Giants of Geriatrics - Current Issues and Challenges

Dr. P. Srinivas
Consultant Geriatrician/Physician
Glenegales Medical Centre
Penang, Malaysia
FACING THE GIANTS OF GERIATRICS
Geriatric Medicine is that branch of general medicine concerned with the clinical, preventive, remedial and social aspects of illness of older people.

Older people often have multiple medical problems, different patterns of disease presentation, often slower response to treatment and requirements for social support, calls for special medical skills!
Elderly – persons aged 65 yrs and above (W.H.O.)

- How are they different?
- Multiple pathology
- Non-specific presentation of disease
- Rapid decline if not treated early
- High incidence of secondary complications of disease and treatment
- Need for rehabilitation
- Importance of social and environmental factors
Gerontology

• Gerontology comes from the Greek word “Geras” meaning old age and “Logo” meaning Study

• Gerontology is the scientific study of the phenomenon associated with ageing

• Geriatrics is subdiscipline of Gerontology which is related to the medical aspects of ageing
Aims of Geriatric Medicine

1. To enable elderly people lead full and active lives
2. To prevent disease or to detect and treat it early
3. To reduce suffering due to disability and disease and minimise dependence by proper rehabilitation
4. To provide a holistic medical care and arrange for adequate social support when needed
5. To manage “Geriatric Giants”: Incontinence, Immobility, Instability (falls), Intellectual impairment (dementia)
Giants of Geriatrics

• Giants of geriatrics was a term coined by the late Prof. Bernard Isaacs to highlight the major illnesses associated with ageing.

• Although the major causes of mortality in the elderly are cancers, heart disease and stroke, The Geriatric Giants reflected the gigantic numbers of elderly afflicted and the giant onslaught on the independence of the victims!
GIANTS OF GERIATRICS

- IMMOBILITY
- INSTABILITY
- INCONTINENCE
- INTELECTUAL IMPAIRMNT
- IATROGENIC
IMMOBILITY

• Defined as the impairment of the ability to move independently which results in the limitation of lifespace.
• This difficulty or the inability to perform mobility tasks is an important outcome to disease and a public health problem in older people.
• Functional assessment of elderly patients is very important in a comprehensive geriatric assessment and management of the patient in a holistic manner.
IMMOBILITY often multifactorial

- Musculoskeletal-OA----pain, muscle weakness and deconditioning
- Heart disease/COPD---CCF----SOB and loss of work ability
- CNS-Stroke—muscle weakness, abnormal gait, poor proprioception
- Cataracts-Macular degeneration-poor vision and falls
IMMOBILITY
Implications

- Adversely affects the quality of life of older people
- Threatens their independence and personal autonomy
- Increases both the informal and formal career needs and hence a ‘burden to society’
- Inactivity increases the risks of incontinence, pressure ulcers, deep vein thrombosis, osteoporosis and pulmonary embolism
- Increases the risks of muscular weakness, lowered aerobic capacity and finally leading to poor physical capacity or deconditioning
Impaired Mobility in Older Persons
Attending a Geriatric Assessment Clinic:
Causes and Management
T L Tan et al  Singapore Med Journal 2010

- Impaired mobility is a common pathway for many diseases, and is associated with significant functional decline.

- With proper evaluation, the offending causes can be identified.

- Early consultation is important for the application of appropriate intervention and can result in better outcome.
Rehab: Physical and Occupational
IMPROVING MOBILITY
Domestic Robot to Help Sick Elderly Live Independently Longer

• To enable elderly people to live at home as long as possible, a group of European researchers, coordinated from Eindhoven University of Technology (TU/e), will link robots and 'smart homes'.

• The robot, a 'sensible family friend', will ensure that home is a nice place to stay.

• The recently started research project, which has been named KSERA (Knowledgeable Service Robots for Aging) focuses in particular on COPD patients, people with chronic obstructive pulmonary disease.

• In 2030 this disease will be the third cause of death worldwide, according to expectations of the World Health Organization.
• A Nao robot. In the KSERA project this standard robot will be the starting point. It will be upgraded and fitted with a projector, so that it can show pictures. (Credit: Image courtesy of Eindhoven University of Technology)
Robots caring for elders
Robotics and Video Games Help Elderly in Rehab

• Centre for Advanced Rehab Therapeutics (CART) Tan Tock Seng Hospital, Singapore---Robotics reduce and eliminate physical loading on therapists!

• 70 year old man with a stroke on the right side and immobile for 3 months has after intensive physio and use of “Armeo” robotic arm regained some power to move his right hand up/down and laterally!
IMMOBILITY

Case history

• An 85 year old man has a 4cm by 7cm stage 3 pressure ulcer over the sacrum. He has been confined to the bed since sustaining a hip fracture 3 months ago and has lost 10 lbs. during this time. Examination shows a foul smelling wound, necrotic tissue covering 50% of the ulcer and purulent drainage at the base. There is no cellulitis—apart from surgical debridement ---what is the appropriate management?
IMMOBILITY

Case history

• Good nutrition—calcium, zinc, protein intake and management of osteoporosis
• Good medical care and comfortable positioning, 2 hourly turning and alternating pressure mattresses
• Osteomyelitis, bacteremia and deep vein thrombosis are complications and iv antibiotics and prophylactic anticoagulation may be required
• After adequate debridement and removal of necrotic tissue only then adhesive polyurethane dressings and myocutaneous flap can be considered.
AGED CARE
Working with Incontinence in the Elderly
INCONTINENCE

• A condition of involuntary loss of urine that is a social or hygienic problem and is objectively demonstrable.
• Ageing causes smaller bladder capacity and greater night time GFR ---more nocturia in elderly
• Males –urethra obstructed by prostate gland—females the urethra may be traumatised by frequent pregnancies
• Kidneys become less responsive to sodium loss and to ADH –hence the kidneys are less able to concentrate the urine.
INCONTINENCE

• Adequate function of the lower urinary tract to store and empty urine
• Adequate mental function
• Sufficient mobility and dexterity to get to the toilet and manage the clothing
• Motivation to be continent
• Absence of environmental/iatrogenic barriers to continence

ALL THE ABOVE FACTORS MUST BE IDENTIFIED SO THAT APPROPRIATE MANAGEMENT OF PATIENT!
ACUTE INCONTINENCE

- Delirium
- Restricted mobility
- Infection, inflammation, impaction
- Pharmacueticals, polyuria
PERSISTENT INCONTINENCE

• STRESS: the involuntary loss of urine during the act of laughing, coughing or exercise

• URGE: Leakage of urine because of the inability to delay voiding after the sensation of bladder fullness is perceived. “Must go now!!!! Or “I cannot make it to the toilet on time” are common complaints.

• OVERFLOW (NEUROGENIC): Frequent dribbling of urine, usually after a stroke or BPH

• FUNCTIONAL: Due to physical and cognitive impairment Dementia, depression, inaccessible toilet facilities.
INCONTINENCE

• History: medications, mental state, mobility
• Physical: CNS, lumbosacral spine, abdomen—palpable bladder, rectal exam, and vaginal exam
• Post voidal residual urine: >100 MLS—needs further investigations and refer for urodynamic studies---can check for detrusor instability and compliance of urethra
• Urine for microscopy and culture
INCONTINENCE

- Identify and treat contributing factors—medications—diuretic, tricyclics, anticholinergics, excessive coffee and tea or alcohol intake.
- Infection with appropriate antibiotics
- Atrophic vaginitis—treat with oestrogen cream
- Pelvic floor or Kegel exercise, Bladder retraining, behavioral methods
- Remove barriers
- Medications: oxybutinin (direct smooth muscle relaxation), detrusitol, propiverine hydrochloride
- Devices: Catheters—accurate monitoring of urine output, urinary retention (BPH), perineal and sacral pressure ulcers, terminal illness. Incontinence pads best in stress incontinence and also as an adjunct.
INCONTINENCE

• Remember that indwelling catheters used only after other therapies have been exhausted.
• External sheaths or condom catheters can be tried—not useful in acute urinary redetection.
• Intermittent catheterisation in the younger incontinent.
• Incontinence carries a HUGE social stigma, reduces life space and mobility and is a huge financial and social burden to the carers.
• In the management few can be cured, many can be improved and all can be better understood.
GIANTS OF GERIATRICS

- IMMObILITY
- INSTABILITY
- INCONTINENCE
- INTELECTUAL IMPAIRMENT
- IATROGENIC
FALLS IN THE ELDERLY
Fall defined as a subject unintentionally coming to rest on the ground, not as a result of a major intrinsic event (e.g., stroke, syncope) or overwhelming hazard.

- Falls are common and preventable source of mortality and morbidity in the elderly.
- The highest mortality are from falls on or from stairs particularly in the age group of 85 years and over.
- Most falls multifactorial in origin resulting from stability impairment features of the host (intrinsic) and extrinsic causes in the environment.
• Major sequelae and morbidity of falls is hip fractures (more common in women with osteoporosis).

• Inability to get up without help.

• Fear of falling and loss of confidence.
INCIDENCE OF ELDERLY SUSTAINING FALLS IN THE COMMUNITY

MARKEDLY INCREASES WITH AGE
25% AT 70 YEARS OF AGE
35% AT > 75 YEARS OF AGE

• NURSING HOMES: 40% OF ADMISSIONS WERE DUE TO FALLS

• STUDY BY TINETTI et al;
★ 1 year prospective followup of 336 persons aged 75 years and above 32% fell at least once

24% had serious injuries
6% had fractures
Risk factors - affecting stability

1. Sensory:
   - Vision, hearing, vestibular function and proprioception
2. CNS - problems in central integration
3. Dementia - cognitive function decline
4. Musculoskeletal
5. Medications
Factors which precipitate falls

Majority occurs during ordinary walking, stepping up or down and while changing position

70% --- FALLS AT HOME
10% --- STAIRS DESCENDING
5% --- CLIMBING CHAIRS OR LADDERS

Environmental hazards present in 50% of falls
Visual perception problems are common in old age
### RISK FACTORS FOR FALLS

<table>
<thead>
<tr>
<th>RISK FACTOR</th>
<th>ADJUSTED ODDS RATIO</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of sedatives</td>
<td>28.3</td>
<td>3.4 - 239.4</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>5.0</td>
<td>1.8 - 13.7</td>
</tr>
<tr>
<td>Lower-extremity disability</td>
<td>3.8</td>
<td>2.2 - 6.7</td>
</tr>
<tr>
<td>Palmomental reflex</td>
<td>3.0</td>
<td>1.5 - 6.1</td>
</tr>
<tr>
<td>Foot problems</td>
<td>1.8</td>
<td>1.0 - 3.1</td>
</tr>
<tr>
<td>No. of balance-and-gait abnormalities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>1.0</td>
<td>---</td>
</tr>
<tr>
<td>3-5</td>
<td>1.4</td>
<td>0.7 - 2.8</td>
</tr>
<tr>
<td>6-7</td>
<td>1.9</td>
<td>1.0 - 3.7</td>
</tr>
</tbody>
</table>

_CI denotes confidence interval. Adjusted odds ratios were obtained from multiple logistic-regression analysis._
Occurrence of Falls According to the Number of Risk Factors

<table>
<thead>
<tr>
<th>Number of risk factors</th>
<th>No. Falling</th>
<th>No. Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>51</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>106</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>94</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>58</td>
</tr>
<tr>
<td>4+</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>System/category</td>
<td>Examples</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Acute myocardial infarct, Arrhythmias, Postural hypotension</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>Pulmonary embolus, Chest infection, Pneumothorax</td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Hypovolaemia secondary to vomiting, diarrhoea or blood loss, Any cause of acute abdomen</td>
<td></td>
</tr>
<tr>
<td>Genitourinary</td>
<td>Urinary tract infection, Micturition syncope</td>
<td></td>
</tr>
<tr>
<td>Endocrine</td>
<td>Hyperthyroidism or hypothyroidism, Hyperglycaemia or hypoglycaemia, Addison’s disease</td>
<td></td>
</tr>
</tbody>
</table>
## Medical causes of falls

<table>
<thead>
<tr>
<th>System/category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs</td>
<td>Most drug categories are associated with falls, particularly hypnotics,</td>
</tr>
<tr>
<td></td>
<td>psychotropics, diuretics, antihypertensives</td>
</tr>
<tr>
<td></td>
<td>Polypharmacy/certain drug combinations (e.g. diuretic + tricyclic</td>
</tr>
<tr>
<td></td>
<td>antidepressants) are associated with significantly increased risk</td>
</tr>
</tbody>
</table>
WHAT CAUSED THE FALL?

• Was there loss of consciousness?
• Was the patient dizzy?
• Was there an acute illness?
• Was there any warning?

IF NO TO ALL THE ABOVE - FALLS OFTEN MULTIFACTORIAL AND/OR FALL CAUSED BY LOWER LIMB WEAKNESS
MULTIFACTORIAL INTERVENTION TO REDUCE THE RISK OF FALLING IN THE COMMUNITY

Tinetti et al, 331 No 13, 1994 NEJM
TARGETED RISK FACTOR

- Postural Hypotension
- Use of sedative hypnotic
- ≥ 4 prescription meds
- Unable to transfer safely
- Gait impairment
- Impaired muscle strength
SCREENING FOR PEOPLE AT RISK

- Long acting sedatives
- Mother with hip fracture
- Previous fracture
- Decreased mobility
- > 2 cups coffee/day
- Previous hyperthyroidism
- Poor general health
RISK FEATURES CONTINUED

• Failed “Get up & go” test
• Decreased vision
• Resting tachycardia
• Low calcaneal BMD
Fatal falls rising among the elderly

The death rate for elderly people falling has risen 55.3 percent from 1993-2003.

Rate of fatal falls for people 65 or older, age-adjusted to 2000 population

<table>
<thead>
<tr>
<th>Year</th>
<th>Men</th>
<th>Women</th>
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<tbody>
<tr>
<td>'93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'95</td>
<td></td>
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<tr>
<td>'97</td>
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<td></td>
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<tr>
<td>'01</td>
<td></td>
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<tr>
<td>'03</td>
<td></td>
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</tbody>
</table>

SOURCE: Centers for Disease Control and Prevention
PREVENTION OF FALLS(1)

- Older people who have had recurrent falls should be offered long term exercise and gait/balance training.
- Tai Chi is a promising type of balance exercise – reduced the risk of falls during a short period of 4 months.
- When older people at increased falls are discharged from hospital an environmental home assessment should be considered.
- Patients who have fallen should have their medications reviewed altered or stopped in light of their risk of future falls---especially those on 4 or more medications and on psychotropic drugs.
• Assistive devices like canes, walkers or hip protectors may be effective elements of a multifactorial intervention program
• Cardiovascular interventions in ruling orthostatic hypotension, carotid sinus syndrome and vasovagal syndrome
• Visual intervention—poor acuity, cataracts, decreased visual field, reduced contrast sensitivity needs to be corrected.
• Check foot wear—low heeled—hard soled (low resistance) are better
FALLS IN THE ELDERLY

• Falls are often predictable
• Screening the population at risk may be cost effective
• Intervention can reduce frequency
• Prophylaxis for fractures essential
"Doctors prescribe drugs about which they know little, for diseases about which they know less, to patients about whom they know nothing."

- Voltaire
General Principles

- Elderly 4% of population but consume 38% of prescribed medications
- Average elderly in community consumes 4.5 medications
- Elderly in Nursing Homes consume >7 medications
Prescriptions per head in England
1987-97 (Source: DOH, 1998)
Prevalence of ADR in relation to number of prescribed drugs

ADR Prev (%)

No of drugs

Williamson & Chopin, 1980
Gastrointestinal Events per 1000 Persons in Relation to Age

- NSAID
- Control
- Attr. Risk
Effect of dose on relative risk of peptic ulcer in older NSAID users

Griffin et al, 1991
General Principles

• Drugs should be considered as potential cause of any symptom
• ADR presents often atypically and nonspecifically as a “geriatric giant”
  – Confusion -- delirium, dementia
  – Depression
  – Falls
  – Incontinence
  – Decreased ADL’s
Why are elderly at risk?

- Changes in drug distribution and metabolism
- Multiple symptoms leading to multiple drugs
- Expectations -- “pill for every ill”
- Over reliance on symptoms rather than emphasis on geriatric assessment
- Multiple factors that affect drug adherence in the elderly
Why are Elderly at Risk?

• Inadequate clinical assessment: non-specific symptoms are treated with drugs
• Excessive prescribing: polypharmacy
• Altered pharmacokinetics and pharmacodynamics of drugs in the elderly
• Compliance
CNS DRUGS AND THE ELDERLY

• Major tranquilizers—elderly are particularly vulnerable to the side effects e.g., Delirium, extrapyramidal symptoms, arrhythmias, postural hypotension

• Higher incidence of tardive dyskinesia and choreiform side effects

• DIAZEPAM: $t_{1/2}$ life is 20 hours in young but 90 hrs in 80 yr old (increased Vd)

• LORAZEPAM (10-20 HRS) and OXAZEPAM (5-15 hrs) no major changes in elderly

• FLURAZEPAM (7 DAYS), TEMAZEPAM (15 HRS)—Cerebellar and Frontal Lobe dysfunction—predispose to falls in the elderly
Benzodiazepines

- Depressogenic
- Ataxia --- leading to falls and fractures
- Confusion
- Disinhibition -- aggression & sexually inappropriate behaviour
- Withdrawal symptoms
- AVOID long acting Benzo’s such as diazepam and flurazepam (except maybe in alcohol withdrawal)
Challenges - Medications
RECOMMENDATIONS FOR DRUG THERAPY IN THE ELDERLY

• Make a diagnoses before initiation of multiple drug therapy. Avoid treating symptoms!
• Begin with a low dose; simplify the dose and drug regimens---maximise compliance
• Advise patients of any serious drug effects-- ?Potential cause of new symptoms
• Periodically review the list of medications and review the doses that need to be adjusted with increasing age
• Advanced patient age, in itself should NEVER be considered a contraindication to beneficial drug therapy in older persons
GIANTS OF GERIATRICS

- IMMOBILITY
- INSTABILITY
- INCONTINENCE
- INTELECTUAL IMPAIRMENT
- IATROGENIC
Faces of dementia
World Alzheimer’s Day · 21 September

To get involved visit

Made possible by a grant from Mollie Foundation

www.alz.co.uk
DEMENTIA

• DEMENTIA is a syndrome in which progressive deterioration in intellectual abilities is so severe that it interferes with the person’s usual social and occupational functioning.

• Guidelines on the Management of Dementia 2003
The Failing Brain
Memory Loss

 whatsoever happened to our sexual relations?

I don't know. I don't even think we got a Christmas card from them this year.
DEMENTIA

- Acquired global impairment of higher cortical functions including memory,
- The capacity to solve problems of day to day living
- The performance of learned perceptuo-motor skills
- The correct use of social skills
- All aspects of language and communication
- The control of emotional reaction
- ALL OF THE ABOVE IN THE ABSENCE OF CLOUDING OF CONCIOUSNESS
- DEMENTIA IS OFTEN PROGRESSIVE THOUGH NOT NECESSARILY IRREVERSIBLE!

ROYAL COLLEGE OF PHYSICIANS
DEMENTIA – the spectrum
Differential diagnosis of dementia

Vascular dementias
- Multi-infarct dementia
- Binswanger’s disease

Vascular dementias + Alzheimer’s disease (AD)

Dementia with Lewy bodies
- Parkinson’s disease
- Diffuse Lewy body disease
- Lewy body variant of AD

Other dementias
- Frontal lobe dementia
- Creutzfeldt-Jakob disease
- Corticobasal degeneration
- Progressive supranuclear palsy
- Many others

AD

AD + dementia with Lewy bodies

5% 10% 65% 5%

7% 8%

SUMMARY
SYMPTOMS OF AD

- Progressive deficit of memory
- Progressive loss of functional skills
- Behavioral disturbance, mood disorders and psychotic problems---arise and disappear
- Very early signs of memory loss and diminished activity are subtle, often overlap with normality
DETRIMENTAL EFFECTS OF AD ON CAREGIVERS

- **PSYCHOLOGICAL** (Depression, anxiety, anger, resentment, violent behavior)
- **PHYSICAL** (Increased systolic hypertension and compromised immune function)
- **MARITAL**
- **SOCIAL**
- **FINANCIAL** (costs CN$3.9 billion in 1991, ??costs of informal care)
EARLY DETECTION OF AD

• The accumulation of warning signs based on observations made by the patient or caregiver correlates with the progressive nature of AD.
• Published practice guidelines have favoured early detection and treatment of dementia—screening should not only be for patients who have suggestive symptoms but for all elderly persons.
• AD IS NOW RECOGNISED AS AN IMPORTANT PUBLIC HEALTH PROBLEM THAT HAS DEVASTATING EFFECTS ON THE PATIENT AS WELL AS THEIR CAREGIVERS—EARLY DETECTION IS THE 1ST STEP EFFECTIVE MANAGEMENT OF AD.
What the GPs admit

29% say they haven’t had enough training to diagnose and manage dementia.

60% feel there is a reluctance to diagnose because of lack of support for sufferers.

50% feel there is a reluctance to diagnose because doctors do not have enough support or training.

10% feel there is nothing that can be done for those with dementia.

40% feel hesitant about diagnosing patients because of a lack of access to drug treatments.

72% feel the lack of services to support dementia patients is the biggest barrier to improving care.
Prevalence of Dementia in older people (Age 65 +) in Malaysia 7/2005

DEMENTIA

Estimated Population: (65 years +)
Females: 622,624
Males: 490,334
Total: 1,112,958 (4.6% of 23,953,136)

5% of 1,112,958 = 55,648 (A) will have dementia of a kind

Source: International data base Census Bureau
Prevalence of dementia in older people (Aged 65 +) in Malaysia: 7/2005

As age increases the higher the percentage
80-85 Years +

DEMENTIA

Estimated population:

Females 90,541
Males 54,101
Total 144,642 (Rep: 0.6% of 23,953,136)

20% of 144,642=28,928 (B) will have dementia of a kind

Source: International data base Census Bureau
Essential Components of a Comprehensive Service

Source: “Forget-Me-Not” Audit commission Jan 2000
DEMENTIA

• Strongest contribution to development of functional dependence and declining function
• Increased mortality rates relative to elderly without cognitive impairment
• MALIGNANCY OF DEMENTIA-major predictor of death in the elderly
Giants of Geriatrics

- **IMMOBILITY**—avoid the vicious spiral of immobility by early intervention and multifactorial treatment focused on the factors which will improve the quality of life.

- **INSTABILITY (FALLS)**—optimal fall prevention strategy is the identification amongst the elderly who have modifiable risk factors.

- **INCONTINENCE**—causes should be identified and treated the contributing factors early.

- **INTELLECTUAL IMPAIRMENT**—dementia, delirium or depression detect early.

- **IATROGENIC**—Avoid polypharmacy and ADR in elderly by careful prescription of drugs.
Smoking prevents dementia.

According to many scientific researches people who smokes have an higher chance to die young. On the 31st of May, the World No Tobacco Day, the Mayor of Nettuno invites all the smokers to stop before it’s too late.
Challenges - Preventing Dementia??
CONCLUSION

• “A Geriatric Storm of Epic Proportions is brewing worldwide and we need urgently to find effective strategies in managing the onslaught of the Geriatric Giants on our Ageing Populations”
THANK YOU