Imperial College London

2018 Carinthia University Study Tour

History of Collaboration
and
Student Contribution

Elizabeth Dubois MSc FRSPH MFPH
Imperial College London
21 February 2018

Imperial College London

Introduction

Elizabeth Dubois MSc FRSPH MFPH

***Background**: clinical, economics, public health specialist*

***Professional**: finance, health policy, nursing, education, training, workforce*

***Experience**: hospital sector, public sector, international, government, academia, research*

Imperial College London

Since 2005, Salman and I have been host to interested students from Austria's Carinthia University of Applied Sciences coming to London for short-term internships in Public Health.

Aimed at strengthening the role of public health through practical experience, students are linked to community projects which focus on health promotion or health prevention.

Whilst working, students are fully engaged in data collection and analysis and are responsible for presenting their findings on the impact of population-based health care.

Imperial College London

2005 – 2008
Wandsworth
SW London

2009 – 2012
Hammersmith & Fulham
NW London

Imperial College London

2005

Martin Falinski

Imperial College London

Public Health Project:

"Falls Prevention in the Elderly Population"

Publication:

'Healthcare in Austria'

(Public Health Medicine, Vol. 6:2; 71-73. June, 2007)

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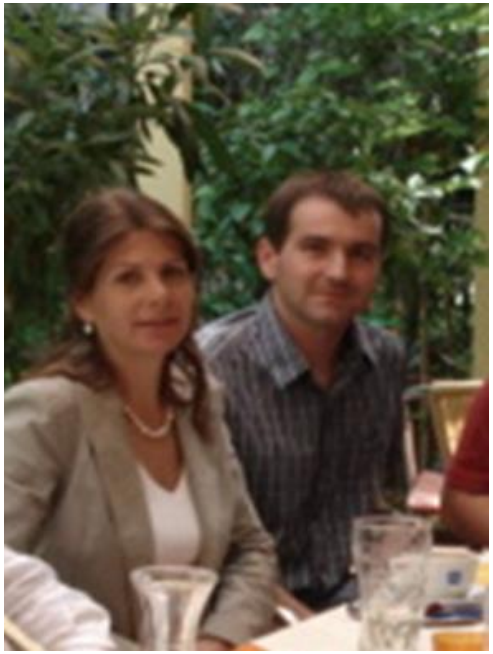
London

2006

Matthias Dielacher



Project:

“Survey of Food Provision and Nutrition Needs in Children’s Nurseries”

Imperial College London

2006

Claudia Fischer

Project:

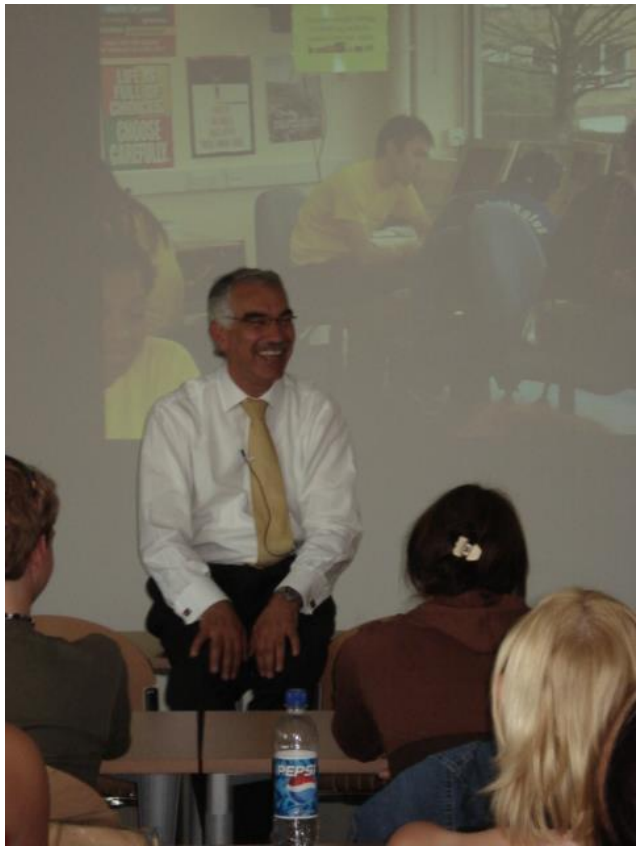
"Mapping Cost and Availability of Healthier Food Options"

Imperial College
London

2007 Invitation to CUAS

Imperial College
London

Feldkirchen campus



Imperial College
London

CUAS Faculty & former students

Imperial College
London

Klagenfurt campus – Marvin Hoffland

Imperial College London

2007

Christine Paischer

Project:

"Correlation between poor access to healthy foods and incidence of illness and poverty"

Gertraud Kreuzer

Project:

"Survey of local people's access to healthy food"

Imperial College London

- ‘Staying Healthy’ campaign
- World Aids Awareness Day December 1st
- Sexual Health Chlamydia Screening
- Food Mapping: promoting healthy nutrition
- Stop-smoking campaigns

Imperial College London

2008

Michael Reiner

Project:

"Developing Web-enabled Medical Research for Chronic Kidney Disease in Primary Care"

Florian Stolz

Project:

"Web-based Clinical Data Collection and Support System for CKD"

"CSV2FlatFile"

Imperial College London

Department of Biomedical Informatics

St George's Hospital

Tooting

SW London

Imperial College London

2010

Johannes Seidl

- Manor Health Centre GP Surgery – QOF data
- Nat'l Institute of Health Research CLAHRC
- UK Health Protection Agency Conference poster
- WHO Management Review: Seychelles Outbreak Report
- KSA Ministry of Health WHO Delegation
- Healthcare System in Israel & Palestinian Territories

The Healthcare System in **Israel** & the **Palestinian Territories**

Johannes Seidl, Intern, WHO Collaborating Centre

Imperial College London

2010 Health Protection Conference

Elizabeth Dubois
Stuart Carroll
Colin Valer
Johannes Seidl

"Getting Ahead of the Curve" – How far have we come?

Elizabeth Dubois[1], Stuart Carroll[2], Colin Valler[3], Johannes Seidl[4]

1. Research Fellow, Imperial College London, WHO Centre. 2. Health Economist, Sanofi Pasteur MSD, Maidenhead, UK. 3. NHS & Regional Government Relations Manager, Sanofi Pasteur MSD, Maidenhead, UK. 4. Intern, Imperial College London, WHO Centre

Introduction

- Vaccination is an essential part of UK health policy protecting the population against infectious diseases, and is pertinent to Government pronouncements around public health.
- In 2002, the Department of Health (DH) published its blueprint document 'Getting Ahead of the Curve – A strategy for combating infectious diseases' (GAOTC) highlighting the enormous gains safe and effective vaccines confer on health – particularly eradication of disease – whilst focusing on R&D of future vaccines.[1]
- Eight years on, it is important to evaluate the 'New Vaccines' section of GAOTC to assess progress against projected milestones; analyse policy developments; and consider future areas of focus.

Methods

- A critical appraisal of original milestones versus subsequent developments was undertaken involving a retrospective review of GAOTC focusing on four areas: 1) technology & science; 2) international comparisons; 3) economics; and 4) media & public perceptions.
- A review of the current UK schedule versus international counterparts was performed. A comparison of the 2002 vaccination programme versus the current programme was undertaken to evaluate progress and opportunities.
- A structured literature review (Embase & PubMed) was performed to identify relevant published sources.

Results

1) Technology & science

- The UK immunisation schedule has seen the number of vaccines increase since 2002 (Figure 1).

Figure 1: Advances in UK Immunisation Schedule

- Acellular pertussis vaccine introduced in 2004
- Inactivated polio vaccine replaced live oral polio in 2004
- Childhood pneumococcal conjugate vaccine added from 2006, followed by a change from 7 to 13 valent in 2010
- MMR catch-up programme for 5-18 year olds
- HPV vaccine introduced in 2008 for 12-13 year old girls with catch-up to 18 years
- Extended use of influenza/pneumococcal vaccines to a wider group phased in since 2003

- Advances were largely consistent with predicted short-term developments highlighted in GAOTC, including development of a rotavirus vaccine, in contrast to 10-year R&D breakthrough projections where vaccines against HIV, RSV and Malaria are still in development.
- Since 2002, the pace of emerging vaccines is noteworthy. It is anticipated that many new and improved vaccines in development are expected to be approved in the short-term.
- Technological advances continue to deliver improvements in new combinations, delivery mechanisms (e.g. oral, intradermal) and adjuvants.

2) International comparisons & World Health Organisation (WHO)

- There are many reasons why countries are not meeting immunisation needs but three particular factors seem to act as barriers to success – 1) vaccination systems, 2) perception of vaccination, and 3) political will.[2]
- With these factors in mind, a simple comparison of UK and international schedules highlights differences in global vaccination policy, and indicates that the UK arguably lags "behind the curve" of many other developed countries, most notably in the wider use of vaccines against varicella and rotavirus (as used in the US and Australia).
- The WHO together with international partners has been proactive in global strategies promoting affordable use of vaccines like hepatitis B and *Haemophilus influenzae* B. They have also fostered research on rapid development of new vaccines yet member states continue to face epidemiological, financial and ethical challenges. Where possible, the UK should further utilise WHO expertise.[3]

3) Economic outlook

- In 2002, the UK economic backdrop for GAOTC was very different, with a deficit of around £7bn in contrast to the current deficit of over £168bn. Future policy must be aligned with economic imperatives.
- Critically, policy must be synchronised with Government commitments to shift the NHS from curative to preventative healthcare strongly emphasising public health; something central to the NHS's affordability and sustainability.
- Vaccination is preventative conferring high economic and social value through avoidance of illness and disease. It is also a quality of life enhancing intervention helping control epidemiological outbreaks and trends.
- To "get ahead of the curve", it is arguable that investment in vaccination should incrementally increase to generate savings avoiding opportunity costs from reactive resource forgone. Future policy should be harmonised with public health imperatives advancing the "invest to save" philosophy.

4) Media & public perceptions

- A perennial problem informing policy is media and public misperceptions; a consequence of poor education and lack of clear information. There is a need to highlight the health improvements of targeted immunisation, especially amongst disadvantaged communities.
- Although some improvements have been made following the MMR scandal, since 2002, in general there has been limited progress in dispelling popular vaccination myths. As Box A shows, misplaced media opprobrium has been unhelpful.

Box A - Examples of Media Headlines

- Professional attitudes show the extent of the problem, e.g. seasonal influenza vaccine uptake has historically been low amongst health workers.
- A key focus for future policy must be education and a proactive approach to ensuring media and public misperceptions do not undermine public health.

Conclusions

- Our research shows the need for a 'new vision' for UK vaccination policy including greater understanding of preventative healthcare and the benefits of vaccination for controlling infectious diseases and improving quality of life.
- To "get ahead of the curve", vaccination investment should incrementally increase. This is central to generating future savings and avoiding opportunity costs from curative interventions – an imperative for an affordable and sustainable NHS.
- For vaccination policy to optimally contribute to public health protection, improvements in education and information dissemination are required to change media and public perceptions and dispel popular myths.

References: 1. DH 2002. Getting Ahead of the Curve - A strategy for combating infectious diseases. 2. Schmitt H-J et al. Lancet Infect Dis 2003; 3:103-8. Hannon F, Zuber P. European J of Public Health, Vol 15, S1, 2005.

Health Protection 2010 University of Warwick 14-15 September

Imperial College
London

Imperial College London

2011

Pierre Schaschl

&

Hannes Linke

Medical Informatics

Klagenfurt

Imperial College London

Pierre Schaschl

Project:

“iPhone app (SiKL) for persons suffering from sickle cell disease”

“SNP-DNA-Database with web interface (WiNorm)”

Hannes Linke

Project:

“Mobile health records on iOS and Android for Sickle Cell Anaemia patients”

Re-vamping the WHO CC website

Imperial College London

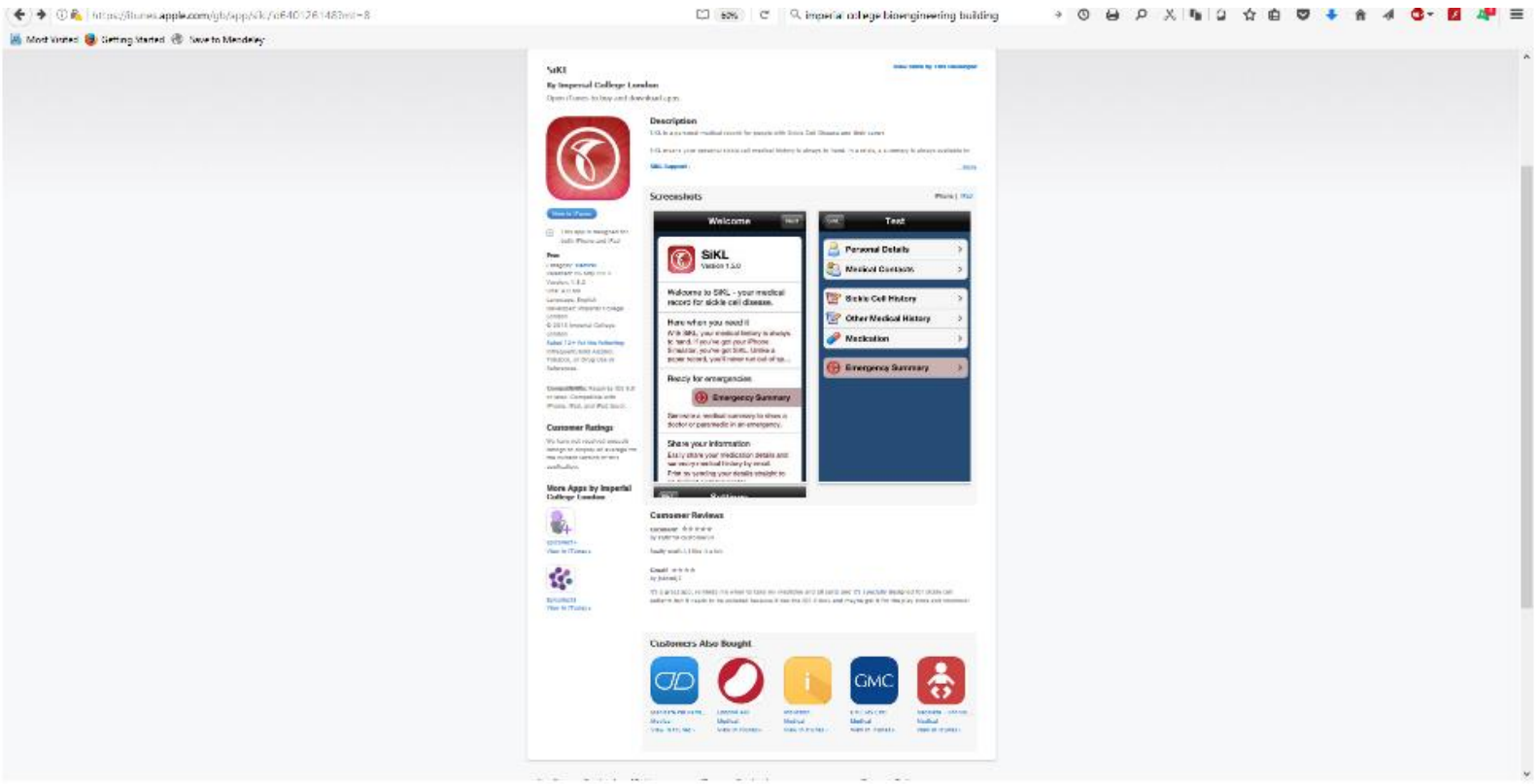
Department of Bioengineering

Imperial College London

South Kensington campus

Imperial College
London

Imperial College
London



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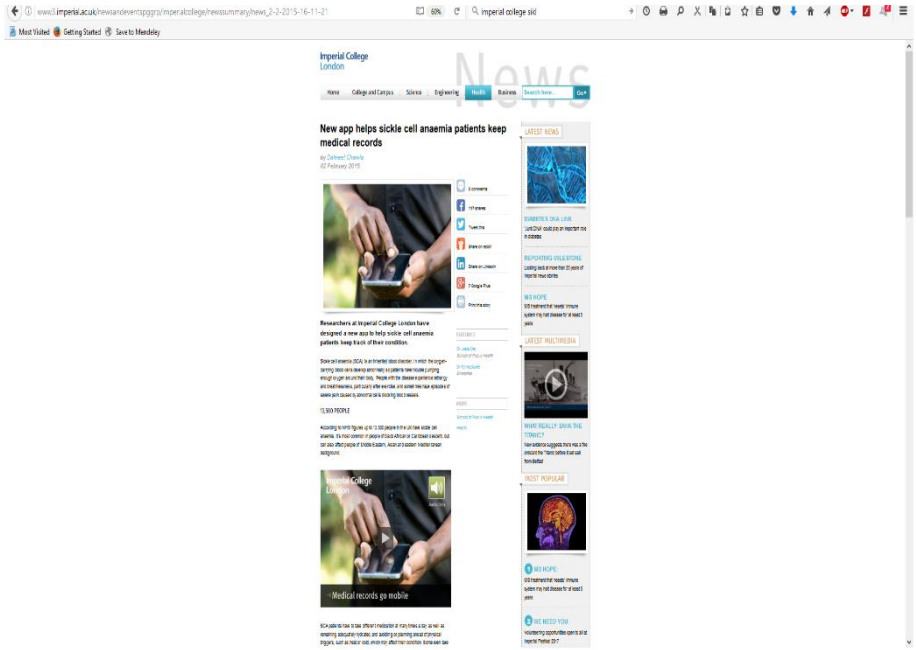
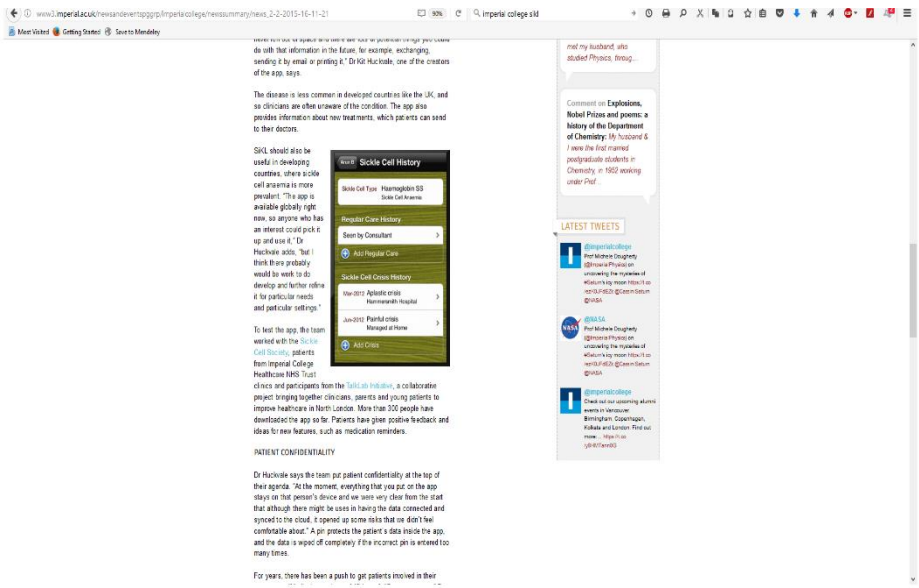




Imperial College
London

Imperial College London

2012

Tibor Zajki-Zechmeister

CUAS School of Medical Information Technology

Major: Biomedical Engineering

"interested in bio-inspired and imaging technology"

Project:

"Using imaging technology to verify nasogastric feeding tube placement and improve patient care outcomes"

Imperial College London

Department of Bioengineering

Imperial College London

South Kensington campus

Dear All

The Department of Primary Care and Public Health
invites you to attend Seminars by:

Dr Dylan Banks, Research Associate
Department of Electrical and Electronic Engineering , Imperial College London

Title: Next Generation Healthcare for Low Resource Settings.

&

Mr Tibor Zajki-Zechmeister, Undergraduate

Title: Using Imaging Technology to verify Nasogastric Feeding Tube Placement and Improve Patient Care Outcomes

Wednesday 30 May at 12.30pm

venue:
Seminar Room, 3rd Floor, Reynolds Building, Charing Cross Campus

All welcome and we look forward to seeing you there

Department of Primary Care & Public Health
School of Public Health
Faculty of Medicine

Tremorerkennung über einen Schreibstift

Studienbereich Medizintechnik/Medizintechnische Systeme

Tibor Zajki-Zechmeister (Tibor.Zajki-Zechmeister@edu.fh-kaernten.ac.at)

Inhalt

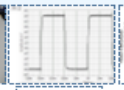
- Erfassung des symptomatischen Tremors der Parkinson-Krankheit
- Alternative zu teuren oder inakkuraten Diagnoseverfahren
- Aufzeichnung des menschlichen Tremors über elektrische Signale, die mittels Software beeinflusst und visualisiert werden können
- Amplitude, Frequenz und Zeitverlauf ermöglichen Maßzinnen die Diagnose, ob der Tremor natürlich oder eine Anomalie ist.
- System dient zur Kurzzeitdiagnose, präventive Diagnose und zur Beurteilung von pharmazeutischen Behandlungen gegen den Tremor
- Patienten müssen nur einen Stift in Ruheposition halten; es sind keine Komponenten am Körper zu befestigen

Abstract

Die Parkinsonerkrankung betrifft weltweit mehrere Millionen Menschen. Die neurodegenerative Krankheit verursacht diverse Symptome wie posturale Instabilität oder einen nicht kontrollierbaren Tremor. Die heutigen Diagnoseverfahren können die Parkinsonerkrankung zwar diagnostizieren, jedoch sind sie inakkurat oder teuer. Diese Arbeit präsentiert einen Tremorsensor in Stiftform, welcher den symptomatischen Tremor elektrisch erfassen und die Ergebnisse mittels Software visualisieren kann. Die Messungen zeigen, dass das verwendete Prinzip eines piezoelektrischen Drucksensors den Tremor erfassen und auch weiterleiten kann. Die verarbeiteten Ergebnisse zeigen eindeutige Tremoren, die bei der Symptomatik einsetzen können und differenzieren diese von dem normalen menschlichen Tremor, welcher nicht pathologisch ist.

Funktionsweise

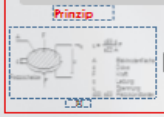
- Patienten nehmen Stiftsensor in die Hand und legen die Sensorspitze auf einen stabilen Untergrund (Tisch, Platte etc.)
- Der piezoelektrische Drucksensor erfasst Druckänderungen, die durch einen Tremorverursacht werden können, und sendet die
- Die Änderungen werden in Form von kapazitiven Änderungen des Sensors gesendet und beeinflussen die Verstärkerschaltung, in welche der Sensor als Bauteil integriert ist
- Die Schaltung wandelt die analogen Signaländerungen in digitale Zustände von „1" und „0" um. Die Druckänderung wird nun als Periodendauer der Signale ausgegeben
- Über eine serielle Schnittstelle werden die digitalen Signale mittels eines Microcontroller an die Software geschickt, die eine Verarbeitung der Signale durchführt
- Die verarbeiteten Signale werden in Form einer Kennlinie ausgegeben



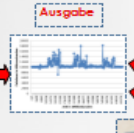
Datenaufnahme mit Sensor | Digitalisierung der Änderungen | Ausgabe des menschlichen Tremors

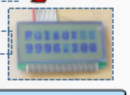
Prinzip

- Piezoelektrische Sensoren reagieren auf Druckänderungen in die Längsrichtung in Form von Spannungsänderungen
- Im Stiftsensor wird ein piezoelektrischer Sensor verwendet, welcher bei Druckänderung den Kapazitätswert des Bauteils verändert



Ergebnis





- Arduino UNO Microcontroller

Die digitalisierten Signale werden einem Microcontroller eingespeist, der die Software ausführt

- Kennlinien

Zur Diagnose wird eine Kennlinie mit einer Frequenz und Amplitude über den Zeitverlauf und eine Ausgabe über LCD ermöglicht

WWW.FH-KAERNTEN.AT

Imperial College London

- World Health Organization Public Health Aspects of Non-Communicable Disease Sseminar - London

- Quality Outcomes Framework in Primary Care

Charlotte, Elizabeth, Salman and Andrea with CUAS intern Tibor Zajki-Zechmeister and volunteer Natasha Weydahl

Imperial College London

Imperial College London

World Health Organization
Collaborating Centre
Public Health Education and Training

Department of Primary Care and Public Health

This is to certify that

Mr Hannes Linke

has successfully completed

an internship in Public Health

dated 14th February to 2nd June 2011

WHO Collaborating Centre, Imperial College London, United Kingdom

Professor Salman Rawaf MD PhD FRCP FFPHM
Director of WHO Collaborating Centre,
Imperial College London
Wandsworth Teaching Primary Care Trust

Dr Elizabeth Dubois
Deputy Director, WHO Collaborating Centre,
Imperial College London

Imperial College London

CUAS Study Tours ?

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018….?

Thank you