
PROJECT Ntshembo:

Improving adolescent health and interrupting mother-infant transfer of health risk in Africa



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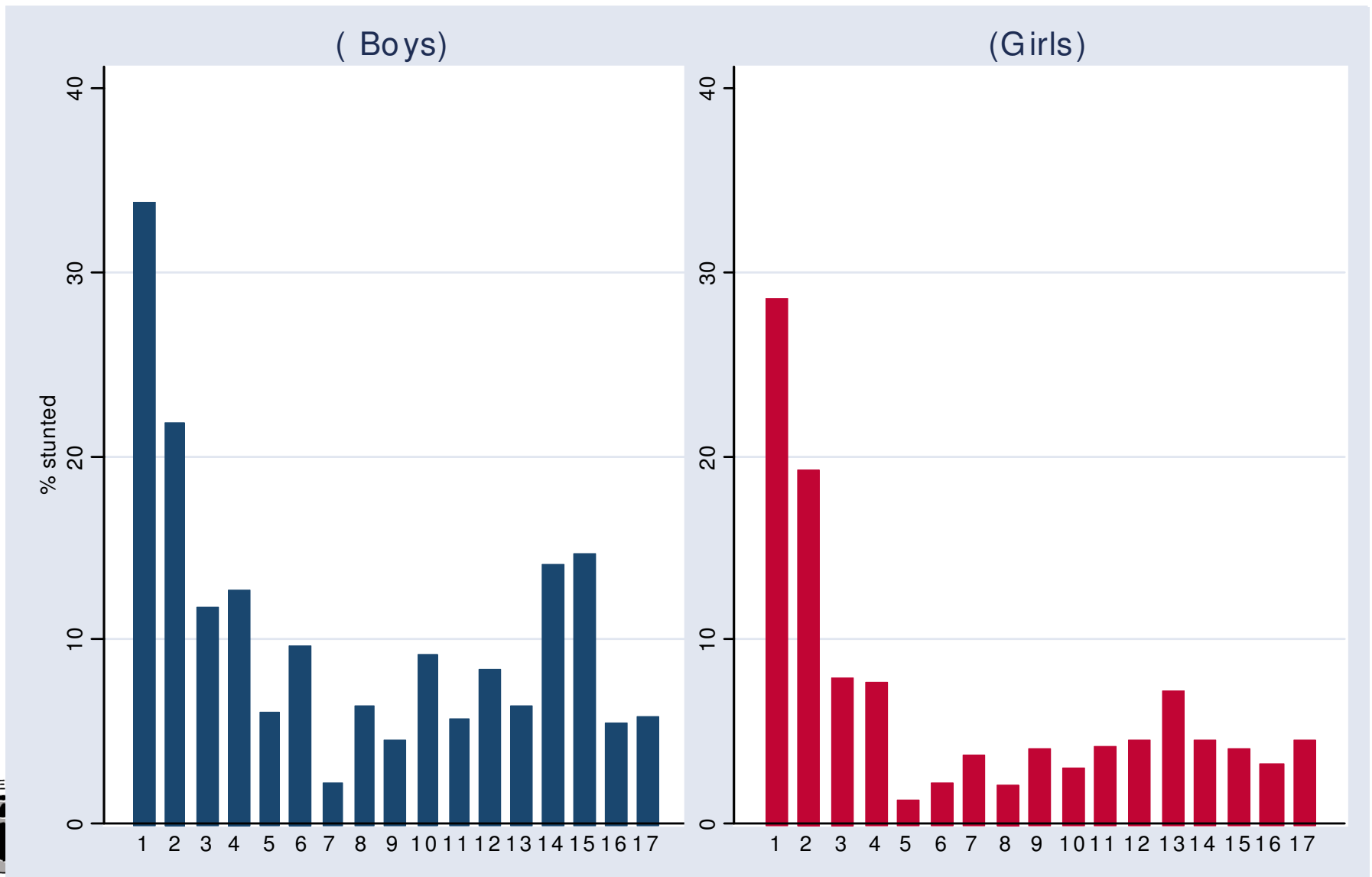
Overview

- Transitions across countries
- Transitions within countries - South African example
- Emerging metabolic disease risk (central to chronic NCD)
- Vicious cycle: mother-infant transfer of health risk
- How can we intervene and disrupt this cycle?



Nutritional transition, Agincourt 2007

Age & Sex Patterns of Stunting for 1-17.9y children



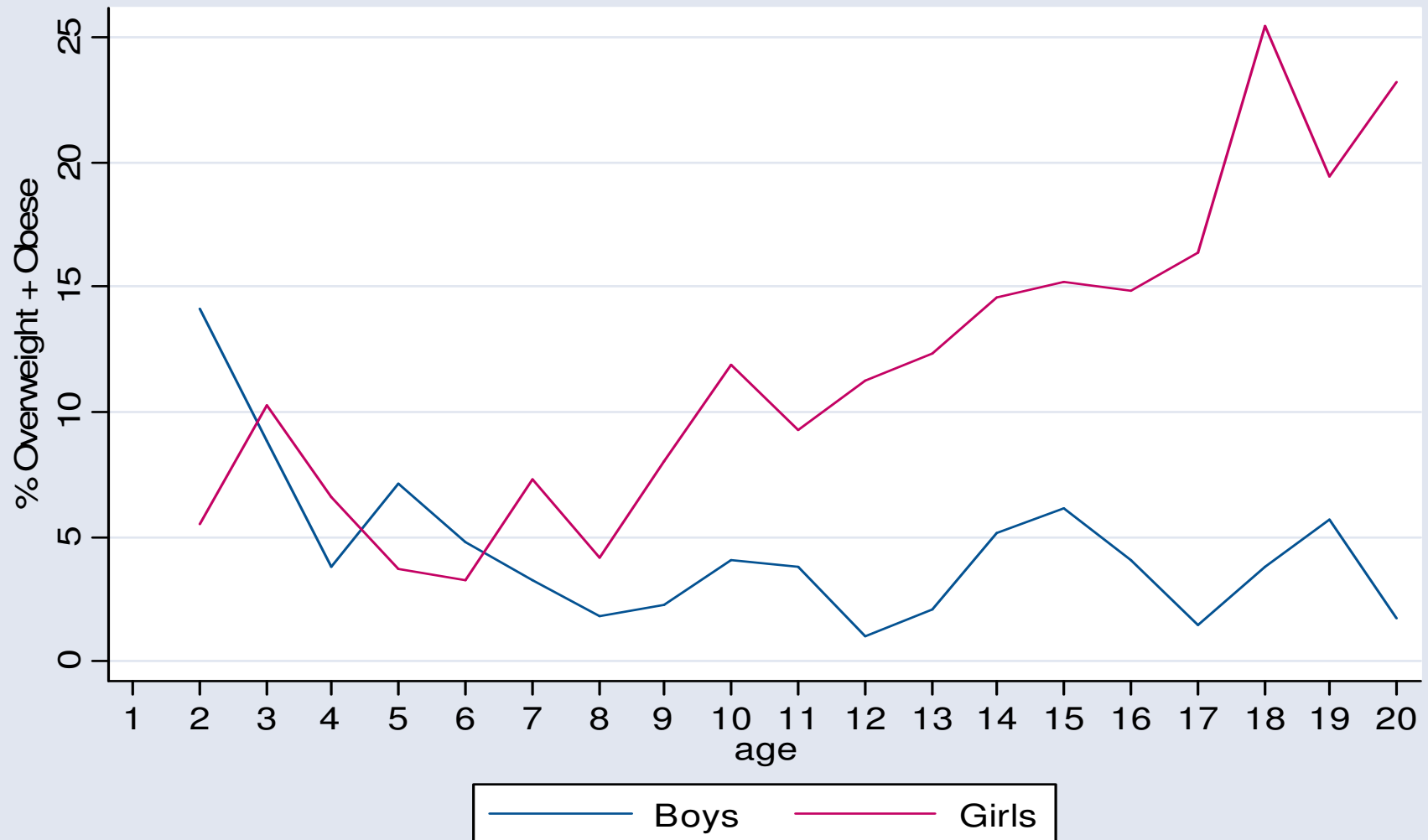
Nutritional status of rural and urban children

	Soweto 1991	Soweto 1992	Agincourt 2007	Agincourt 2007
	12 months	24 months	12 months	24 months
Stunting	7.8 %	26.5 %	32 %	24 %
Underweight	7.8 %	8.7 %	7 %	13 %

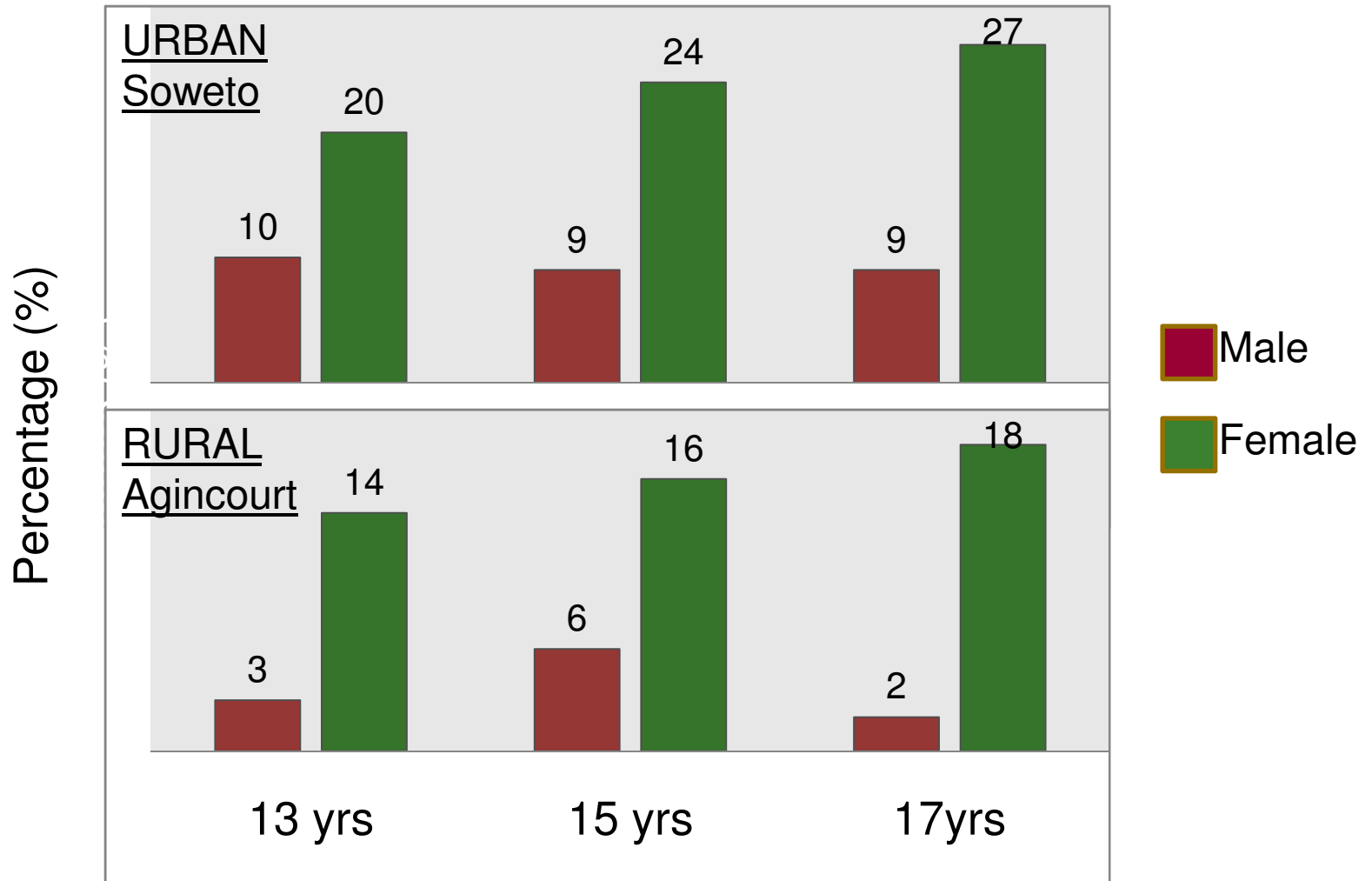
- Rural stunting at 1 year today is 4 times higher than urban 15 years ago
- All other rural levels are similar to urban levels pre-1994



Age-sex patterns of combined overweight & obesity in children and adolescents 2-21 yrs, Agincourt 2006

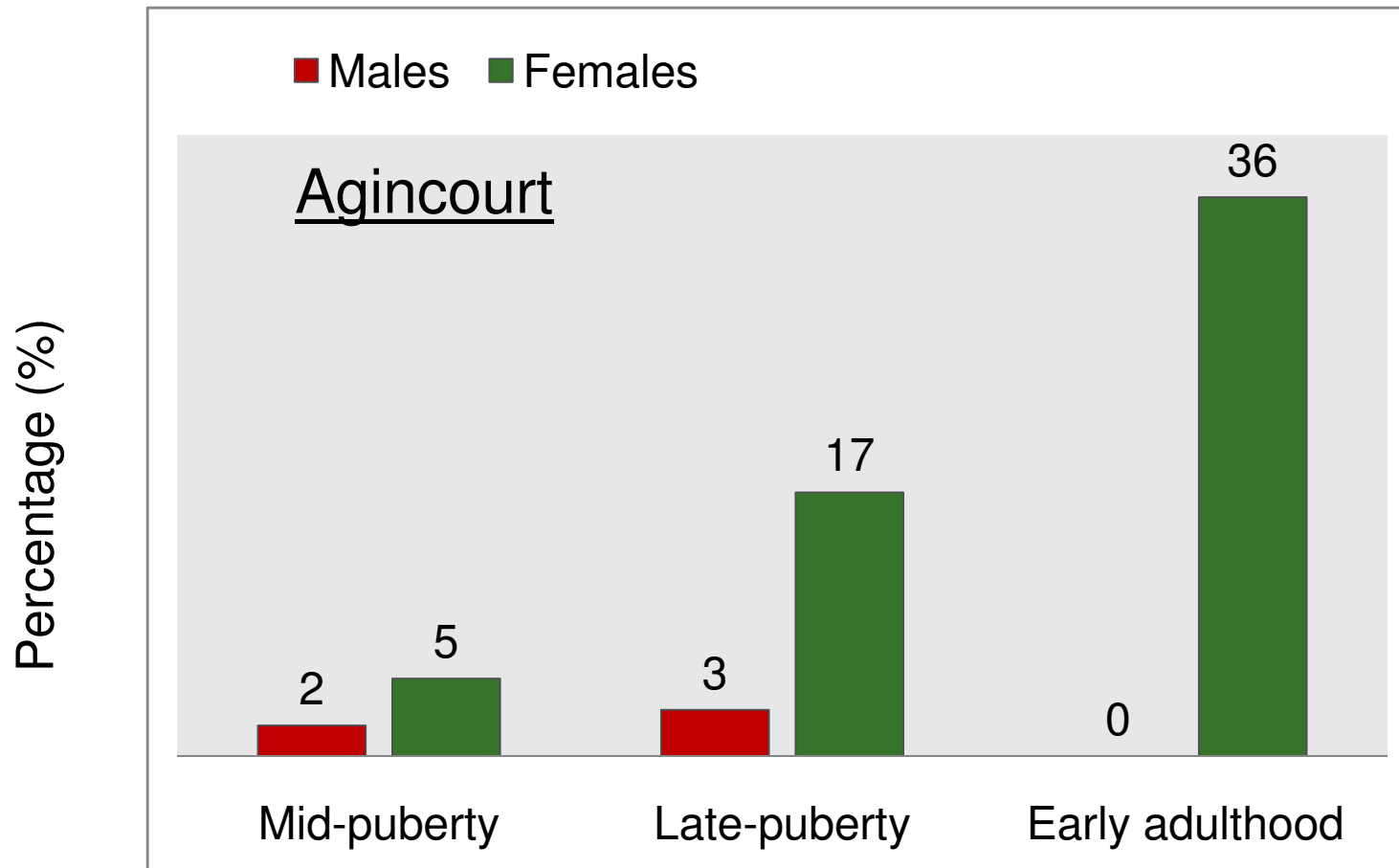


Overweight & obesity prevalence

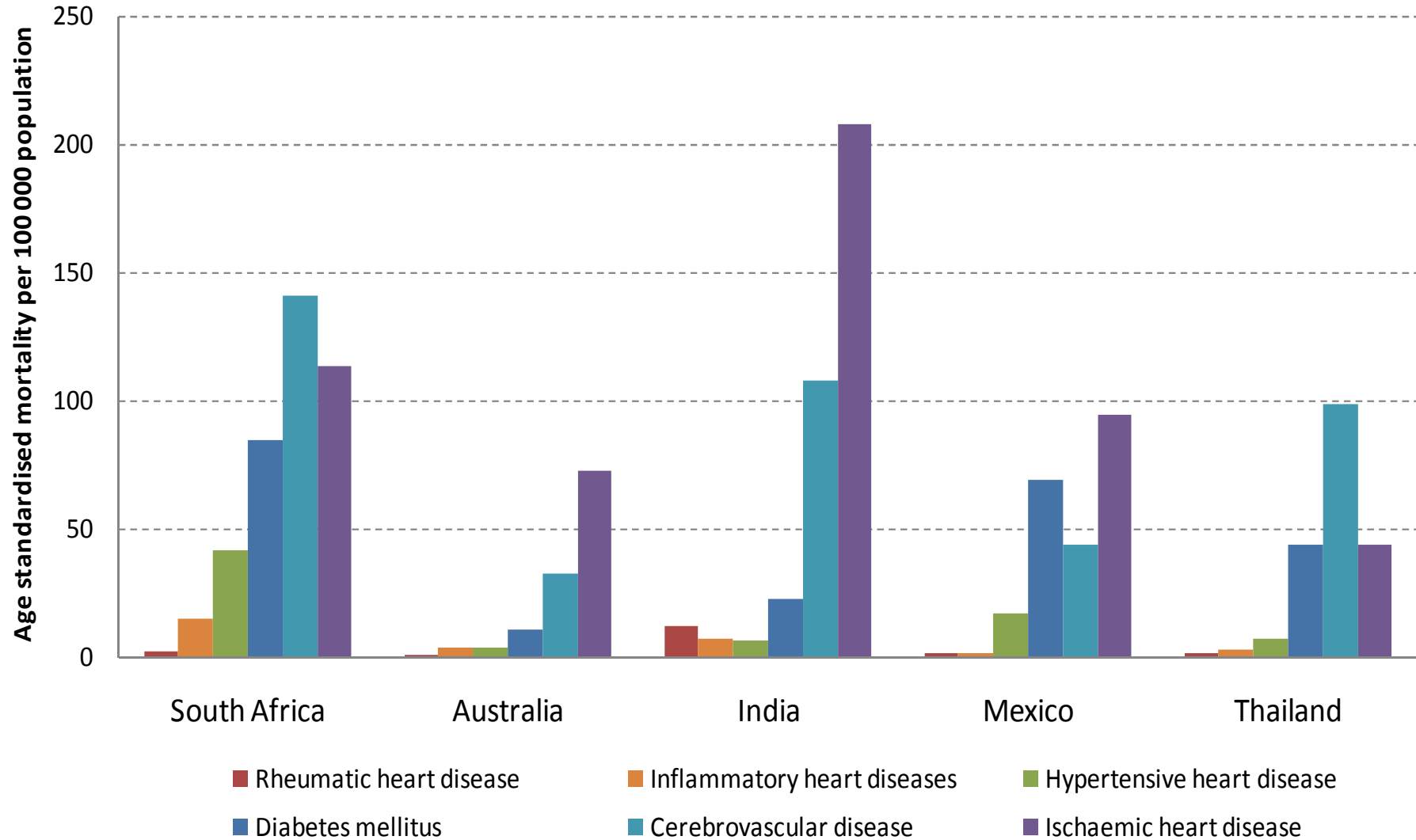


Abdominal fat

Percentage of waist circumference measurements that exceed the adult cut-off for metabolic risk



Cardiovascular and diabetes mortality rates South Africa and selected countries 2004



Source: WHO Statistical Information System



Metabolic disease risk factors: community surveys 2003; females >35 years

Variable	Agincourt (% or mean)	Soweto (% or mean)
BMI	27.2	30.5
Prevalence of hypertension	42%	42%
Prevalence of obesity (BMI \geq 30)	33%	50%
Prevalence of diabetes (glucose >7mM)	8.3%	14.3%

Summary

Combination of HIV and NCDs have significantly impacted on life expectancy in South Africa

Already hidden burden of Type 2 diabetes

Very high levels of obesity in adult female population in both rural and urban South Africa

Converging rural-urban scenarios



Sub-Saharan Africa in transition

	Urban Ethiopia	Urban Kenya	Urban South Africa
Stunting	57%	56%	15%
Obesity	1%	15.5%	42%
Type 2 Diabetes	2.1%	4.5%	14.3%





COHORTS

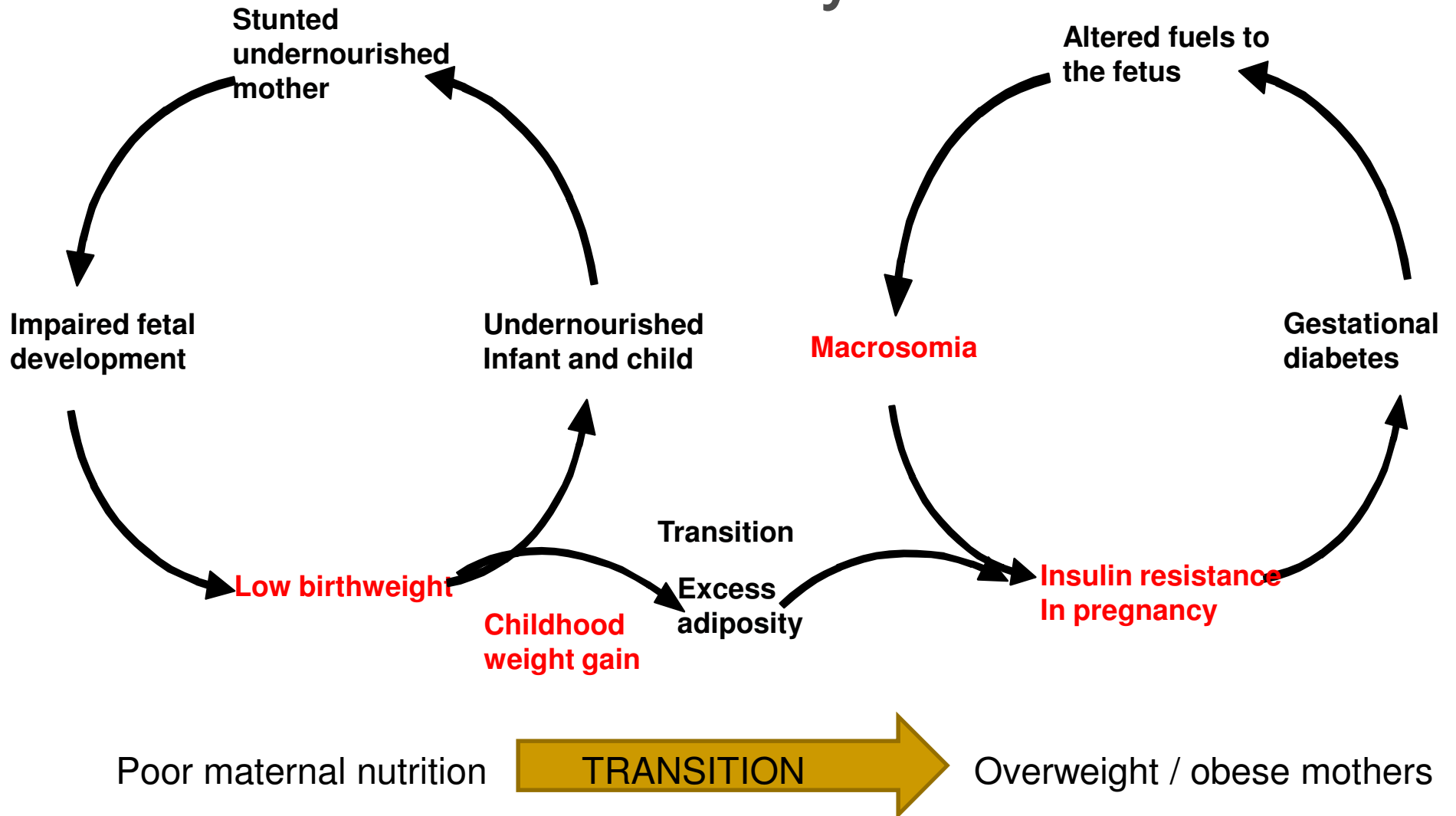
Brazil, Guatemala, India, Philippines, South Africa

Data from the 5 birth cohorts indicate

- Under-nutrition occurs in the first 2 years and increases short-term mortality
- Good nutrition in early life improves
 - Birth weight
 - Adult height
 - School Achievement
 - Economic productivity



Vicious cycle



Project Ntshembo – aims and hypothesis

Aims to break these vicious cycles

- ❑ community-based adolescent-infant intervention
- ❑ optimises health prior to pregnancy and weight gain during pregnancy
- ❑ promotes optimal growth and development of off-spring
- ❑ can be scaled up within the public health sector

Hypothesis

Community-based adolescent lifestyle interventions can improve young women's health prior to and during pregnancy. This will improve infant growth and development, so enhancing human capital and reducing metabolic disease risk in later life



Project Ntshembo – current status

Currently characterising and comparing metabolic disease risk in rural and urban South Africa

- Pilot work completed
 - physical activity
 - cultural practices and beliefs around pregnancy, delivery, infant care
 - adolescent friendly health services
 - community food vendors - food diversity, cost, access - geo-spatial distribution

- 2012 cross-sectional study of Agincourt adolescent girls (13-21 yrs)
 - anthropometry
 - body composition
 - metabolic indicators (BP, glucose, insulin, lipids)
 - lifestyle (diet, physical activity)
 - household (SES, maternal factors)



INDEPTH – single centre incubator

- Systematic process of sharing and disseminating study protocols across INDEPTH centres
- Potential to characterise adolescent females across INDEPTH centres to determine stages of transition and obesity / metabolic disease risk that young women face
- To adapt a South African intervention for implementation and evaluation across other INDEPTH centres



Acknowledgements

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Summary

Urban South Africa still “better off” in terms of housing, income & work opportunities – but rural improving

Access to education has significantly improved in rural South Africa – quality remains a major problem

Persisting malnutrition and food insecurity in rural South Africa, less so in urban South Africa

Adolescence marked by significant shift in over-nutrition, particularly in females, in both rural and urban South Africa

The combination of under-nutrition in early life and over- nutrition in later life is a major concern for risk of metabolic disease

Convenient, inexpensive, energy dense food more widely available

