



MTHR

Mobile Telecommunications and Health Research

The Mobile Telecommunications and Health Research Programme (MTHR)

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Overall Conclusions of AGNIR report (Dec 2003)

- Echoes Stewart report (2000):
- “Weight of evidence now available does not suggest there are adverse health effects from exposures to radiofrequency fields below guideline levels”
- However...

However

- “...mobile phones have only been in widespread use for a relatively short time. The possibility remains therefore that there could be health effects from exposure to RF fields below guideline values; *hence continued research is needed*”.

Base stations

- Both reports emphasised that exposure levels near to mobile phone base stations are extremely low
- Nevertheless there is still public concern which affects the well-being of some people

Overview of MTHR Programme

- Funded jointly by Government and Industry- £7.4 million ; adjunct funding brings total to £8.6 million
- Funds now all committed
- 29 projects funded
- First projects started in Dec 2001
- 6 completed, 2/3 due to finish by Dec 2005

MTHR +Adjunct Projects (24+5^{*})

- Epidemiology (5)
- Human volunteer Studies (6+2^{*})
- Mechanistic (3)
- Exposure and dosimetry (9+3^{*})
- Psycho/Social Studies (1)

Completed Projects (6)

- Cohort study of mobile phone users (pilot study)
- Conversations in cars
- Measurements of emissions from commercial mobile phones
- Assessment of specific energy absorption rate (SAR) in the head from TETRA handsets
- SAR testing of hands-free mobile phones*
- Measurements of the power density of radio waves in the vicinity of microcell and picocell base stations*

What does the Science tell us about Health Risks?

- MTHR projects so far:
- Demonstrate viability of a major cohort study
- Provide important information on exposure levels
- Add to evidence about risks associated with use of phones while driving
- *Information on health issues from radio waves will come from MTHR projects still underway*

Information to come?

- Information from other reviews –ICNIRP, WHO..
- INTERPHONE epidemiological studies mostly still to report
 - Some information has been published eg Swedish study on acoustic neuroma

Why did AGNIR say more research is needed?

- Latency: average time between initiation of disease and appearance of symptoms is around 10-20 years or so for many, perhaps most cancers.
- Most people have been using their phones for 6 to 7 years or so (2004).
- Young people for much less.

How much more research is needed?

- Latency : *average* is around 10-20 years
- In some people less, in some more.
- Present epidemiological studies (6-7 years) will only show strong association between exposure and disease
- Need to continue epidemiological studies for another 5 years or so to see if there is a weak but still significant association.

MTHR strongly supports proposed WHO study

- WHO cohort study (phones)
 - 250,000 people
 - 5 countries (UK, Denmark, Finland, Germany and Sweden)
 - Range of diseases
- TOTAL COST to UK: £2.8 M

Future MTHR Programme ?

- View of the independent scientists on MTHR committee agrees with Stewart and AGNIR that further research is needed in addition to cohort study.
- Priority areas determined in the light of WHO and AGNIR research recommendations and also UK needs.
- Total cost around £10 M over 3-5 years (includes £2.8 M for WHO cohort study).
- *No more EC funding until 2008*

Future Programme: Sensitivity of children to mobile phone signals

- Stewart: if health effects, children may be more vulnerable: developing immune system, greater RF absorption (?), greater lifetime exposure. Major issue on WHO agenda.
 - Cohort study of children: less serious illnesses so smaller sample needed.
 - Extension to environmental exposures including base stations (personal exposure meter)
 - Cognitive/behavioural studies (ethical issues so young animal models)
 - RF absorption in children's heads
 - Computer models of whole body exposure: both children and the foetus (pregnant woman)

Future Programme: Studies relating to base stations

- TETRA base stations – many reports of symptoms.
 - Extension of present study on GSM and 3G base-stations
- Sleep disruption – conflicting reports from studies
 - Study of long term low level effects
- Siting of base stations
 - Systematic study of methods used by all parties to influence this
- Epidemiological study of adults (?)
 - personal exposure meter

Future Programme : Studies relating to phones

- Risks from phone use: driving/operating machinery
 - Awareness of risks: hand held and hands free
 - Reduction of distraction, eg earpiece or loudspeaker?
- Effects of RF on cells
 - Blood samples from phone users: studies of all 30,000 genes.
- Effects of RF on brain function (?)
 - Detailed studies (EEG, functional imaging etc (PET)) if present cognitive etc studies find effects
- Risk perception
 - Interpretation of “scare stories” by different people, effect on behaviour

Summary

- MTHR has considered the AGNIR and WHO recommendations for further work and produced a research portfolio for a phase 2 programme.
- MTHR approach focusses on people-both adults and children
- Global and UK needs

Summary

- Total cost similar to present programme.
- Aim to start first projects in July 2006 (cohort sooner) :
- Funding needs to be in place by June 2005.
- Call for proposals in Autumn 2005.
- Discussions with potential sponsors has been constructive and is continuing.



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Conclusion:

- Balance of present evidence suggests that the RF from mobile phones does not cause adverse health effects.
- However evidence not as strong as one would wish. Most people have been exposed to RF for appreciably less than the average latency for many diseases (time for symptoms to appear).
- More research needed: continue the MTHR programme.
- Exposure from base stations very much less so chance of health effects expected to be appreciably smaller than from phones. Nevertheless more work needed in response to public concern and consequent effects on well-being.

Epidemiology (5)



- Emphasis on Cancer Handsets
 - 2 case studies of brain tumours - part of the international Interphone Study
 - Pilot for cohort study of mobile phone users (finished)
 - Large case study of leukaemia patients
- Base Stations
 - Case study of cancers in early childhood

Human Volunteer Studies (6+2*)

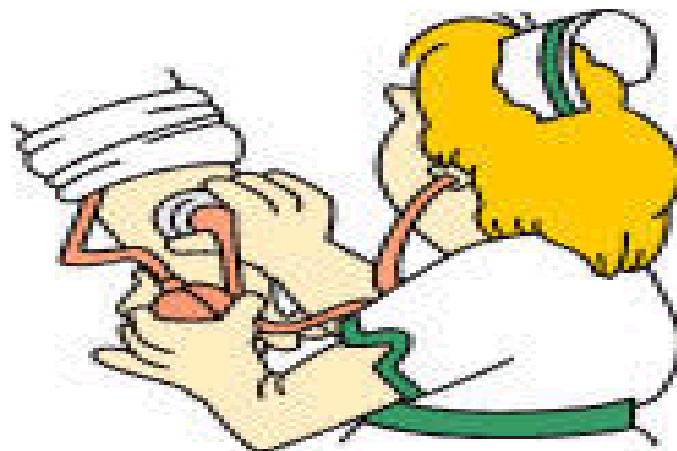
Standard Exposure Systems:

- Mobile Phones and TETRA handsets
 - SAR of approx 1.4 W/kg
 - Low frequency magnetic fields expected to be comparable to those of phones/handsets (about to be measured)
 - Blinding
 - GSM/ TETRA, or CW, or sham
 - Temperature rise of surface same in all 3 modes
 - Negligible acoustic noise
- Base station transmitters -GSM (900, 1800) and 3G (UMTS)
 - 10 mW/m²
 - GSM, or UMTS or sham
 - Blinding
 - Screened rooms



Human Volunteer Studies (6+2*)

- Blood pressure (GSM + TETRA)
- Memory and Attention (GSM)
- Labyrinthine function ; hypersensitivity? (GSM)
- “Unpleasant Symptoms” ; headaches, nausea etc- hypersensitivity? (GSM and TETRA*)
- Electrical activity of brain (TETRA)
- Conversations in Cars (finished)
- Base stations (GSM and UMTS*)



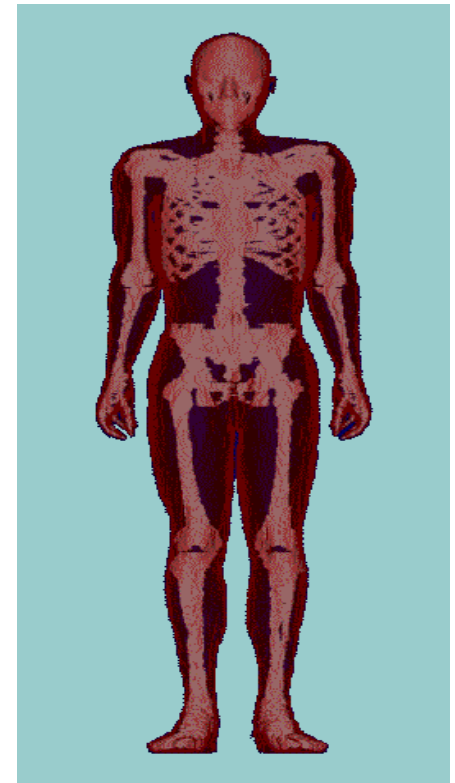
Mechanistic Studies (3)



- Expression of Heat Shock Protein- studies of nematode worms
- Brain physiology and function -studies of signalling in mice
- Studies of calcium signalling in various cell types

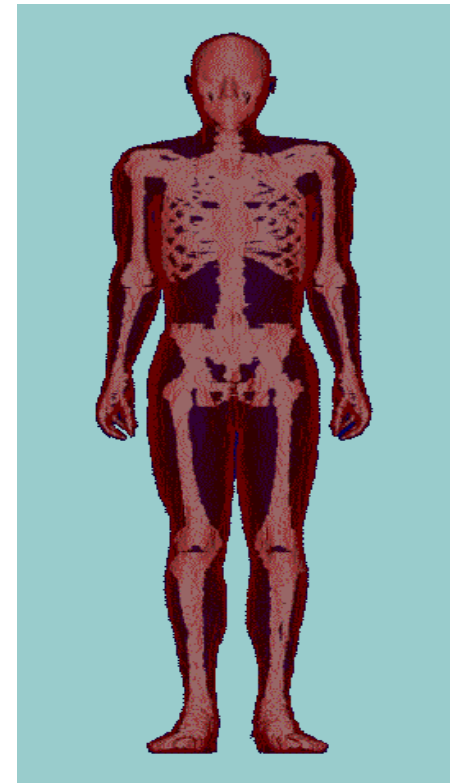
Exposure and Dosimetry (9+3*)

- Development of standard phone/handset exposure systems (finished)
- Measurements of electrical properties (age dependence)
- Non-linearity of electrical properties* (effects of pulsing)
- Exposure from emerging technologies (3G etc)
- Magnetic fields from phones (finished)



Exposure and Dosimetry (9+3*)

- Exposure from TETRA handsets (finished)
- Hands free kits (finished)
- International dosimetry project
- Emission from microcell base stations (finished)
- Dosimetry support for other projects
- Development of base station exposure system*
- Evaluation of personal dosimeters*



Psycho/Social Studies (1)

- The impact of adopting precautionary approaches to the management of mobile phone risks on the risk perception and behaviour of groups and/or individuals
- The evaluation of efforts to communicate information about mobile phone risks eg DH leaflets (supported by DH)