

cholecystectomy of a 68-year-old woman in Strasbourg, France using remote-controlled robots and a high-speed cable video link.<sup>9</sup> This procedure was expensive as it used especially designed fibre-optic link. To make it cost effective in 2003 surgeons in Canada performed telerobotic assisted antireflux surgery using regular national internet system with a special priority networking connection that allowed information signals to travel along the public information highway, but in a lane blocked off for its private use to avoid traffic jams.<sup>10</sup>

- *Telehealth*: Sometimes used interchangeably with telemedicine, telehealth includes a diverse group of health-related activities for distance learning in health care delivery settings for both health professionals and patients. This also encompasses the use of information technology in public health, research and administration of health services. The health care worker in the rural set up can get updated with the recent development in the field of medicine with online resources like journals and research databases. Nowadays, telehealth is also known by the names online health and e-health.

### Beyond boundaries

Telemedicine can run beyond national geographical boundaries and bring the concept of a global health care village into reality. People from developing countries can benefit from the clinical expertise in developed countries, and developed countries can get services like teleradiology and telepathology from well accredited doctors in developing countries at a significantly low cost, which is made possible only through the use of the internet. The developed countries can also benefit from the medical expertise in the developing countries. In September 2003, Dr Ashok Sethi, Chief of Interventional Cardiology at Escorts Heart and Research Centre, New Delhi, demonstrated angioplasty procedures live via a satellite link to an annual meeting of heart surgeons in Washington, D.C.<sup>11</sup>

Telemedicine has created a global debate as to whether it can provide health care to disadvantaged rural people or not. There are, on one side, enthusiasts of telemedicine who envision the potential in telemedicine to put an end to the present disparity in health care service to rural areas, whereas others are of the opinion that it is not perfect solution to the present problem and may even do harm to the development of local resources. The enthusiasts argue that telemedicine helps to redistribute knowledge and expertise to rural areas in a cost effective way. There is evidence that telenursing can be cost effective, electronic referral and teleconsultation can be cheaper, and teleradiology, which is widely used in the USA, is found to be safe and in right circumstances economical.<sup>12</sup>

However, some people think that telemedicine is going to affect the traditional doctor patient relationship and argue that it can impair the clinician's decision-making. There are the issues of maintaining confidentiality, guidelines of practice to ensure safety and standard and legal issues, which are still not perfectly clear in the case of telemedicine. There is fear that the use of teleconsultation through a local clinician on a larger scale may stifle the development of local resources and lead to dependence. The remote consultant may prescribe treatment not knowing what is available, affordable, or acceptable locally.<sup>13</sup> The establishment cost and maintenance of the service can be a great challenge to run telemedicine in remote rural areas of developing nations where there are either no, or intermittent, power supplies, and phone lines are unreliable.

Richard Wooton, currently the editor of a specialised peer reviewed journal of Telemedicine and Telecare, once expressed concern that commerce might become the driving force behind the spread of telemedicine.<sup>14</sup> Still, many people fear that telemedicine is market driven, with technological push (and associated big commercial interest) being greater determinants in its development than the clinical pull.

### CONCLUSION

Telemedicine is unlikely to ever be as good as face to face consultations.<sup>15</sup> However, owing to the constraint of human resource and time, telemedicine helps greatly in delivering health care service to deprived people of rural areas worldwide, and educating the health care professionals and patients in much better way than what has been practiced conventionally.

### REFERENCES

1. Government of India  
*Ministry of Health and Family Welfare, Annual Report, 2000-2001*  
New Delhi: Government of India Press, 2001
2. London Martin  
**Rural health care in New Zealand: Poised for renaissance?**  
*Aust J Rural Health* 2002; 10:117-124
3. Ricketts Thomas C.  
**Rural health care in the United States**  
[www.mansfieldfdn.org/programs/program\\_pdfs/ricketts.pdf](http://www.mansfieldfdn.org/programs/program_pdfs/ricketts.pdf)  
(accessed 18 June 2005)
4. Larson EH, Johnson KE, Norris TE, Lishner DM, Rosenblatt RA, Hart LG.  
**State of the health workforce in rural America: profiles and comparisons.**  
Seattle: WWAMI Rural Health Research Center, August 2003
5. WHO  
**Information technology in support of health care**  
<http://www.who.int/eht/en/InformationTech.pdf>  
(accessed 18 June 2005)
6. Larkin Marilyn  
**Telemedicine links US doctors with space**  
*Lancet* 1997; 349
7. Bashshur RL, Reardon TG, Shannon GW.  
**Telemedicine: a new health care delivery system.**  
*Annual review of public health* 2000; 21:613-37
8. WHO  
**Telehealth and telemedicine henceforth will be part of the strategy for health for all** 1997  
[www.who.int/archives/inf-pr-1997/en/pr97-98.html](http://www.who.int/archives/inf-pr-1997/en/pr97-98.html)  
(accessed 26 Dec 2004)
9. Larkin Marilyn  
**Transatlantic robot-assisted telesurgery deemed a success**  
*Lancet* 2001; 358
10. Pirisi Angela  
**Telerobotics brings surgical skills to remote communities**  
*Lancet* 2003; 361
11. Mudur Ganapati  
**The great technological divide**  
*BMJ* 2004; 328: 788
12. Wootton Richard  
**Recent Advance: Telemedicine**  
*BMJ* 2001; 323: 557-560
13. Rigby Michael  
**Impact of telemedicine must be defined in developing countries**  
*BMJ* 2002; 324
14. Larkin Marilyn  
**Telemedicine finds its place in the real world**  
*Lancet* 1997; 350
15. Wootton Richard  
**Telemedicine: a cautious welcome**  
*BMJ* 1996; 313: 13775-77

## FEATURE : CONFERENCE REPORT

# The 2005 Annual Scientific Meeting of the Australasian Society of Aerospace Medicine and the 5th Asia Pacific Congress of Aerospace Medicine

Andrew Winnington

Third year student  
Dunedin School of Medicine  
University of Otago

The 2005 Annual Scientific Meeting of the Australasian Society of Aerospace Medicine (ASAM) and the 5th Asia Pacific Congress of Aerospace Medicine convened at the Gold Coast International Hotel in Surfers Paradise, Queensland, Australia from the 15th to the 18th September 2005. It was hosted by the Aviation Medical Society of Australia and New Zealand (AMSANZ; [www.amsanz.org.nz](http://www.amsanz.org.nz)), Australasian Society of Aerospace Medicine (ASAM; [www.asam.org.au](http://www.asam.org.au)), and the Asia Pacific Federation of Aerospace Medicine Association (APFAMA). Delegates were comprised mainly of doctors, who were Designated Aviation Medical Examiners (DAME), aerospace medicine researchers including a large delegation from the Chinese Society of Aerospace Medicine, members of the aviation industry and representatives from the military.

Aerospace medicine is the medical specialty that is concerned with the interaction between the aviation and space environment and human physiology, psychology and pathology. All medical practitioners need to know something about aerospace medicine because everyone who flies experiences some form of decompression related alteration in physiology. Ninety percent of people who fly get Jet Lag (fatigue), oedema, or microvascular venous failure. The remaining ten percent experience asymptomatic Deep Vein Thrombosis (DVT), symptomatic DVT, Pulmonary Embolism (PE) or, very infrequently, death. In our lifetime, space tourists may present with orthostatic intolerance (hypotension associated with fluid shifts).

Themes of the conference included aviation psychiatry, aeromedical operations and space physiology. Research presented included plans for artificial gravity during interplanetary missions, vestibular-oculomotor deficits experienced by astronauts post-flight (Space Adaptation Syndrome) and the related spatial disorientation during shuttle landings (which result in 70 percent of landings rated as poor including one being near catastrophic), mental stress and cardiovascular variability in student airline pilots, aeromedical evacuation operations in Banda Aceh, and anti-SARS experiences in China.

The impact of fatigue in the aerospace industry was the main focus of the conference. Professor Philippa Gander from Sleep/Wake Research Centre at Massey University and Dr John Caldwell from the US Air Force were the keynote speakers. Fatigue is physiologically induced by increasing the number of continuous hours of wakefulness and sleep loss. Circadian factors are also important and cause the body to perform like an orchestra during the pre-performance tune up. Fatigue is already a significant problem in the aviation workplace given long periods monitoring automated systems and, with respect to aircrew, changes in time zones and the length of flights. Fifty percent of military pilots, 71 percent of corporate pilots, and 80 percent of commercial pilots admitted that they had fallen asleep or nodded off in the cockpit during



Fifty percent of military pilots, 71 % of corporate pilots, and 80 % of commercial pilots admitted that they had fallen asleep or nodded off in the cockpit during flights.

It is therefore not surprising that the 3 - 7 percent of all aviation accidents that are recorded as fatigue-related is considered to be just the tip of the iceberg.

Sixteen hours of continuous wakefulness is required to induce serious behavioural detriments similar to alcohol intoxication. Specifically restricted sleep causes:

- irritability
- degraded alertness
- slower reaction time
- poor psychomotor skills
- slower cognitive processing
- cognitive fixation
- less creative problem-solving
- immune suppression
- increased appetite (for junk-food)

The problem of fatigue is about to get significantly worse with the introduction of 24/7 operations and the development of ultra long haul passenger aircraft making 22-hour commercial operations from Sydney to London non-stop. Currently 16-hour flights operate from Singapore to Los Angeles. Military flights have been up to eighteen hours but pharmacological intervention is routine. Studies have shown F1-17 pilots can be kept awake for 2-3 days with no statistically significant loss of function when given amphetamines every couple of hours.

Sleep restriction is common in the aerospace industry (as it is for medical students and junior doctors in hospitals) and there is large individual variability in sleep and resistance to the effects of sleep loss. Recovery is based on deeper more consolidated sleeps and not hour for hour reparation. After two uninterrupted sleeps, EEG indicates the normal sleep architecture returns. However, it takes more than three days before full waking function is restored. Sleep needs to be maximised prior to work and during lay-overs and the rest opportunities during

flights needs to be maximised. Commercial pilots use hypnotics (such as Temazepam) to assist in reconstructing the sleep architecture but sleep medications are not recommended for ongoing fatigue.

Courses in aviation medicine are offered at the Wellington School of Medicine, University of Otago. Papers include aviation physiology, aircrew and performance, airport and travel health, and clinical aviation medicine. For further information see:

[www.otago.ac.nz/Web\\_menus/Dept\\_Homepages/aviation](http://www.otago.ac.nz/Web_menus/Dept_Homepages/aviation)

#### REFERENCE

- Asleep in the Sun*  
Conference Handbook  
The 2005 Annual Scientific Meeting of the Australasian Society of Aerospace Medicine and the 5th Asia Pacific Congress of Aerospace Medicine

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## FEATURE : BOOK REVIEWS

#### Aoifé Kenny

Second year student  
Dunedin School of Medicine  
University of Otago

#### Illustrated Clinical Anatomy

Abrahams, Craven and Lumley, \$89.00

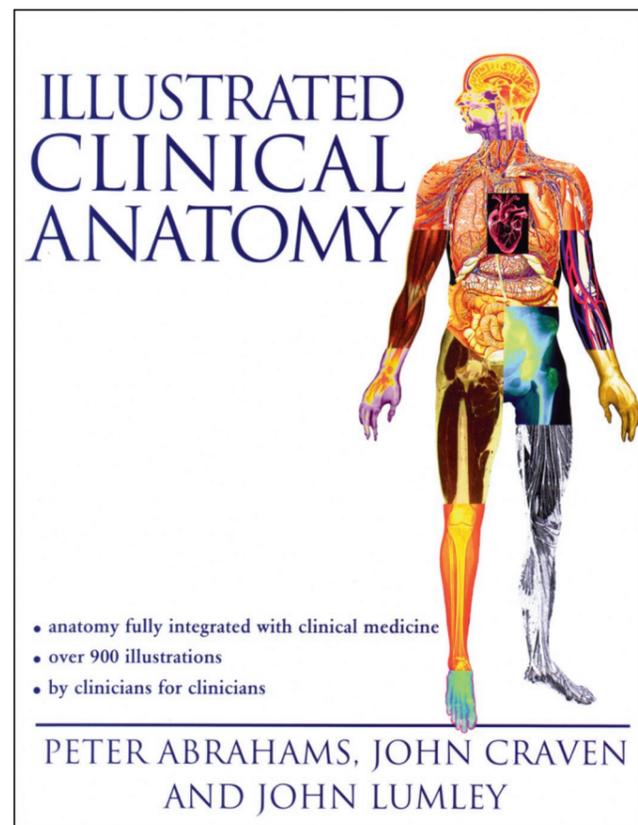
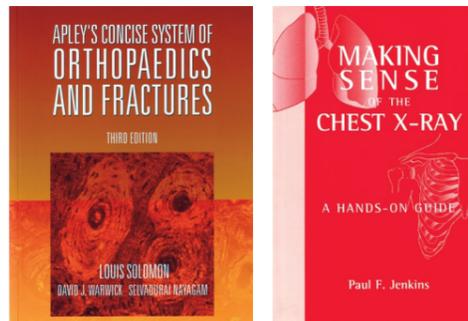
This anatomy textbook describes itself as "...integration of anatomy teaching with the study of clinical medicine". It has been written by two surgeons and a GP, also a professor of clinical anatomy. I like the sound of that. Doctors writing for doctors-in-training.

At first sight I thought it was too small to be an anatomy textbook, being about half the size of Moore. However in my brief read I found this to be no problem. The layout of Abrahams *et al.* is as is normal for anatomy textbooks: by body region. However there is one difference that seems just what I've heard some many people say they wanted. It's logical. For example, in 'The Pelvis' the bones are first discussed, followed by joints, muscles, fasciae and organs. Function is described throughout. An aspect of this book that I particularly like was that the clinical information was not in a box to the side. It is in the text itself, and highlighted. I would expect such things form a 'Clinical Anatomy' textbook.

I would also expect cool pictures. Some of the clinical photos are quite graphic – like some guy casually sitting with a sternal puncture, or a right indirect inguinal hernia extending into the scrotum. They don't just have photos though. There are lots of diagrams, imaging and surface anatomy. A patient won't come to you partially dissected (hopefully). This book has many photos of a person with the relevant organ/area superimposed. It helps with perspective and tying all our disjointed anatomical knowledge together.

Another good aspect is the one page of SAQs and MCQs at the end of each region. And there are answers, thank goodness.

In summary, I liked it. However, I wouldn't replace an atlas with it, there isn't enough of that sticky detail. I would like the anatomy department to have a look and see if it covers all that we need to, the anatomical and the clinical. Appropriate for all levels of medical training.



#### Making Sense of the Chest X-ray: a hands-on guide

Jenkins, \$70.00

The lecturer says "and you can see clearly that this man has a bronchiogenic cyst". You look enthusiastically at the projected image, and see no difference between that and the primary tuberculosis patient's x-ray. What to do?! It would be wonderful to have an experienced physician at hand to lead you through the complexities. Paul F. Jenkins may be your man.

His book begins with a systematic approach to interpreting the radiographs. He refers to this many times and the final section of the book challenges you to diagnose patients using the method. Within the body of the text are five chapters focusing on specific features, such as "Consolidation, Collapse and Cavitation". The radiographic appearances are explained and pathologies detailed. For example, within the "Consolidation" part of the chapter is "What is the distribution of the abnormal shadowing?" given below are the possible causes of each type of distribution. This would be a wonderful tool for differential diagnosis.

'Making Sense of the Chest X-ray' is a well written book. It is as though Dr Paul himself is speaking to you. There are little text boxes throughout containing clinical associations, warnings and "pearls of wisdom". Abbreviations are explained at the beginning. My need for bullet points was well satisfied. However the names of diseases, syndromes and the likes made things a bit tricky. What on earth is Osler-Rendu-Weber syndrome? Because the book requires higher medical knowledge and is so clinically focused I feel that it would be best suited to clinical-years students and junior doctors. However, a pre-clinical student with a few textbooks and a radiographic inclination would also reap wisdom from Jenkins' guide through the murky chest x-ray.

#### Apley's Concise System of Orthopaedics and Fractures, 3rd edition

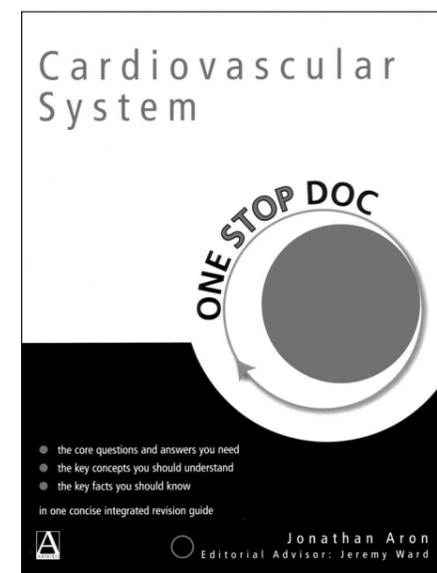
Solomon, Warwick and Nayagam, \$85.00

This textbook aimed to introduce medical students and trainee surgeons to modern orthopaedics, with a focus on "actual diseases". The authors also wished to provide guidance on simple procedures without excessive detail. Knowing how to operate – now that sounded exciting.

They didn't lie. After going through the pathogenesis, clinical presentation and imaging, for example, the treatment was discussed. If treatment included surgery you are briefly told of the goings-on in the operating room. And focus is definitely on the disease/injury/condition. One thing I found was that conditions were discussed in different ways, sometimes the differential diagnosis was detailed and sometimes not, for instance.

The layout is reasonable. Again there are the wee boxes containing condensed and important information. The book is structured by general orthopaedic stuff, conditions by body regions, and one section on fractures and joint injuries. At the beginning of the chapters the subjects contained are listed with page references. This would be very handy for quick reference. However, I found it slightly difficult to 'jump into' and pick out certain things. It is quite hard to see where a new condition begins and if you're looking at a new subject or just a subheading. Furthermore, you really need to know your anatomical terms: "...by pressing on the dorsum while manipulating the wrist into flexion, ulnar deviation and pronation". Saying that, there are lots of pictures, MRIs, diagrams, and funky clinical photos.

I would say this is worth the cash if you are really interested in becoming an orthopod. For orthopaedic training I would suggest something with more detail. There is a bigger book 'Apley's System of Orthopaedics and Fractures', which is said to have more detail in descriptions and in surgical procedures.



#### One Stop Doc

Series of nine, various authors, \$44.99 each

Well now, 'One Stop Doc' sounds like medicine made easy. I was curious. On the front of each of the nine books there is a statement that it will cover the core questions, the key concepts and the key facts. And that it is an integrated revision guide. I hadn't seen anything like this for medical students.

The books contain questions on anatomy, physiology, biochemistry and pharmacology. Questions are in the form of True/False, short answer and multiple choice. Many questions are based on cases. Oh and the answers are written really tiny at the bottom of the page facing the questions. On that page also is the gem of this series: a concise and easily read explanation of the answers. One other nice thing is that the abbreviations are not only clarified at the front of the book, but also on the bottom of the pages that contain them.

These are truly revision tools. I wouldn't base my entire respiratory system knowledge on the information given on the 'explanation page', for example. However, they are very good. A bit on the pricey side at \$44.99 a head. Have a look for yourself if you can and see if you think they're worth it.

The series consists of:

- Nervous System
- Cardiovascular System
- Respiratory System
- Musculoskeletal System
- Gastrointestinal System
- Endocrine and Reproductive System
- Renal and Urinary System and Electrolyte Balance
- Metabolism and Nutrition
- Cell and Molecular Biology