

VITAMIN D (COLECALCIFEROL, VITAMIN D₃)

Indication	<ul style="list-style-type: none"> Prevention of vitamin D deficiency¹ in the following '<i>at risk neonates</i>'^{1,2} <ul style="list-style-type: none"> Less than 34 weeks gestation at birth Less than 2000 g Liver disease or terminal ileal resection If maternal vitamin D deficiency If maternal dark skin or with limited sun exposure (e.g. veiled) 			
ORAL	Presentation	<ul style="list-style-type: none"> Calculate dose according to supplied presentation (may vary) Oral solution: 1000 units in 0.2 mL (25 microgram in 0.2 mL) 		
	Dosage (supplementation)	Indication	Dose ^{2,3}	Duration
		<ul style="list-style-type: none"> If receiving pentavite®, cease and change to vitamin D at 34 weeks 	400 units daily	Until solids introduced
		<ul style="list-style-type: none"> Maternal vitamin D deficiency in pregnancy that normalised (more than 50 nmol/L) before birth Maternal dark skin or veiled with unknown vitamin D status 	400 units daily	6 months
		<ul style="list-style-type: none"> Maternal vitamin D deficiency 25–50 nmol/L 	400 units daily	12 months
		<ul style="list-style-type: none"> Maternal vitamin D deficiency less than 25 nmol/L 	1000 units daily	for 3 months
		then		
		400 units daily	until 12 months	
Preparation	<ul style="list-style-type: none"> Draw up prescribed dose into oral/enteral syringe 			
Administration	<ul style="list-style-type: none"> Oral/OGT/NGT May be given with or without feed 			
Special considerations	<ul style="list-style-type: none"> A variety of regimens are commonly accepted and local protocols may differ For '<i>at risk neonate</i>' less than 34 weeks *current gestational age <ul style="list-style-type: none"> Prescribe pentavite® until *current gestational age is 34 weeks (pentavite® provides 405.2 units of vitamin D₃ in 0.45 mL) If known neonatal vitamin D deficiency at any age, prescribe colecalciferol (vitamin D only product) instead of pentavite® For '<i>at risk neonate</i>' at or more than 34 weeks *current gestational age (when only vitamin D required) <ul style="list-style-type: none"> Cease pentavite® (if prescribed) and change to vitamin D as per recommended dosage above If no previous pentavite®, commence on day 7 of life (if oral feeds commenced and tolerated) Vitamin D is required irrespective of method of feeding (breast milk or formula)² <ul style="list-style-type: none"> If receiving HMF or LBW infant formula (full feeds), vitamin D supplementation not usually required For formula fed babies, sufficient vitamin D intake (400 units/day) occurs only when intake is over 1L/day² Continue vitamin D as the post discharge supplement until 6 months of age <ul style="list-style-type: none"> Advise parents of the risks of hypervitaminosis if other vitamin preparations are given in addition to vitamin D post discharge For treatment of confirmed vitamin D deficiency, seek expert advice to individualise dosage 1 microgram of colecalciferol³ is equivalent to 40 units of vitamin D₃ 			
Monitoring	<ul style="list-style-type: none"> Not routinely required If indicated by clinical condition (e.g. treatment of vitamin D), at SMO discretion 			



Compatibility	<ul style="list-style-type: none"> • Not applicable
Incompatibility	<ul style="list-style-type: none"> • Not documented
Interactions	<ul style="list-style-type: none"> • Can increase absorption of calcium and phosphorus⁴ • If given with thiazide diuretics, increased risk of hypercalcaemia, as thiazide diuretics reduce the urinary excretion of calcium⁴
Stability	<ul style="list-style-type: none"> • Store as per product information • Discard 4 weeks after opening or as per local infection control policy (limited evidence)
Side effects	<ul style="list-style-type: none"> • Most adverse effects related to effects of hypercalcaemia⁵ <ul style="list-style-type: none"> ○ Headache reported as common¹, may cause baby to be unsettled ○ Vomiting¹, constipation¹, muscular weakness¹, weight loss¹, kidney stones⁵, polyuria¹
Actions	<ul style="list-style-type: none"> • Hormone precursor manufactured by the body and activated by physiologic reactions⁶ • In the skin, the sun's ultraviolet rays convert 7-dehydroergosterol into vitamin D₃ which is then hydroxylated in the liver to 25-hydroxycholecalciferol; undergoing a second hydroxylation in the kidney to form 1,25-dihydroxycholecalciferol (calcitriol), the most active form⁶ of vitamin D • Regulates calcium homeostasis and bone metabolism⁵ • Promotes bone mineralisation⁵ • Increases intestinal absorption and renal reabsorption of calcium and phosphate⁵ • Assists with maintaining normal thyroid function⁵
Abbreviations	HMF: human milk fortifier, LBW: low birth weight, OGT: orogastric, NGT: nasogastric * <i>Current gestational age is the same as postmenstrual age (PMA)</i>
Keywords	vitamin deficiency, penta-vite, vitamin D, vitamin D ₃ , cholecalciferol, colecalciferol

The Queensland Clinical Guideline *Neonatal Medicines* is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

References

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6. Tan M, Abrams S, Osborn D. Vitamin D supplementation for term breastfed infants to prevent vitamin D deficiency and improve bone health. Cochrane Database of Systematic Reviews. [Internet]. 2020, [cited 2021 September 02]. Issue 12. Art No.: CD013046. DOI:DOI:10.1002/14651858.CD013046.pub2.

Document history

ID number	Effective	Review	Summary of updates
NMedQ22.075-V1-R27	11/01/2022	11/01/2027	Endorsed by Queensland Neonatal Services Advisory Group (QNSAG)
NMedQ22.075-V2-R27	21/04/2022	11/01/2027	Added: commencement if no previous pentavite® Added: not usually required if LBW formula or HMF

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