112
 - supplements 119–120
- donor breast milk (DBM) 91
 - feeding guidelines 92, 94
- early total parenteral nutrition 37
 - of amino acids 37, 39–42
 - see also* total parenteral nutrition
- Ehrenkranz, R.A. 3–4, 5, 177
- electrolytes, management of 9–10, 166
- energy expenditure
 - of critically ill infants 20
 - factors increasing 17–18
 - measurement of 17
- energy requirements
 - for catch-up growth 105–106
 - of growing preterm infant 18–19
 - practical tips 20
- enteral nutrition 79–80

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)Index **185**

- conservative feeding strategies
 - 85–86
- criteria for feeding readiness
 - 84
- factor in etiology of NEC 80–81
- gastric residual volume (GRV)
 - 84–85
- guidelines practicum 89
 - choice of feed 90–91
 - contraindications 89–90
 - feeding intolerance 97–99
 - practical tips 99–100
 - recommended intake 91, 92–96
- low rate increments preventing
 - NEC 81–82
- and milk availability 83–84
- practical tips 86–87
- protein 101–108
- role in TPNAC 73
- and umbilical artery catheters (UACs) 82–83
- withholding vs. early
 - introduction 81
- essential fatty acid deficiency (EFAD) 29
- extrauterine growth restriction
 - 1, 153
- fat calories
 - in premature infant formulas
 - 117, 167
 - toleration of, infants with SBS
 - 168
- fat deposition *see* adipose tissue deposition
- fatty acids
 - and carnitine-free TPN 33
 - effect on development of TPNAC 72
- feeding intolerance, assessment
 - of clinical signs 97–99
- fetal nutrition 39
- fiber, reducing diarrhea 169
- fluid and electrolytes
 - management 9–10
 - insensible water loss, factors affecting 10–11
 - practical tips 13–14
 - sodium intake, restriction
 - of 12–13
 - urine specific gravity 11–12
- folate, signs of deficiency
 - in 54
- formula milk 91
 - hypercaloric 137–138
 - need for higher protein content 106–108
 - post-discharge 154–159
 - for premature infants 117
 - composition of available
 - 120–121
 - constituents of 117–119
 - practical tips 121
 - protein hydrolysate formulas
 - 127
 - for short bowel syndrome
 - infants 167–168
 - soy-based formulas 125
 - standard formulas
 - 123–124
 - practical tips for 124

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)**186** Index

- free fatty acid/albumin ratio (FFA/ALB) IVL infusion 30–31
- gastric residuals 84–85, 87
 - clinical assessment 98–99
- glucose
 - effect of insulin on 24–25
 - effects of excessive on
 - respiratory gas exchange 25–26, 27
 - elevated production leading to hyperglycemia 23
 - infusion rate (GIR) 23, 26
 - intolerance 24, 40
 - source of TPN energy 19
 - in urine increasing urine osmolality 12
- growth
 - anthropometric measures 144–147
 - biochemical measures 147–150
 - in the NICU, link to later neurodevelopment 3–4, 141–142
 - post-discharge 155–159
- growth charts 147
- head circumference (HC)
 - link to neurodevelopmental/ growth outcomes 141
 - measurement of 146–147
- hepatic dysfunction 70, 71
- human milk 178–179
 - deficiencies of unfortified 111–112
- developmental advantages 112
 - due to higher DHA and ARA acids 119
- feeding of choice 90–91
- fortification
 - with calcium and phosphorus 131–132
 - for post-discharge feeding 159
 - with protein 103
 - strategies 113–114
 - with vitamin E 135–136
- hypercaloric feeding strategy 138–139
- nonnutritional advantages 112–113
- practical tips 114
- problems with availability 83–84
- protective against NEC 83, 112
- hyperbilirubinemia 69, 70, 166
- hypercaloric feeding strategy 137–139
- hyperglycemia
 - amino acids preventing 25
 - cause of 23–24
 - insulin therapy 24–25, 26–27
 - strategies to manage 24
- ileocecal valve, effects of loss of 165
- ileum, function of and effects of resection 164–165
- insensible water losses (IWL), factors affecting 10–11
- insulin

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)Index **187**

- administration and monitoring
 - 26–27
- and lipogenesis 24–25
- resistance in adolescence,
 - link to rapid early growth 176–177
- intestine, adaptation of following surgical resection 165–166
- iron content
 - in premature infant formulas 118
 - in standard formulas 123
- iron deficiency
 - anemia, detrimental effects of 135
 - clinical signs of 60
- iron supplementation 135
 - concerns with TPN 59
 - for first year of life 136
 - recommendations 58, 59–60
- iron toxicity, avoidance of 136
- iso-osmolality 12
 - of premature infant formula 119
- jejunum, effects of removal 164
- lactose
 - in premature infant formulas 118
 - in standard infant formulas 123
- lean mass vs. fat mass, promotion
 - of 102–103, 178
- length measurements 145–146
- light degradation of vitamins 51
- lipids
 - adverse effects on pulmonary function 31–33
 - complications with critically ill, ventilated infants 30–31
 - impact on development of TPNAC 72
 - lipid-soluble vitamins, recommended TPN intake 51
 - practical tips 33–34
 - preventing EFAD 29
 - for TPN 29–30
 - and vitamin A delivery 54
 - lipogenesis 24–25, 25–26, 27
 - loperamide 170
 - Lucas, A. 3, 80, 83, 111–112, 175, 176–177
 - magnesium (Mg)
 - recommended intake 58
 - enteral guidance 131
 - parenteral guidance 46
 - metabolic bone disease
 - and aluminum 46
 - causes of 132–133
 - risk factors for 134
 - see also* osteopenia
 - “metabolic shock,” amino acids
 - preventing 39–40
 - minerals, recommendations
 - for 45–48
 - minimal enteral nutrition (MEN)
 - 86, 177
 - multivitamin supplementation, TPN 51, 55, 75

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)**188** Index

- necrotizing enterocolitis (NEC)
 - etiology of 80–81
 - higher in formula-fed infants 83
 - preventative strategies
 - conservative strategies 85–86
 - limiting feeding increments 81–82
 - withholding of feeds 81
 - and umbilical artery catheters 82–83
- neonatal cholestasis 69–74
 - practical tips 74–75
- neonatal intensive care units (NICUs)
 - goals of promoting growth 3–4
 - growth study 141–142
- neurodevelopment
 - amino acids promoting 37, 40–41
 - and growth in the NICU 141–142
 - human milk promoting 112, 119
 - optimization of 3–4
 - pros and cons of early
 - aggressive nutrition 176–177
- NICHD Growth Observation study 1–2, 175, 177
- nonoliguric hyperkalemia 23, 40
- nonprotein calories (NPC) 19
- nutritional assessment 143
 - biochemical tests 147–149
 - body weight 144–145
 - head circumference (HC) 146–147
 - length measurements 145–146
 - serum albumin measures 149
 - skin-fold measures 147
- omega–3 fatty acids, role in preventing TPNAC 72
- omega–6 fatty acids, contributing to TPNAC 72
- osteopenia 132–133
 - calcium and phosphorus deficiency 45–46, 48
 - and elevated alkaline phosphatase levels 147–149
 - and vitamin D supplementation 131
- parenteral nutrition *see* total parenteral nutrition
- patent ductus arteriosus (PDA) 90
- pectin, soluble fiber 169
- phenobarbital 73
- phosphorus (P)
 - effects of deficiency in 45, 48, 132–133
 - low in human milk 111–112, 131–132
 - low in soya formulas 125
 - in premature infant formulas 118
 - recommended intake 58
 - enteral guidance 131, 133
 - parenteral guidance 46

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)Index **189**

- polyunsaturated fatty acids (PUFA)
 - in lipid emulsions 32–33
 - impact on TPNAC 72
 - and neurodevelopmental outcome 119
- post-discharge formula (PDF) 154–157
- post-discharge strategies 153
 - breast feeds 159
 - formula feeds 154–159
 - practical tips 159–160
- potassium (K)
 - effect of K⁺ leakage 40
 - ion (K⁺) in intracellular water 9
 - recommended intake of mineral 58
- premature infant formulas 117
 - composition of 117–121
 - practical tips for 121
- preterm formula (PTF) 154–159
- protein
 - in fortified human milk 103
 - inadequacy of 106
 - and later insulin resistance 176–177
- protein hydrolysate formulas 127
- protein intake
 - estimation methods 101
 - inadequate for “catch-up” growth 104–106
 - and lean body mass gain 102–103
 - new recommendations 106–108
- pulmonary function, adverse effects of IVL 31–33
- resting metabolic rate (RMR), measurement of and factors influencing 17–18
- selenium 57, 58, 60
- serum albumin measures 149
- short bowel syndrome (SBS) 163–164, 171–172
 - clinical presentation 164–165
 - intestinal adaptation 165–166
 - lengthening procedures 170
 - nutrition therapy 166–169
 - pharmacologic therapy 170–171
 - soluble fiber 169
 - tips for managing nutrition 172–173
- skin-fold measures 147
- small bowel bacterial overgrowth 171
- sodium (Na)
 - ion (Na⁺) in extracellular water 9
 - in premature infant formula 118–119
 - recommended intake 58
 - restriction of 12–13
- soluble fiber 169
- soy-based formulas 125

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)**190** Index

- standard infant formulas 123–124
- starvation response 40
- term formula (TF) 156–158
- thiamin, signs of deficiency in 54
- total body water (TBW) 9
- total parenteral nutrition (TPN)
 - benefits of early 63
 - and cholestasis 69–75
 - energy requirements 19
 - growth advantages of early
 - administration of amino acids 37–41
 - mineral and vitamin D requirements 45–48
 - overall guide, tolerance and weaning 63
 - recommended vitamin intake 51–55
- TPNAC (total parenteral nutrition-associated cholestasis) 69–75
- trace elements 57
 - infants with cholestasis 75
 - monitoring in SBS infants 166, 173
 - practical tips 60
 - recommended intake 58
- transthyretin (prealbumin), marker of serum albumin 149
- umbilical artery catheterization (UAC) 82–83
- urine osmolality, prediction of 11–12
- ursodial 73–74, 171
- very low birth weight (VLBW) infants
 - goal of nutritional management 4–5, 175–176
 - nutritional “map” of 2
 - slower growth rate 1, 5
- visceral adiposity and rapid early growth 180–181
- vitamin A
 - degraded by light exposure 51
 - guide to TPN 53
 - improved delivery of 54
 - recommended intake 52
- vitamin B12 deficiency, following resection of ileum 164
- vitamin D
 - clinical signs of deficiency in 54, 132–133
 - recommended intake
 - enteral guidance 131
 - parenteral guidance 46, 52
- vitamin E
 - clinical signs of deficiency in 54
 - guide to TPN 53–54
 - supplementation 135–136
- vitamin K 52, 54

Cambridge University Press

978-0-521-73246-8 - Nutritional Strategies for the Very Low Birthweight Infant

David H. Adamkin

Index

[More information](#)Index **191**

- water-soluble vitamins,
 - recommended TPN
 - intake 51
- weaning infant from TPN to oral diet 63, 164, 166
- weight, assessment of 13, 144–145
- weight gain
 - energy cost of 18–19
 - lean body mass gain more
 - useful 178
 - and promotion of lean mass 102
 - via lipogenesis 24–25
- weight loss during first week of life 9–10, 13, 144–145
- withholding of feeding, early
 - NEC prevention
 - strategy 81
- zinc 58, 59, 60