

Vitamin D deficiency in Aboriginal children and adolescents in metropolitan and rural Western Australia



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Background

- Incidence of low vitamin D is rising worldwide
- In WA refugee children: 45% deficient; 54% insufficient
- Roles of vitamin D:
 - Bone metabolism
 - Extra-skeletal roles
- Vitamin D supplements may be given PO or IM
 - Traditional daily dosing
 - “Stoss-therapy” or depot treatment

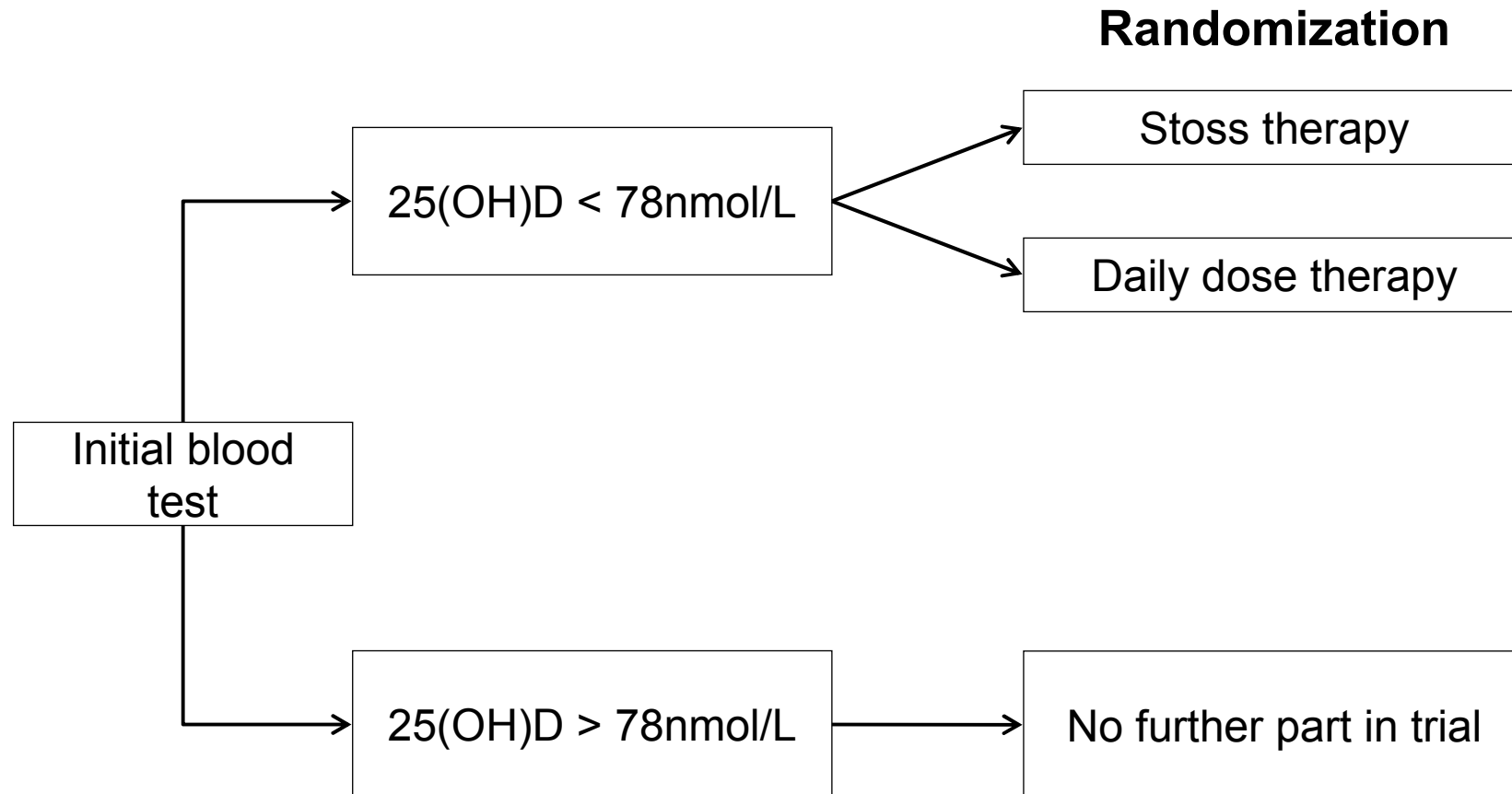
Hypothesis

- Vitamin D deficiency/insufficiency is a common problem in Aboriginal children and is more common for those in urban areas
- Depot vitamin D more effective than daily

Research Plan and Methods

- The study has two parts:
(1) Descriptive, (2) Stratified randomized controlled trial
- Ethics approval from PMH, WAAHIEC, and support from the local AMS
- Recruitment:
 - Aboriginal children; aged 3 months – 16 years; requiring blood or IV access; previously well children
- Biological, biochemical and social markers

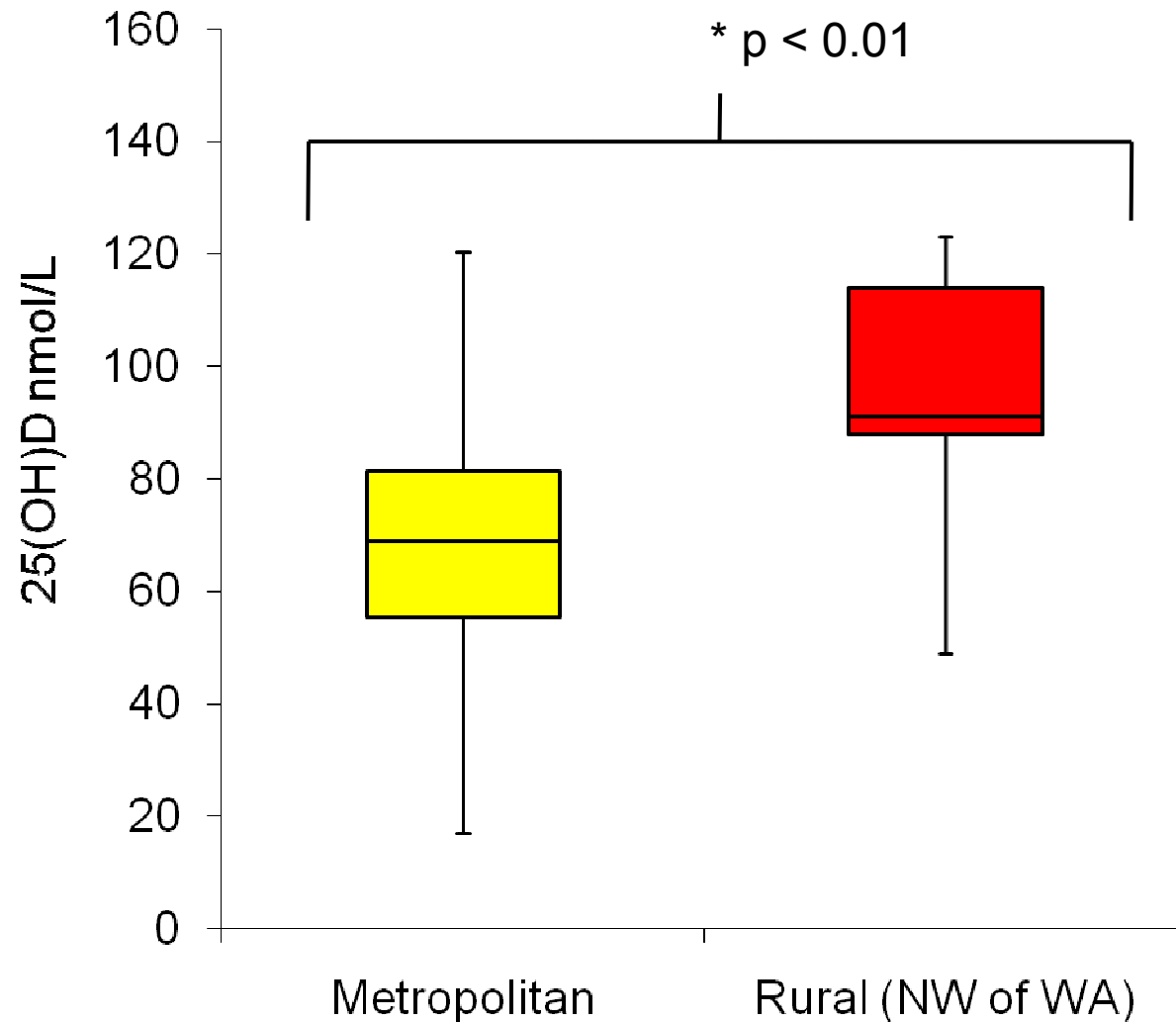
Methods



Results – Metro and Rural Site

	Metropolitan Site	Rural Site (North West WA)	P-Value
Population (n)	39	14	
Gender (% males)	64%	64%	NS
Age in years (mean±SD)	6.5 ± 4.3	6.2 ± 4.2	NS
Weight z-score (mean±SD)	-0.09 ± 1.1	-0.05 ± 2.53	NS
25(OH)D (mean±SD)	71 ± 26	94 ± 25	<0.01
Sun exposure score (mean±SD)	67 ± 48	73 ± 47	NS
Skin phototype (mean±SD)	4.3 ± 0.6	4.8 ± 0.7	<0.01

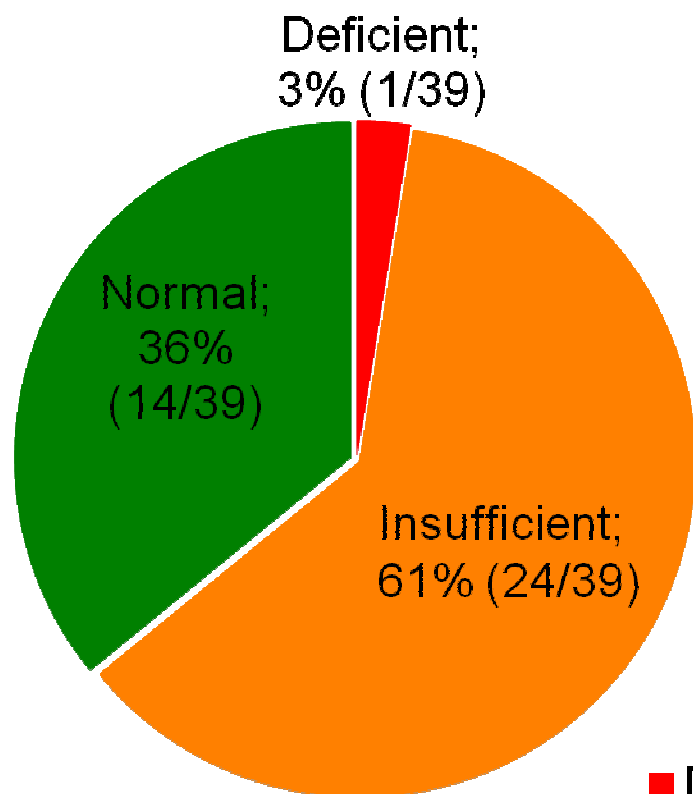
Comparison of Vitamin D by Site



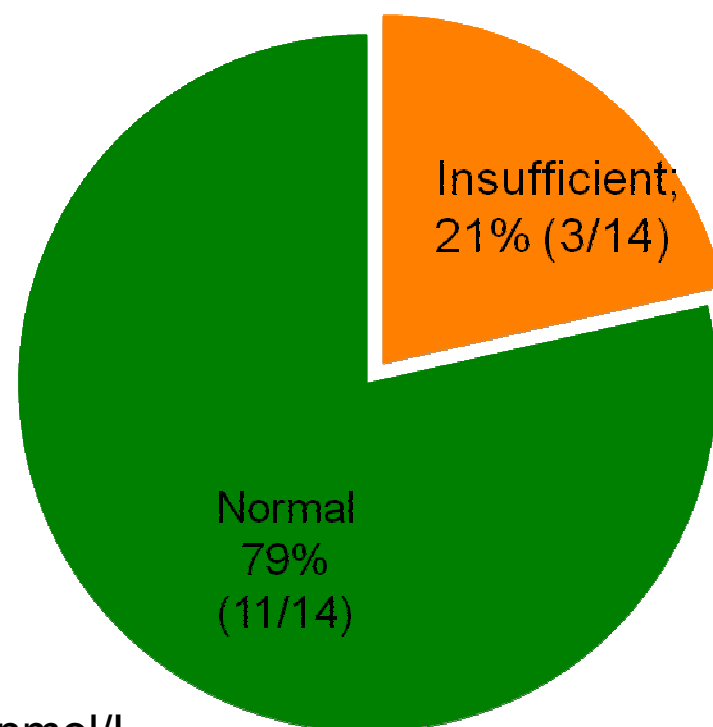
Box plot showing median and 1.5 x IQR

Percentage of low Vitamin D by Site

METROPOLITAN SITE



RURAL SITE



- Deficient : < 25nmol/L
- Insufficient : 25-78nmol/L
- Normal : ≥78nmol/L

Response to vitamin D₃ supplementation (early results)

25 (OH) vitamin D [nmol/L], average \pm SD

	Daily (n=2)	Stoss therapy (n=4)
Baseline	61 \pm 0.7	51 \pm 6.7
6 weeks	109 \pm 10	78 \pm 19
Change	48 \pm 9	27 \pm 24

Discussion

- Vitamin D insufficiency is common in the metropolitan group
 - Predictors
 - Reasons: lifestyle changes, inadequate dietary vitamin D
- Vitamin D is uncommon in rural NW of WA
 - Weather and latitude
 - Small numbers
- Early results show that there is a bigger response with daily therapy
 - Pekkarinen et al. Clin Endocrinol 2009

Aboriginal health research

- Research in Aboriginal health has been:
 - Challenging
 - Eye-opening
 - Rewarding
- Hope to continue useful research and build capacity within communities
- Start building relationships between PMH and communities



Acknowledgements

- People, family and communities
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