

DATA HAROMY

Knowledge Exchange Workshop

January 2013

Eyes and vision (WP4)

Phillippa Cumberland (p.cumberland@ucl.ac.uk)

Jugnoo Rahi (j.rahi@ucl.ac.uk)

Institute of Child Health UCL

Background

- Visual function profoundly and cumulatively impacts on
- development and maintenance of physical and mental health, general well-being
 - social and economic prospects across their lifespan
 - participation in society at each life stage

Impaired sight associated with adverse outcomes eg educational and occupational opportunities and significant avoidable morbidity or mortality e.g. RTAs/falls

Background

Visual functions

- sensitive & readily accessed bio-measures of broader neuro-development /cognition
- change over the life course - maturation and degeneration trajectories, 'sensitive' and 'critical' periods profoundly influenced by the external environment

Visual system provides accessible model for

- understanding neuro-developmental, neuro-degeneration and repair.

Myopia (with other refractive errors) is most common eye condition and main cause of reduced vision worldwide

Myopia:

c.30% of adults in N America/European and c.70% in East Asian populations

Unexplained striking recent secular changes: increasing frequency & severity and younger age at onset

Exemplar of complex, chronic disorder-

- lifestyle, social and environmental influences associated with urban life
- very strong genetic susceptibility

acting together to disrupt highly regulated ocular growth

High attendant financial costs (loss of productivity and comorbidity due to vision impairment plus direct 'treatment' costs)

Scope for prevention currently very limited

Investigation of myopia in context of CLOSER

- Vision/eyes as exemplar for measures of senses / neurosciences
- Ocular growth as an organ-model for understanding the intertwining environmental (and genetic) influences on human growth over the lifespan.
- Draw on / intersect with all other WPs
- Inter-disciplinary work of scientific and policy-making groups (cf obesity)

Visual function (distance, near & stereo acuity, colour vision) and refractive error in each of the CRF national cohorts but varied/evolved -

- self or proxy report
- objective / 'clinical' assessments (high 'equivalence' – categorical and continuous measures)
- indirect/proxy measures (eg clinical reports)
- measurements vary by age

Variable degree of backward harmonisation required - 1946, 1958, 1970, birth cohorts, Millennium cohort, ALSPAC

Forward harmonisation in Biobank

Current status

SRA in biostatistics to be appointed

(Year 1- Biobank)

Year 2 – data harmonisation

Year 3 – demonstrator project on myopia