

# General Surgery: Is the general dead?



Arthur G. Felice, MD, MSc, FRCS Ed, FEBS.  
University of Malta  
President UEMS Division of General Surgery

# General Surgery

- ▣ Not easy to define
- ▣ Competences and training within General Surgery vary significantly worldwide

# Status of General Surgery

- ▣ Passed through difficult times in terms of popularity. Surveys in the U.S. and Canada:
  - 1981 12% of medical graduands chose General Surgery
  - In 2001 only 6% in the U.S. and 4% in Canada
- ▣ Now in the recovery phase as a result of remedial measures following adverse effects of rampant hyper-specialisation.
- ▣ It is still a unifying force in surgery and a gatekeeper for surgical education

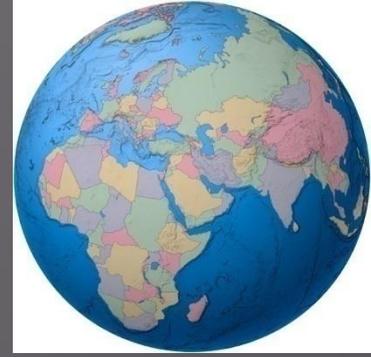
# Is General Surgery necessary?

- ❑ Pigeon-holing, more comprehensive treatment and continuity.
- ❑ Staffing district general hospitals
- ❑ Hospitals in small island states and small islands off the coast of larger states
- ❑ Training surgeons for service in third world countries.
- ❑ Dealing with emergency surgery
- ❑ Basis for training of Emergency Surgeons

# Reflection:

- ▣ Is there a problem ?
- ▣ Magnitude of the problem
- ▣ Causes
- ▣ Effects
- ▣ Possible remedies

# Worldwide:



- ❑ 234 million major operations performed per year
- ❑ 30% of the world's population receive 74% of the surgical procedures
- ❑ The poorest 30% receive only 3% of the above
- ❑ 30% of the world population are served by < one operating theatre per 100,000 population

**i.e. Insufficient surgical capacity and lack of equity in accessibility**

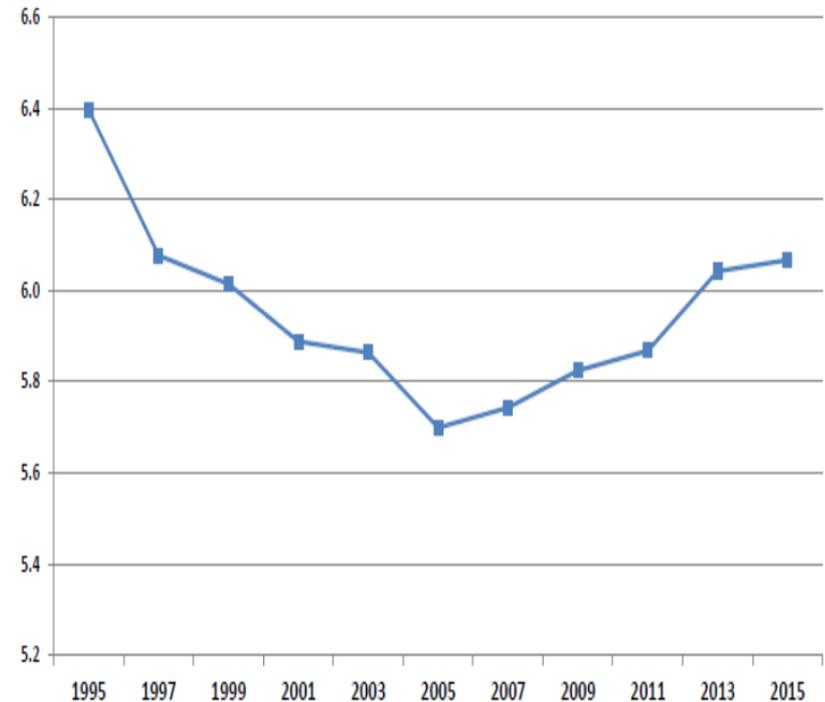
# Targets

- ▣ WHO suggests 20-40 surgeons / 100,000 population.....**but**.....
- ▣ The surgical workforce is critically inadequate in large parts of the world
- ▣ The workforce distribution is grossly inequitable

# What is happening to the workforce?

- Despite remedial measures, the growth of general surgeons statistics has failed to keep pace with population growth and workload, more so in rural areas
- The number of new surgeons necessary for replacing those nearing retirement age appears disproportionate
- Poor uptake of female talent due to poor career/lifestyle balance in most countries
- AMA statistics: Consequent to the 'baby-boom', the proportion of clinicians aged 65 years or older rose from 9.4% in 1985 to 15.1% in 2011.

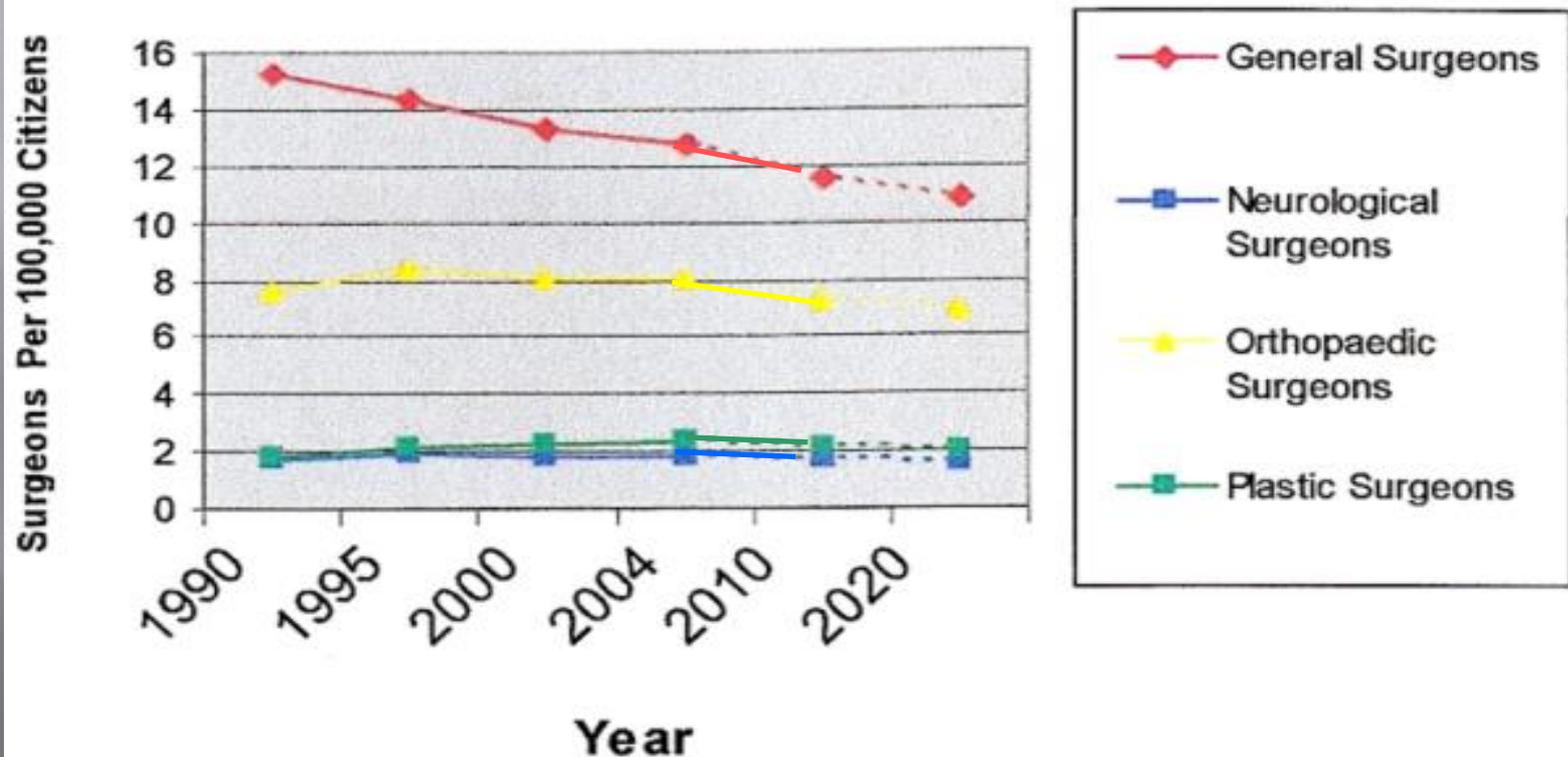
Physicians/100,000 population for General Surgery  
in Canada, 1995 to 2015



Source: CMA Masterfile

# ACS Projections:

## Surgical Specialists Providing Emergency Care per 100,000 U.S. Citizens



# Forces shaping the workforce crisis

- Financial concerns:**
- 1) Inadequate pay
  - 2) Concerns with increased liability risks and premiums
  - 3) Disruption of 'private practice'

**Social concerns :** Family and social disruption; gender discrimination

**All these factors result in:**

- ▣ Sub-specialization
- ▣ Unavailability for emergency on-call cover

# Why is the shortfall happening?

- ▣ Growing movement towards sub-specialisation (About half the general surgery trainees or more become single-organ specialists)
- ▣ Inadequate number of trainees in specialties dealing with emergencies (out of proportion with medical counterparts)
- ▣ The feminisation of medicine did not transmit into a corresponding choice of general surgical specialisation.
- ▣ Time needed to train specialists in General Surgery
- ▣ Increased mean age of general surgeons etc.



strain on cover



decreased quality of care

# Defining hyperspecialisation:

- ▣ Number of times a procedure or group of procedures targeting a single organ or system is performed
- ▣ *Divided by:*
- ▣ Total operative volume covering all procedures

# HYPER-SPECIALISATION: HOW MANY SPECIALISTS DO YOU NEED TO SOLVE THIS PROBLEM?

Multi-organ +

Multi-system involvement

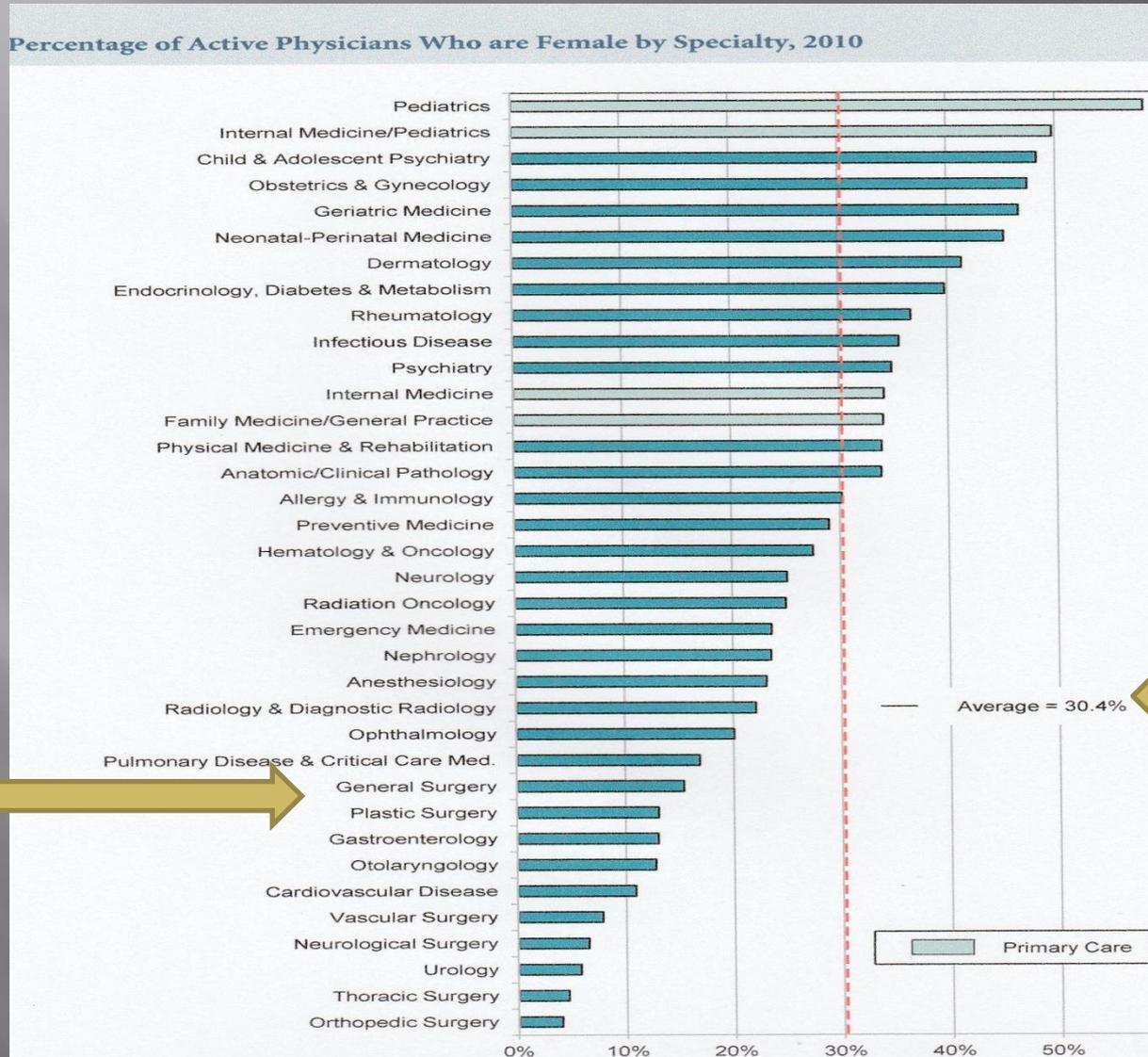


# Gender considerations

# Some relevant statistics:

- ▣ % age of female medical students in Europe...55% to 65%
- ▣ Between 2007-2012 in UK: Female doctors <30 years **increased** by 30% whilst males **decreased** by 1%.....**but**.....
- ▣ In the UK in 2013 the workforce in General Surgery was 11% female against 89% males. (Females opt out of G.S.)
- ▣ In the US females are similarly under-represented in General Surgery

# %age of female physicians who are active by specialty in the US - Below average



Source: AMA Physician Masterfile (December 2010)

# Gender domination

- ▣ Surgery is still male dominated though there has been some (insufficient) progress
  
- ▣ Gender is still a determining factor in choosing a career in General Surgery in most countries. Possible reasons:
  - Difficulty with career-quality of life balance
  - Gender discrimination
  - Lack of role models and mentoring
  - ?Personality difference
  - Harassment

 Females are under-represented in General Surgery

 Loosing out on talent

 Loss on taxpayer investment

# What is happening to the workload

U.S. projections between 2000 and 2020 :

- ▣ Population growth expected to increase by 18%
- ▣ General Surgery workload expected increase by 31.5%

# What can we expect?

- ▣ Workforce trends

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graph LR; A[Workforce trends] --> C[Crisis]; B[Rising demands despite decreased trauma] --> C;
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Crisis

- ▣ Rising demands despite decreased trauma

Have there been consequences?

# Statistics from the UK

*(I. Anderson for RCS Eng. 2011)*

- ▣ 170,000 emergency surgical (non-cardiac) operations/year
- ▣ 100,000 experience complications
- ▣ 25,000 die (crude mortality rate: 14.7%)
- ▣ >80 year olds undergoing emergency GIT surgery :  
Crude mortality up to 50%
- ▣ Recent study gave somewhat improved figures

# Cause/s:

- ▣ High index of suspicion – Insufficient adequate General Surgery cover

In the meantime:  
General Surgery is under siege

# Inroads into General Surgery

- ▣ Tendency towards 'hyperspecialties' and 'single organ specialties' reducing the Generalist to insignificance.
- ▣ Take-over by specialties outside surgery e.g. Gastroenterology endoscopic procedures and Interventional Radiology
- ▣ Gatekeeping of our referrals has been lost to other specialties e.g. gastroenterologists, sometimes resulting in late or 'complicated' referrals.
- ▣ Paradigm shift from strictly operative to possibly conservative gold standards for surgical emergencies: *Is this EBM or medicine of convenience?*

# Our answer at present: Expansion of Minimal Access Surgery

- ▣ This is a method or a tool and not a subspecialty
- ▣ It is itself fragmented into single-organ approaches.

# A more comprehensive stand is necessary:

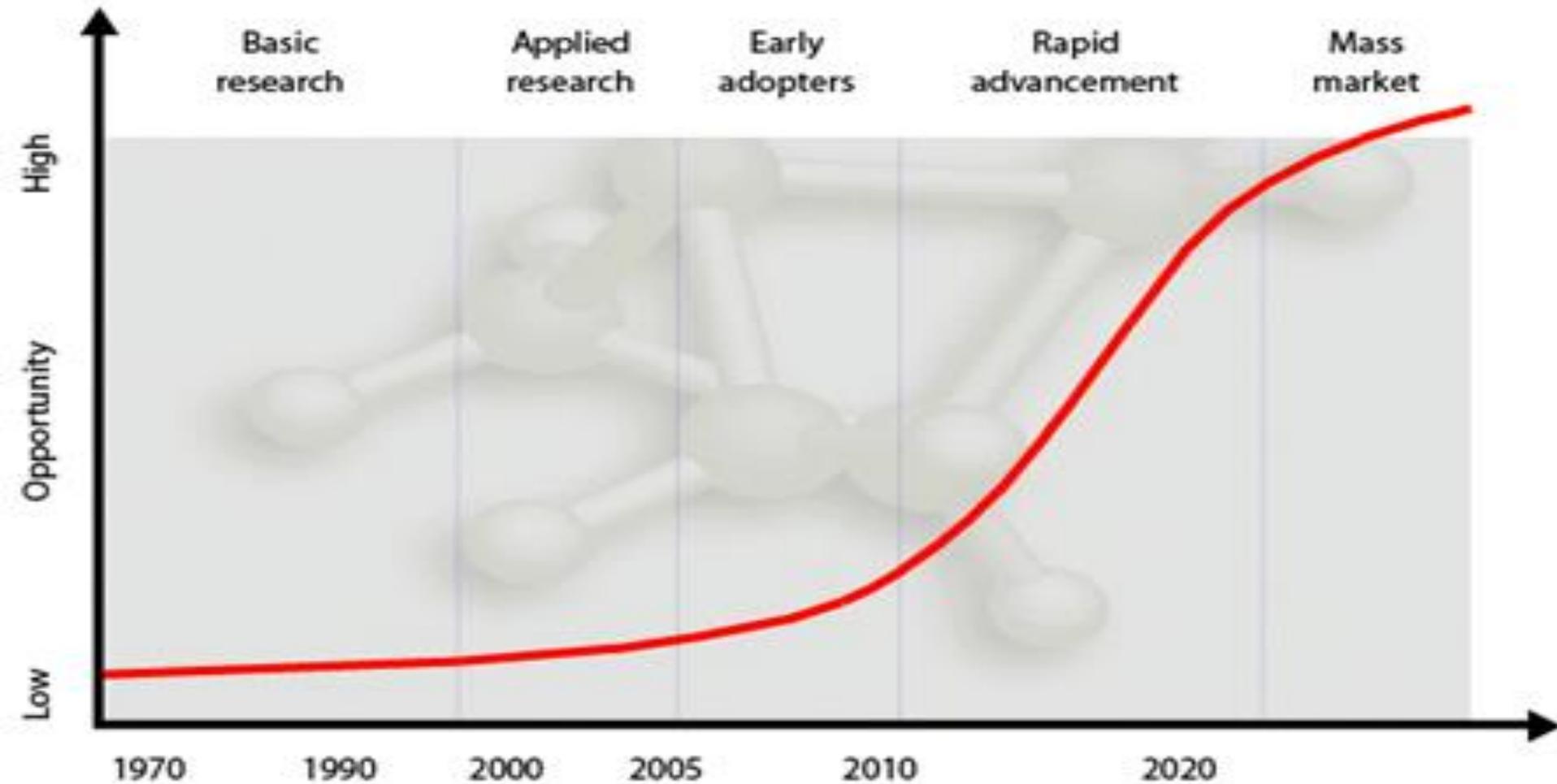
- ▣ General surgical training should include gastroenterology endoscopic procedures and interventional radiology as part of the rotation
- ▣ This fact should be emphasised with legislators and administrators to ward off legal and indemnity concerns
- ▣ 'Gate-keeping' should not be allowed to pass to other specialties e.g. gastroenterology.
- ▣ General surgeons should get involved in development and application of new technologies
- ▣ Making a career in General Surgery more attractive
- ▣ Reversing causes of family and social disruption as well as gender discrimination
- ▣ Healthcare planning: Greater proportion General Surgery jobs

# Evolution and adaptation

- ▣ The traditional skills and techniques should continue to form the basis of surgical education, *but....*
- ▣ More and more training will be needed in emerging technologies
- ▣ Both these approaches are necessary.

# Involvement with new technologies e.g. Nanotechnology (*provocative example*)

## The growth of nanotechnology



# Nanotechnology is not pie-in-the-sky

Nanomaterials are found in more than 1,600  
consumer products on the market today,  
including medicine

# Potential nanotechnology applications in General Surgery

- ▣ Early diagnosis
- ▣ Surgery assisted by nanotechnology
- ▣ Ideal grafts
- ▣ Bioprinting
- ▣ Micro robotic surgery
- ▣ Surgical oncology
- ▣ Antimicrobial applications
- ▣ General therapy applications

# Surgeons *must* be involved

- ▣ Nanotechnology has created an unprecedented multidisciplinary convergence .
- ▣ Surgeons are the best people to cooperate , advise and apply nanosurgery applications
- ▣ Surgeons have ample experience of what happens when they ignore new technologies, techniques and scientific developments (e.g. Cardiac percutaneous interventions, Interventional radiology, Endoscopic procedures)
- ▣ Leaving new technologies entirely to others would be a serious mistake.

The same argument applies  
to other new technologies

# How is General Surgery faring in Europe ?

Individual states in the EU have:

- ▣ Different formative programmes
- ▣ Different health organisation
- ▣ Different geographical challenges
- ▣ Different logistics



# The effect

- ▣ This renders standardisation of training and assessment difficult (not impossible)
- ▣ However, issues of patient safety and professional mobility make standardisation *a necessity*

# Surgical Emergencies

# General surgery as an entity

- ❑ Some countries exclude General Surgery as an entity e.g. Sweden, but favour the concept of an Emergency Surgeon (Bakjoursskolan)
- ❑ This involves transplanting the 'damage-control concept' to the general surgeon.....*However*.....
- ❑ General Surgeons have traditionally formed the backbone of services involved with surgical emergencies
- ❑ Damage Control Surgery and Damage control Resuscitation (Physiology given priority over anatomical reconstruction), is not alien to General Surgery.
- ❑ Even 'specialised' Emergency Surgeons need substantial experience in General Surgery
- ❑ General Surgery is a unifying force in surgery (*Need for inclusion not exclusion*).

# Solutions

1. Increasing the General Surgery training posts while decreasing the proportion of hyper-specialist posts
2. Judicious increase in medical student uptake in some countries (needs appropriate projections)
3. Incentives for emergency cover
4. Incentives for rural practice
5. Less emphasis on direct involvement in research and more on proper appraisal of research (avoiding poor quality research and information overload)
6. Improving lifestyle issues e.g. part-time and shared work
7. Hybrid clinical-academic roles for those who are not full time
8. Better utilisation of female and senior surgeon expertise e.g. job-sharing
9. Proportionate liability premiums for part-timers instead of flat rates

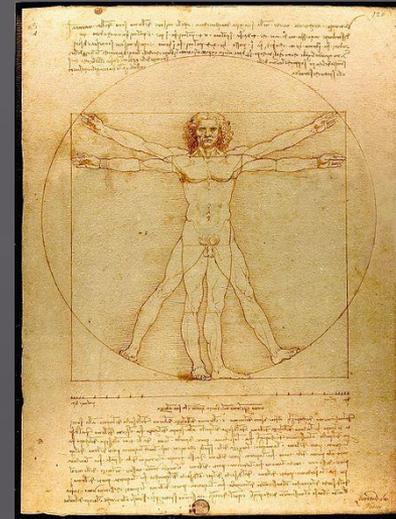
# Effects of these solutions

- ▣ Direct effect on demographics in General Surgery
- ▣ Encourage more medical graduates, especially females, to take up General Surgery
- ▣ Avoid long periods detached from clinical practice for purposes of research resulting in de-skilling and contributing to the information overload
- ▣ Reduce burnout rate
- ▣ Balance the increased demand due to the growing and aging population

# Conclusion:

## A multipronged approach is necessary

- Understand the present problems
- Attract the best talent, irrespective of gender
- Increase the number of General Surgery posts
- Re-think our health care models
- Adjust our curricula to include new technologies.
- Make sure we retain 'gate-keeping' and not let it slide away.
- General surgeons ,with additional subspecialty training ,working within a multidisciplinary context
- Better utilisation of senior surgeon expertise
- General surgeons should get involved in development and application of new technologies
- Increase graduate and post-graduate funding
- **General Surgery should continue to be the core and matrix of surgical training**



# Any questions?





Thanks!

# Definition of General Surgery

General Surgery is a large specialty which requires the acquisition of knowledge in basic sciences required in the development of clinical and operative skills as well as specialised knowledge and skill in managing congenital and acquired diseases and injuries of most organ systems, which are treated by operative and other interventions. It provides for operative and non-operative management, i.e. prevention, diagnosis, evaluation, decision making, treatment, intensive care and rehabilitation of patients with pathological processes that affect these organs, including the management of pain. It also involves the necessary knowledge and expertise leading to referral to specialised centres when this is indicated and possible, and where this is not possible because of time and geographical considerations, to possess the multi-specialty skills to carry out these interventions safely.

General Surgery co-operates with other surgical specialties, anaesthesia, intensive care, emergency medicine, radiology, neurology, paediatrics, internal medicine, geriatrics, rehabilitation medicine, obstetrics and gynaecology and also pharmacy in the management of patients.