VISIT TO REHABILITATION INSTITUTIONS IN NORTH AMERICA AND EUROPE
20 APRIL 1998 - 5 JUNE 1998

SALIENT POINTS FROM VISITS

- Rehabilitation Units do not need interns or residents to monitor patient care, neither may registrars (unless in training) be necessary
- Rehabilitation is, and should be, a vital, but independent, part of an integrated health care system
- Rehabilitation should be a visible part of health care
- Rehabilitation should, ideally, contain all essential centralised services in one area
- Central Rehabilitation units should ideally be on the site of acute hospitals to benefit from access to the full range of laboratory and investigative facilities, as well as collegiate support
- Little evidence of broad support for exclusive use of rehabilitationists vs non-rehabilitationists to provide inpatient and outpatient co-ordination.
- Not necessary to confine rehabilitation beds only to central and peripheral sites could also be within acute hospitals, e.g. very early rehabilitation, i.e., within 3 to 4 days of admission.
- Innovative use of, for example, general practitioners to provide rehabilitation where there is a lack of Rehabilitation Specialists.
- Recommended Australian Faculty of Rehabilitation Medicine ratios for Physio- and Occupational and Speech Therapy, Social Work, etc., are similar to those in both North America and Europe.
- Consideration of 7-day therapy for hospital inpatients
- Innovative use of extra-hospital facilities, e.g. home-based rehabilitation and cardiac rehabilitation, nursing homes for sub-acute care
- A co-ordinated network for all head-injured patients
- No international standard for ward sizes
- Recreation therapists should be considered more frequently

LESSONS FOR AUSTRALIA

- Given the small number of rehabilitation beds per capita, there need to be co-ordinated plans for Rehabilitation in each State and/or Region
- Need to look at innovative ways to fund Rehabilitation
- Need to encourage appointment of Professors of Rehabilitation Medicine and the research that follows

RECOMMENDATIONS FOR IMPLEMENTING CHANGES

- Need to increase University intake of therapists, particularly Speech, Occupational and Physio- therapies to meet specialist demand of Rehabilitation.
- States where there have been no co-ordinated plans for Rehabilitation, need such plans to ensure equity of access and co-ordinated bed availability.

INTERVIEWEES ON CHURCHILL FELLOWSHIP
20 APRIL 1998 TO 5 JUNE 1998
20 and 21 April: SEATTLE, WASHINGTON, USA

A. University of Washington Medical Centre (UWMC)

Prof. Walter Stolov, Professor of Rehabilitation Medicine University of Washington
Kathryn Waddell, Rehabilitation Co-ordinator UWMC
Terry Corkery, Rehabilitation Case Manager
Dr Kurt Johnson, UWMC Head, Division of Rehabilitation Counselling
Ann Buzaid, UWMC Manager, Occupational Therapy & Therapeutic Recreation
Mark Jensen, UWMC Clinical Psychologist
Arlene Libby, Children’s Hospital Med. Centre OT/PT Manager

B. Harbourview Medical Centre (HMC), University of Washington

Lyn Krog, Trauma Rehabilitation Co-ordinator
Janice Dillman, HMC OT/PT Manager
David Patterson, Clinical Psychologist
Dr Peter Esselman, Director of In-patient Rehabilitation
Dr Loran Engrav, Plastic Surgeon Burns Unit HMC

C. Veterans Admin. Puget Sound Health Care System

Dr Steven Steins, Physiatrist Spinal Unit
Dr Jo Czerniecki, Physiatrist Amputee Unit

23 and 24 April: VANCOUVER, BRITISH COLUMBIA, CANADA

GF Strong Rehabilitation Centre

Dr Hugh Anton, Medical Director Clinical Patient Unit
Shirley Williams, Co-ordinator for the Acquired Brain Unit
Dr Acob, Physiatrist Spinal Unit
Dr Susan Jung-Kemeny, Physiatrist Spinal Unit
Bruce Sandy, Ancillary Service
Peter Quick, Programme Manager Spinal Unit
Colleen Heenan, Nurse Educator Spinal Unit
Pam Aiken, Neuro-Musculo-Skeletal Programme Co-ordinator
Heather Rumble, Acquired Brain Injury Programme Director
Dr John Higenbottam, Psychologist. Administrator of the G.F.Strong
Dr Andrea Townson, Physiatrist Amputee Unit and Vancouver General Hospital

27 April - 1 May: TORONTO, ONTARIO, CANADA

A. Lyndhurst Rehabilitation Hospital

Dr David Berbrayer, CEO
Pat Ridley, Director of Nursing
Elaine Aimone, Head, Physiotherapy Department
Dr Bill Geisler Physiatrist
Dr Nimmi Bharatwal, Physiatrist
Jan Pelletier, Urodynamics Laboratory
Professor Gordon Hunter, Orthopaedic Surgeon
B. Bloorview - MacMillan Centre

Dr Mickey Milner, Director, Research & Rehabilitation Engineering
Sheila Hubbard, Clinical Co-Ordinator, Amputee Programme
Virginia Wright, Clinical & Research Physiotherapist, Arthritis/Orthopaedic Programmes
Jane-Anne Bradbury, Director of Planning
Dr Peter Rumney, Director, Paediatric Acquired Brain Injury Programme

C. Sunnybrook Health Science Centre

Alison Jardine, TBI Clinic Co-Ordinator

D. Toronto Rehabilitation Centre

Cardiac Rehabilitation Programme
Paul Sawyer, Head Physiotherapist
Robin Campbell, Administrator, Toronto Rehabilitation Centre

General Rehabilitation Clinic
Dr E A Robinson, Clinical Director, General Rehabilitation Dept

E. Rehabilitation Institute of Toronto (RIT)

Dr Barry Goldlist, Director, Geriatric Rehabilitation
Dr Jim Dornan, Clinical Co-Leader, ABI Programme
Rika Vander Laan, Executive Director, Acquired Brain Injury Network
Dr Stephen Fried, General Practitioner/Medical Co-Ordinator Avenue Annexe of RIT

F. Baycrest Centre for Geriatric Care

Dr Michael Gordon, Medical Director, Baycrest Centre

G. University of Toronto Teaching Hospital

Sandra G Leggat, Administrative Director, Primary & Community Care.

4-6 May: ROCHESTER, NEW YORK, USA

Dr Bill Hall, Chief, General Medicine/Geriatrics Unit, University of Rochester Medical Centre
Dr Bob McCann, Geriatrician, Rochester General Hospital
Carol Podgorski, Executive Director, Wellness Centre, Rochester
Paul Katz, Medical Director, Monroe Community Hospital, Rochester
Dr Josh Hollander, Neurologist, Rochester General Hospital.

7 - 11 May: WASHINGTON, D.C., USA

National Rehabilitation Hospital Research Centre
Professor Gerben DeJong, Director, Research Centre
Dr Janet Sutton, Senior Research Associate
Dr Bonnie O’Day, Research Associate
Phillip Beatty, Research Associate
Rachel Halpern, Research Associate

National Rehabilitation Hospital

Dr Joseph Bleiberg, Programme Director, Brain Injury Rehabilitation
Dr Andrew McCarthy, Medical Director, Brain Injury Programme
Dr Brendan Conroy, Medical Director, Stroke Recovery Programme
Dr Michael Rosen, Director, Rehabilitation Engineering Services
Dr Lauro Halstead, Director, Spinal Cord Injury Programme
Marti Carroll, Physiotherapy Supervisor
Lauren Rosenberg, Occupational Therapy Supervisor
Dr Robert Bunning, Director, Arthritis Programme

Walter Reid Army Medical Centre

Dr Andreas M Salazar, Director, Head Injury Programme

13-14 May: EDISON, NEW JERSEY, USA

JFK Johnson Rehabilitation Institute

Professor Tom Strax, Professor & Chairman, Dept Physical Medicine & Rehabilitation
Pat Dulin, Director, Client Services
Dr Steve Escaldi, Director, Day Hospital Programme
Anthony Cuzzola, Vice President, Administration
Dr Heikki Uustal, Psychiatrist - Director, Amputee Clinic
Christine Reineke, Director, Physiotherapy
John Forbes, RN, Sub-acute Unit, Muhlenberg Hospital, Plainview, N.J.
Claudia Sommerer, Director, Paediatric Outpatient Rehabilitation
Dr Iqbal Gafri, Medical Director, Pain Management Programme
Dr Elie Elovic, Director, TBI, Long-term Care/Spasticity Clinic
Marcie Geitter, Physiotherapist/Administrative Director, Outpatient & Satellite Services.

20-21 May: BOSTON, MASS., USA

Spalding Rehabilitation Hospital - Harvard Medical School

Dr David Slovik, Chief of Medicine
Dr David Burke, Director, Traumatic Brain Injury Service
Dr Oruc, Director, Amputee Clinic
Debbie Margolis, Occupational Therapy Supervisor
Dr Joel Stein, Director, Spalding Hospital Stroke Unit
Shannon Rogan, Gait Analysis Laboratory
Dr Michelle Alpert, Director, Spinal Cord Injury Programme
Marie Winston, Director, Physiotherapy Department
Dr Paul Laraia, Director, Cardiac Rehabilitation
Susan Glasser, Vice President, Strategic Planning & Development.
1 June: HELSINGBORG, SWEDEN

Orup Rehabilitation Hospital, Orup

Dr Jan Lexall, Neurologist, Neurological Rehabilitation
Ake Wallberg, Medical Director, Spinal Injuries Unit

Helsingborg General Hospital

Dr Bo Agren, Director, Internal & Rehabilitation Medicine

4 June: COPENHAGEN DENMARK

Bispebjerg Hospital

Professor Gudren Boysen, Professor of Neurology
Helen Lang, Physiotherapist, Stroke Unit
Berit Hartwig, RN, Stroke Unit
Lene Vieira, Occupational Therapist, Stroke Unit

5 June: LONDON, UNITED KINGDOM

National Hospital for Neurology & Neurosurgery - Neuro-Rehabilitation Unit,
East Finchley, London

Jane Johnson, Clinical Nurse Specialist
Dawn Langdon, Clinical Psychologist
Dr Yolanda van der Putten, Research Assistant

Dr Peter Goldswain
CONSULTANT PHYSICIAN IN GERIATRIC MEDICINE
CHURCHILL FELLOW 1998

SUMMARY OF INTERVIEWS AND VISITS

Overall organisation of rehabilitation service delivery.

With our distribution of hospital’s, a central tertiary rehab unit with community rehab services would be the ideal.

Rehabilitation should be on the same site as the acute tertiary teaching hospital site for the following reasons:
• It should be visible as a vital component of health care

• Ability of rehabilitationists to easily access referrals and patients and vice-versa

• Access to acute care when needed professional colleagues lab and other investigative facilities

• Esprit de corps for all staff working in rehabilitation under one roof.

• Rational use of therapists eg recreational therapists may only be part-time if the tertiary rehabilitation facilities were to be dispersed amongst several sites, whereas if it were on a single site full-timers could be employed.

• Ease of co-ordination of services

• Ability to care for more medically unstable by virtue of the proximity to the acute teaching hospital (see medical staffing)

For the community rehab the logic is less difficult to justify, in that the rehab will theoretically be closer to the patients home, the major hurdle will be the availability of therapists, together with their level of expertise. The expectation at this stage is that the level of care in the metropolitan peripheral areas will be at the same level as in the central unit.

**Bed distribution and numbers**

Anecdotally the US (Prof Stolov-Seattle) quotes using 7% of acute beds as a guide to the number of beds needed for rehabilitation. Canada (Higenbottam-Vancouver) quotes a figure of 10%, and which may reflect the different funding models in existence in the two countries. The difficulty with these figures is the accuracy of the acute bed no’s. If inaccurate, then rehabilitation loses out.

The Toronto Health Services Restructuring Commission (HRSC) is the only recent example I’ve seen of a serious attempt made to address the issues. Their first report was released in July 1997, responses were sought and the final report was released on 27th April 1998. It’s a huge report and I’ve only seen and have in my possession, the rehabilitation component of it, and have interviewed one of the contributors.

The report covers the period to 2003. The population of Toronto is similar to WA in age distribution, so the discussion and conclusions are relevant.

The initial recommendations were for 17 rehab beds/100,000 population. These had been increased to 20 beds by July 1997 and following the responses had been increased to 25 beds. These are made up of:

- 4 beds /100,000 for regional rehabilitation
- 20 beds for local rehabilitation
- 1 bed for transition to independent living

Regional equates to what we would call tertiary care, local would be community rehab, and transition is for patients with ABI and SCI (spinal cord
injury) and would probably be equivalent to what we have at para-quad and more especially at Oats St and Kyeema.

These bed ratio’s include geriatric rehabilitation, and in the July summary there was a detailed breakdown of the ratio’s per capita stratified for age, for each of the disease entities, as well as recommended LOS’s for each disease.

There are other area’s of rehab that they identify as sub-acute care and ALC (alternate level of care) ie patients who are occupying acute beds, but who have been identified as awaiting rehabilitation. They also mention ‘shadow’ beds, which represent patients who have not yet been recognised as needing rehabilitation. The sub-acute and ALC groups are included in the overall total of 25 beds. What we also have to take into consideration, is the impact of our HACC programmes and services such as HANDS (from RPH) and the SCGH equivalent, on the overall beds set aside for rehabilitation. I am unsure of how to calculate the impact of these, perhaps we have to read the reports first.

Talking to Dr Gerben DeJong (who appears to be one of the few research workers into managerial aspects of rehabilitation in North America) the means by which you can calculate bed numbers are:

- beds per capita ratio
- current bed utilisation
- incidence

This was a draft paper in 1995, (unpublished), but his feelings then were then that the incidence rate was the method of preference, but that now there are too many variables in the system with changing acute hospital care, the advent of subacute care, and the role of insurers to come up with any one preferred method.

Staffing

Medically, we have a shortage of physiatrists/rehabilitationists, and with the current model I don’t see much chance of changing it, certainly not in the short term. The Canadians use GP’s very imaginatively and effectively, and it may be one way of overcoming the difficulty of whom to place the patient under in the generic units in the community hospital’s, if we decide to go that way.

One factor to consider is the medical staffing of rehab. In Canada they rarely have registrars in the rehabilitation units, and have no interns at all. If we, in W.A., were to move to the acute hospital site then we should certainly consider doing away with interns, as if the patients are there for rehabilitation, then they should be stable medically, and if they are not then they shouldn’t have been transferred. And anyway the acute hospital is on site if they need any support. This was in evidence at the JFK-J Rehabilitation centre in New Jersey. And as above we could use GP’s in the community units.

Have noted the allied health staff ratio’s for most of the disease entities, the two groups which seem consistently to be missing when comparing to the analogous Perth units, are clinical psychologists and recreation therapists. The latter are:

- good in integrating patients back into the community
- good at diversional therapy early in their admission
- assist occupational therapists
- teach patients how to have fun
• sports programming
• bridge to the real world
• help with aqua therapy
• community outings with specific goals in mind
• working with the families of patients (after hours)

In New Jersey they employ 2 part-time rec. therapists, who cover the evening sessions which are especially useful when dealing with families (who can’t come in at other times). An additional point that emerged was that the rec. therapists are paid quite a deal less than either OT or PT.

Instruments

All are agreed that we have to measure progress in rehabilitation, but it doesn’t seem sensible to insist that it should be a single institution-wide tool such as the FIM (Functional Independence Measure). The Americans are stuck with the FIM because of their membership of the CARF (Commission for Accreditation of Rehabilitation Facilities). There does seem to be an alternative to the CARF organisation called Medirisk. It would however be useful to obtain a copy of their requirements, as it covers standards monitoring, policy and procedures.

Ward areas.

There are no international standards for ward sizes for rehabilitation. When it comes to mixing patients the Americans do it, but then their actual ward areas are small, and they acknowledge that once you have more than 15 patients with a single disease entity, then you shouldn’t mix them.

Funding.

US is very different from Canada, where the latter is all government sourced. We have talked of something like the increase in driver’s licence fee’s in NSW to cover ABI and +-SCI, a novel way, ? in Ontario (Toronto) was to increase the fines of traffic offenders by $25 or $50.

Administration.

If our system is going to be on integrated as we hope, then there is almost certainly going to have to be medical, nursing and allied health coordinators. Although I haven’t seen any ‘hub and spokes’ in almost all there were allied health managers, and in the most integrated medical system (Seattle) there was a medical director.

Cost-effectiveness of rehabilitation

No one could confirm the statement about the savings in acute care that would accrue if you had more rehab. What is probably a better argument for rehab in preference to acute care is the identification of patients in acute beds needing rehabilitation, and who may or not have been recognised ie the so-called sub-acute ALC or shadow beds, and then justifying the savings on this basis.

Patient Routines

In Toronto the HSRC at one stage proposed that the patients, in order to maximise their hospital-stay have 7 day a week therapy. After submissions they returned to a 5 day week, on the basis that patients couldn’t tolerate it. In Washington they have a 7 day system, with therapists coming in over the w/e, those that are treated on the Sunday are the recent THR’s and TKR’s and those strokes who are admitted on the Friday. Everybody then gets 6 days a week (they have only been trialing it for 3 weeks, so don’t know how effective it is). The therapists who work on the
Sunday get a day off in lieu, those that do the Sat. are paid overtime. They also use college students on the Sat. to reduce costs. In New Jersey the patients, especially in elective orthopaedic receive 7 days therapy, and they even find that most of the strokes can tolerate it. In NJ the therapists all work a 5 day week, taking days in lieu when working over the w/e.

**REHABILITATION OF SPECIFIC DISEASE ENTITIES**

**Amputees**

In-patient beds are justified for the same reasons as exist in Perth. In Toronto, the patients spend only 3 to 4 days in the surgical wards, before being transferred to a sub-acute area, where they remain for the next 2 weeks before they are suitable for limb-fitting. We have talked about a Blaylock type ward (check with Shelley Drummond) for sub-acute care in RPH, although haven’t called it by that name. It may be something to recommend that the acute hospital’s consider, and it would be a cheaper but no less effective way of treating the amputee’s. In New Jersey the ALOS in amputees is also 3-4 days suggesting it is something we should be recommending, ie moving to a lesser care level.

- Thermoplastic interim’s are in
- Interim’s are better hand-made (currently) than by computer.
- Power prostheses (myo-electric) are in particularly for kids upper limbs. I met the N American expert on the subject. Sheila Hubbard at the McMillan centre in Toronto.

**Burns.**

A small no. will need prolonged rehab after grafting, and once their burns are covered. There was a good example of this at the Harborview Medical centre in Seattle.

**ABI.**

Very clear prevalent rates published in Toronto, and which are used by the HSRC, (on it’s way to RPH) giving numbers of mild and moderate cases as well as the severe ones.

Lots of good ideas in Toronto regarding the overall care of these patients. They have set up a programme at the RIT (Rehabilitation Institute of Toronto) where they are trying to capture information of the ABI in-patients. Have also prepared cards for GP’s listing the signs and symptoms to look out for, post head injury.

There is a similar simple card for sports coaches and trainers, setting out clear guidelines as to how to handle concussion in any sport. They also use an instrument, the Galveston Orientation and Amnesia Test (GOAT), to screen all those attending ED following head injuries. Been around for some time, but I’d heard about it at a few other venues.

Use the Ranchos quite frequently, as well as familiar tools such as the GCS, and the Glasgow outcome scale.

There is very clearly a need to have a means by which all those presenting to ED with head injuries are followed. But there’s currently no way of easily implementing this. I met a nurse at the Sunnybrook Hospital in Toronto with a large Emergency service, and she was scanning the presenting lists to ED each day to pick up the ABI's especially those not admitted under the neuro-surgeons of the trauma service. Her position had only just been created. That’s one way around the problem, but I believe from the experts I seen, it has to be someone from outside the service delivery side of ABI who coordinates it.
There's no obvious and easy way round the problem of behavioural difficulties in ABI. They appear to have many more psychologists and neuro-psychiatrists, and they also are more wary about admitting them, referring rather to the psychiatrists de novo.

The same applies to those with a Ranchos score of <3. They go to the long-term care wards, although they approved of our idea of a step-down unit with access to the rehab wards at any time that they showed improvement.

All this information came from two hospital systems, it was difficult establishing exact policies given the vastness of their city, but at least we have access to the people who know.

**Paediatrics**

I didn’t visit the paediatric hospital in Toronto, (Bloorview) but spoke to the paediatrician who has some beds there.

- ABI: 20 beds—the only dedicated beds in Ontario
- CP eg post-op: 10
- Chronic care: 25

Generic
incl occasional Amp: 20

We will have to compare these with PC, I would imagine that his numbers are much smaller and that chronic care is not carried out at PMH.

**Orthopaedics**

There is a system available in Toronto where a rehab facility (admittedly run by 3 GP’s under a geriatrician) admit elderly elective orthopaedic patients 3-4 days post-op. It would appear to work very well and they will post the assessment form to me at DGM.

**Spinal cord Injury**

Nothing to see that would change the way we do things in Perth, at the spinal cord unit they knew all about George Bedbrook. The comments about ratio and type of therapists made earlier in the summary would apply here also.

**Cardiac rehabilitation.**

There were two area’s that the HSRC identified as needing more assets in their latest report. Cardiac rehab was one (trauma was the other? what this means).

They have an OP service for 1500-1600 patients (it’s the biggest in the world) who receive therapy 1x week and work out the other 4 days a week at home, their average LOS is 6 months and the American cardiological association has produced a document proving it’s cost effectiveness! Can be obtained through the net

- US agency for health care policy and research on Cardiac rehabilitation
  - www.nlm.nih.gov
  - www.cdcl.cdc.gov/noish

It is 178 pages long, but it sounds as though we should talk to the cardiologists (who may have just attended the world cardiac rehab conf. in Rio-and where some of the staff were when I visited last week), and possibly get the document.

**Neurological**
Thus far have seen very little coordinated stroke services, they all agree that our ideas are the ideal!

No-one has a programme like we are proposing for chronic neurological disease. There was an article I spied whilst waiting to see them at the HSRC, and which you could look at and may be helpful:

Economic consequences of MS in Canadians.
Asche, Ho, Chan and Coyte
Acta Neurologica Scandinavia 1997.95. 268-274.

In Copenhagen, Denmark, since February 1998, there has been an integrated stroke service involving inner-Copenhagen (population 600,000). This is described in detail further in the text. Despite having only been in operation for 4 months at the time of the visit, it would, thus far, appear to be a successful model.

STROKES

SPAULDING REHABILITATION HOSPITAL

- Dr Joel Stein. Physiatrist in charge of the neurology programme. They have a liaison nurse employed by the SRH to ‘find’ the patients for their neurology wards. They see the patients quickly, will take TACI’s, as they need to fill the beds. There are 38 beds for strokes, mean age is 70 and LOS is 35 days. They will also send patients to sub-acute care, these may be TACI’s, in theory they could return them to the acute unit if they showed any sign of improvement, but this very rarely happens in practice. Gave me a JAMA reference 97: 277:396-404 - Kramer, Steiner, Schlenker, Hrincevich, Tropea, Ahmad and Eckhoff. Outcomes and costs after hip fracture and stroke: A comparison of rehabilitation settings. Going to subacute care did not have an impact on # NOF’s but did on strokes. Also, there is quite a good publication on Stroke rehabilitation put out by the US Dept of Health Human Public Health Service-Post-stroke rehabilitation - clinical practise guideline No 16.

Asked about chronic neurological disorders, didn’t really agree with the philosophy of prospective admissions of MS patients to rehab, but did accept their need for admission when necessary.

COPENHAGEN

- Prof Gudren Boysen- Neurologist, in charge of the acute intervention unit at the above hospital.

Since Feb 1998 there has been a coordinated stroke service for the inner area of Copenhagen (pop 0.6 million), incorporating 5 hospital’s and an acute unit. There is a push for the stroke plan to be extended to greater Copenhagen - pop 1.6 million. This took a year to plan, and one hospital has still to commence operations. Although not specifically asked about it, it appears that this was a Government decision, although the rules were agreed to amongst the doctors.

The hospital’s involved are as follows:

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bispebjerg</td>
<td>12 bed acute intervention unit</td>
</tr>
<tr>
<td>BBH</td>
<td>40 bed rehab unit (900 bed acute hosp)</td>
</tr>
<tr>
<td>Fredericksberg</td>
<td>25 bed rehab unit (400 bed)</td>
</tr>
<tr>
<td>Hvidovre</td>
<td>40 bed rehab unit (1000 bed)</td>
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</tbody>
</table>
Amager 25 bed rehab unit (400 bed)
Rigshospital 14 bed rehab unit (1200 bed-university hospital).

This equates to 25 beds/100000 for neurology alone, she accepts that this is a high figure. It was calculated by Dr Olsen the neurologist running the 40 beds at the BBH, on the basis that a stroke patient was in hospital for an average of 38 days. The hospital's are distributed in such a way that they represent a hub and spoke type pattern.

Admission policy is as follows.

Patients contact the ambulance service, and if it can be established that the stroke was less than 6 hours after the stroke, then they have been instructed to bring the person directly to BBH, warning the unit of the patients impending arrival at the ED. There they are assessed, CT scanned, and if the diagnosis is confirmed and it's less than 6 hours after the stroke, then they are admitted to the acute unit. If it’s a stroke and it’s more than 6 hours old or of undetermined duration, then they are admitted to a conventional stroke and rehab unit, in the hospital closest to their residence. This is because of the participation of the unit in international stroke trials, but it doesn’t in any way detract from the major role of the unit ie stroke diagnosis and management. There is a strict policy that the patients stay only 7 days before either being discharged (which may be earlier than 7 days) or transferred to the stroke unit nearest to their domicile.

There is a protocol for the patients stay in the unit, this includes the usual instruments such as the Barthel’s (done on day’s 3 and 5). They use the Scandinavian stroke score (SSS- first introduced in 1986), performed 2 hourly in the first 24 hours, 4 hourly for the next day and then tds thereafter. When questioned about instruments, there is apparently quite a useful article in last years edition of Stroke on the Cochrane evaluation of acute trials covering such tools as the SSS, Matthew and the NIH. They also use the Bamford classification of strokes, accepting that it’s fairly gross.

The only patients remaining in the unit after 7 days are those whose trial protocols dictate it (such as the Tinzaparin - a low molecular weight heparin given in combination with aspirin for 10 days trial), and those who are terminal. 40% of the patients from the unit are discharged home before 7 days, the remainder, including the TACI’s are transferred to the other stroke units ie those closest to their home. Geriatricians play no role in any of the care of strokes, they do assess the patients for nursing homes (to which about 15% of their patients are admitted), and she admits that there is a block at this stage, due to lack of beds. Follow up of the patients is for 3 months with Rankin and Barthels scores, there is no coordinated day hospital care, nor is there any early discharge rehabilitation such as in RPH, and which they would like to have. They have to rely on OP treatment organised locally, and have no Day hospitals. At present there is no plan for coordination of the overall system ie director of stroke care with appropriate nursing and allied health counterparts, although they do meet regularly.

Similar stroke systems are in place in Cologne and Helsinki. The 7 day cut-off was selected as it was the period in which it was felt that the patient would stabilise sufficient for them to be assessed for their continuing care, as well as being long enough for them not to feel rushed, before being transferred to the other acute/rehab units. They do not have a social worker on the team, but one is available. The reason for this is that if the patient is well enough to be discharged from the unit then they don’t need a social worker, or if they do then that can be achieved post-discharge. Similarly with aids to daily living.

Average age for the unit is 70 to 75 years.

- Berit Hartvig RN in the unit, demonstrated the monitoring system with all patients having BP, pulse and Oxygen sats., there are generally 4 bed wards in area not dissimilar to the RPH stroke unit, they
don’t use bladder ultra-sounds (Prof Boysen admitted that she had been convinced by Ted Stewart-Wynne (Neurologist at RPH) but hadn’t been able to convince the nurses). They have daily ward meetings with all staff for about 30 mins. Didn’t have an opinion about training for stroke care. The forms that are filled in don’t present a problem for the nurses, interestingly the forms are scanned into the PC once completed—perhaps something we could look at.

- **Helen Lang Physiotherapist in the Stroke Unit.** The staff ratio is 1:7 or 8, there is no 7 day therapy, but patients will receive therapy over w/e if needs be. Whilst it is also the wish of Prof B. the costs of 7-day therapy are too high. Spends about 50% of her time on administration, and believes that better and easier communication with her colleagues would help.

- **Lene Vieira Occupational Therapist.** Similar staff ratio to PT, they don’t assess the patient for home. ADL’s (for the same reason as there is no Social Worker), showed me their huge toilet and showering areas, with the same basins as at Orup which could be moved up and down (mechanically at BBH, electrically at Orup!). The article on ESPS 2 is worth reviewing as there are some useful statements regarding stroke care. J. Neurological Sciences 1996 :143: 1-13.

**QUEENS SQUARE REHABILITATION UNIT**

- **Strokes.** They have no upper age limit, although the patients tend to be young (mean age 50 years) complex and medically stable. The duration from the initial event varies but they take them from other hospitals and from Queens Square, and the ALOS is between 6 weeks and 4 months. They have no exit block.

**ROCHESTER GENERAL HOSPITAL NY**

- **Dr Joshua Hollander- Head of Neurology and Rehabilitation.**

  They have a 9 bed acute stroke ward and a 16 bed rehab unit on the same floor. Can’t take ABI and SCI who are admitted to other hospitals.

  The clinical pathway in stroke is for them to be admitted to the acute ward and where they are trying to reduce the mean LOS to 5.5 days, following which they are transferred to the rehabilitation side but only if they can tolerate >3 hours of PT and OT a day. If not they go to a SNF (Skilled Nursing Facility) where they may get an hour a day of varying quality therapy. He would much prefer if they could remain in the acute hospital for at least another week of two, as would be the case in one of our rehab beds. The mean LOS in the rehab ward is 23 days.

  He has a report from the HAS (Health systems agency) from Fingerlees (a nearby hospital) which deals with bed numbers for rehabilitation. Bob McCann will send it on. They do take the occasional amputee, it has to be an AKA (above-knee), it’s unfortunate if you are a BKA (below-knee). He would welcome rehab respite for MS patients.

**SPINAL CORD INJURY**

**BOSTON- SPAULDING HOSPITAL**

- **Dr Michelle Alpert- SCI unit.** Nothing much to learn here LOS is the same as elsewhere ie 4 months for tetraplegia and 2 for para’s. They use the FIM alternative weeks.
JFK-J EDISON NEW JERSEY

- Dr Jonathan Quevedo, General Physiatrist: Involved in SCI, Pain clinic and Strokes.

  SCI  ALOS - tetra  6 months  
       - para  4 months

- ORUP HOSPITAL

Ake Wallberg in charge of the SCI unit. Has been to Royal Perth Hospital Shenton Park Campus. Was consulted and agreed to the move to Orup, but would now far rather have it based at the teaching hospital, but as an entity rather than being incorporated into the acute hospital. They have 12 beds for the 1.5 million pop of the area, their incidence rate is

  13 / million c/f WA at 26/ million which explains why they need as few beds as they do.

  LOS  Tetraplegia  6 months  
       Paraplegic  3 months

  ALOS pre transfer is about a week. Have ventilated patients. Have alternate year admissions for all ex SCI’s for re-assessment for about 2.5 days, but is unsure whether this is cost effective and admits that they don’t pick up very much pathology.

AMPUTEE’S

EDISON NEW JERSEY.

- Dr Heikki Uustal, Director of the Amputee Clinic.

  Their case load is 600 and they see between 120 and 150 pa, 75% are non-traumatic. Have very few in-patients, the patients are kept in hospital for a very short period ie sometimes as short as 3 days, they then go to a sub-acute unit, to return to the P and O (Prostheses & Orthotics) Clinic when ready, prostheses made in 2 to 3 days, 50% computer made.

  5 to 10% of patients are seen pre-operatively, and which is obviously the ideal. Quite a few of the orthopaedic surgeons use rigid dressings to good effect.

HELSINGBORG.

  They use community hospital’s for their ‘sub-acute’ care with the type of patients admitted being: Amputee’s admitted after 7 days post-operative and who stay till stump is healed.

BLOORVIEW MACMILLAN.

- Sheila Hubbard. Probably the foremost expert of childrens prostheses (especially power) in N America.

  See about 600 patients per annum evenly distributed between the two age groups. Gave me a paper on the incidence of congenital UL deformities in children.. Most children with UL stumps( congenital >> traumatic) will get fitted with a myoelectric prosthesis $6000 for below elbow, $15000 above elbow. I have a book chapter written by her on myoelectric management of
the upper limb amputee. With lower limbs, congenital still out-number traumatic, although trauma produces more LL than UL amputations. Almost all the prostheses are produced by hand, and you can’t really use tele medicine for the fitting of limbs.

SPAULDING REHABILITATION HOSPITAL-BOSTON.

- **Dr Oruc- Physiatrist for the Amputee**’s. Has 18 beds and takes them at 2 to 3 days post op. ALOS 4-5 weeks. Mean age 70 years. Go straight for definitives rather than interims, as is more cost effective. Uses Silicon for suspending the prosthesis, and appears kinder to the skin. 36% of her patients are on dialysis and in rehabilitation.

GF STRONG-VANCOUVER

- **Dr Andrea Townsend. Physiatrist** recently appointed to the VGH and GFS. Young and enthusiastic! Her major interests are Amputees. Their policy is very much like that at RPH where most are treated as OP, the indications for IP are the same, they are as not aggressive as the Drs at the VA in Seattle regarding rigid dressings (and doesn’t believe they make any difference in the long run). What she is keen on doing is to develop a clinical pathway for amputee’s, with the aim of improving their pre-amputation assessment of patients.

ACQUIRED BRAIN INJURY

BLOORVIEW MEDICAL CENTRE - TORONTO

- **Dr Peter Rumney, Director, Paediatric Acquired Brain Injury Programme** based at the MacMillan, but with clinical responsibility for 20 ABI beds at the Bloorview.

   The 75 beds at Bloorview are divided as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Beds</th>
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<tbody>
<tr>
<td>ABI</td>
<td>20</td>
</tr>
<tr>
<td>CP eg post-op</td>
<td>10</td>
</tr>
<tr>
<td>Chronic care ie long term</td>
<td>25</td>
</tr>
<tr>
<td>Generic inc. the odd amp</td>
<td>20</td>
</tr>
</tbody>
</table>

He has a clinical psychologist who has been able to estimate the accurate incidence of ABI, and has, thus, produced figures for the province, the metro area etc. (The HSRC has independently come up with very similar figures). He is:

Dr Barry Willer
Ontario Brain Injury Assoc.(OBIA)
3550 Schmonn Parkway 2nd floor
Thorold Ontario L2M 7M7
ph 1800 263 5404
905 641 8877 ext 222 (work)
905 871 1913
fax 905 641 0323
e-mail bwiller@spcart.ac.brocku.ca

The incident rate for ABI’s for the total pop. is 150-250/100,000.

Talking about management and tracking of ABI’s, they use:
Levin HS, O'Donnell VM, and Grossman RG.

This uses a score out of 100 and is being trialed in the ED of Sunnybrook in all patients who have a head injury, no matter how trivial. (vide infra- Alison Jardine).

They have guidelines for it’s use (I have a copy). It is about as close as we can get to a case manager or coordinator. Still cannot pick up the case who is discharged from ED, although they also have a hand out for sport-related head injuries and with appropriate dissemination will help the case attack rate.

Regarding the vegetative patient, they tend not to take the kids who have a Ranchos score of <3. In cases where they believe there may be a poor outcome they perform the Western Neurosurgery Stimulation Battery and if there is no improvement after 3 months, then they are moved to permanent care.

- **Allison Jardine, TBI Clinical coordinator at the Sunnybrook Health Science Centre.** They have no IP beds, and her JDF (since Jan 1998) has been to trial the GOAT through ED, as well as picking up the more obvious patients by daily scanning of the ED lists as well as those who are admitted. She also works with the trauma coordinator for the hospital. The problem is that this is only one of the acute admitting hospitals in Toronto. She has a dossier of all the assessments that are performed on the patients to help with the documentation as well as for a data base (given to me)

**SPAU DING REHABILITATION HOSPITAL-BOSTON**

- **Dr David Burke, Physiatrist in Charge, ABI In-patients**
  ALOS pre transfer of 2 weeks
  ALOS in unit 57 days
  patients seem older than ours
  nurse practitioners do all the assessing and are generally much quicker than he is, ie in the same day as referred. There is a coma stimulation programme and they are trialling stimulants and other psycho-active tablets such as:

  - Ritalin
  - Bromocriptine
  - SSRI’s
  - Donepezil

  on their patients.

**JOHN F KENNEDY- JOHNSON REHABILITATION HOSPITAL, NEW JERSEY**

- **Dr Elie Elovic, Physiatrist in charge of Botox, Phenol and Baclofen pumps.**
  He runs the 54 bed long-term care unit for the ABI program.
  Divided into 2 groups of patients.

  20 bed Extended Recovery Unit, comprising of ABI’s who receive 3 hrs therapy a day
  34 bed Long Term Management. These patients have usually plateaued, they receive some group therapy, and some remain for life. Others go to LT care units.
Patients are between 1 and 4 to 5 months in hospital before are transferred, will take Ranchos 0-3
Median age is 15 to 20
70% are traumatic
Outcomes are either home LT care or Transitional care where they will spend between 2 weeks and 3 to 5 months. I think this is analogous to the Oats St service.

- Dr Caroline McCagg, Physiatrist in Charge, ABI unit

Have 26 beds, and like us has noted that their bed numbers are actually dropping. Take patients from the acute unit, but they also go to the sub-acute unit (which I think is the one Elie Elovic manages).

- Can’t give me the median age of the in-patients.
- ALOS is 35 days, some stay many months.
- Unlike others I’ve seen will take Ranchos 0 to 2.
- They monitor their patients very closely, with their CRS (a copy given to me-validation in the Archives of Physical Med) which they complete weekly. The other purpose is that it allows them to at least convince those families who are reluctant for their relatives to be discharged. They have exactly the same problems as we do in this regard.
  FIM is too crude for the above purposes.

ORUP HOSPITAL - HELSINGBORG

- Jan Lexall, Neurologist and Research Registrar, was quite critical of the positioning of the hospital with reference to it’s efficiency and the lack of collegial contact. Very keen on the cerebral stimulation that I heard about first at the Spaulding, it seems as though these are almost first line drugs now. Amantadine is the drug of choice, followed by Bromocriptine and L Dopa, Ritalin is also used. Has similar problems with PTA patients as we do at Shenton Park campus.

He believes in a ‘PAU’ and the philosophy of being able to shift patients back into the rehab unit if they show any signs of recovery. Their bed no’s are low because of good preventative programmes. Can’t recall what level of Ranchos they took as the level for admission. ALOS pre admission is 1 to 6 weeks, ALOS once in the unit is 2 months with 80-85% being discharged home.

Believes that patients with Rancho’s 4 or > should be admitted to a separate unit, if none, then probably to the rehabilitation unit.

G F STRONG - VANCOUVER

- Heather Rumble director of the ABI within the Rehab CPU. An ex PT and is responsible for the IP OP and out reach programmes of the ABI unit. In discussing the management of the ABI there were a number of initiatives which she thought might help.

  Case manager or coordinator for all the patients
  Better GP education
  Improved profile for the ABI’s
  Increased leisure activity
  Currently have 1.5 Rec off. for 30 ABI IP
  1.5” “ 90 ABI OP
  0.75” “ 45 AB in outreach programme
Better ADL equipment

Staffing that they do have: Psychologist 1:20
Social worker 1:12
PT/OT 1:5
Music therapist 0.3 (very good for behavioural problems)
Recreational programme 1.0

Regarding the role and possible work load of the case manager, she suggested we contact John Simpson Rehabilitation Management, 99-46511 Chilliwack Lake Road, Sardis V2R 2PI, British Columbia, Canada, who’s been very involved with head injuries and would be by far the best person to comment upon this.

- Dr Higenbottam at the GFS

ABI's and case managers agree that this is the only way to ensure that we can prevent the type of behavioural problems that frequently follow the patients who present well after the initial event. They are looking to develop some means of identifying them when they present to the ED Department, even if it is with an unrelated problem. We should follow this.

NRH WASHINGTON DC

- Dr Joseph Bleiberg, Programme Director ABI and Psychologist.

   Explained that they were a non-profit organisation and as such their costs were higher because of the impact of factors such as teaching and research.

   NRH receive about 80% of all the ABI’s in DC, equating to about 600 pa. Their Ranchos 0-3’s go to SNF’s, the marker for acute rehabilitation is the patients capacity to absorb 3hrs or more therapy a day, (this applies to all rehab). There is a South African, Victor Nell at UNISA who is developing a more sensitive index of assessing ABI’s calling it the GCS-E, as he has added 7 sub categories to the 15 item GCS score. Email nellv@africa.com. Fax -27 11 857 2330 He feels the GOAT is not sensitive enough, and perhaps this is where the GCS-E comes in.

   He has been testing school footballers to assess the accuracy of testing after HI, it’s so subtle that the change is measured in milliseconds, and he has therefore developed a computer programme which is down to a 7 minute test after the game. This is called the ANAM study. Apparently the Australians are major contributors to the literature as a result of VFL. He has given me an article or two, plus a couple of handouts, similar to the one I received from Alison Jardine at Sunnybrook.

   Regarding registration of all ABI’s the person to talk to is Dr Andres Salazar at 202 782 6345, who has been involved in capturing and tracking all HI in a closed system. Bleiberg feels that our ideas for the PAU are good, although the long-term follow-up of HI is probably adequate for 2 years.

   To my informing him of Rika Vander Laan’s idea of a card with warning symptoms following HI for GP’s, he did not think it was such a bad idea as it has been shown that dizziness can be a significant symptom after HI, contrary to what Dr Dornan had to say. Posturography is the test, but it is a research tool and is expensive.

- Lauren Rosenberg. OT in charge of ABI and stroke.
They are happy to do the FIM. Their productivity is expected to be 6.5 hours a day. Same deal as the PT’s regarding the weekend. Showed me around Independence Square, lots of photo’s taken. I have the address of the contractors.

WALTER REED ARMY HOSPITAL - WASHINGTON DC (WRAMC)

- Dr Andres Salazar- neurologist at the Walter Reed Army Medical Centre. In charge of their head injury programme.

They have a continuing programme of documenting HI in the army, they have extensive recording systems, which he will send me copies of. At the moment they are only following them up for about 2 years at decreasing intervals. They have longer follow up of Vietnam veterans and where it has been shown that 56% after 15 years have returned to gainful employment.

I am unsure of the value of a coordinator for HI. Is it effective in picking up those cases who end up with behavioural problems, soon enough, or should it be a research tool. (I may have to ask Jo Bleiberg or Rika VanderLaan the answer to this). What could be quite exciting would be to co-operate with the WRAMC in a research project on this group. There are all sorts of objective measurements in this like MRI QEEG (quantitative) and serotonin levels. Apparently there is quite exciting work on a serotonin transporter gene, and which may be the predictor (where decreased) of neuroticism in psychiatric patients and the behaviour of murderers. They are about to commence a trial of Sertraline in HI patients. Also mentioned the European Brain Injury consortium.

- Rika Vander Laan, Exec Director, ABI Network. This new post created specifically to track patients through the system and also those who may be missed. Some of the initiatives are handouts which have been given to GP’s. In the past year, she has followed 438 through the ABI and has complete files on them all. She is working in conjunction with others e.g. Alison Jardine at the Sunnybrook. What she’s really doing is perhaps what we are trying to achieve i.e., some sort of case manager for ABI’s.

THERAPY STAFF

BOSTON

RECREATION THERAPISTS

2x 1.0 FTE’s in the hospital, this is a reduction on previous no’s, for financial reasons. They tend to round out the rehabilitation programme and are more broad-based. She gave me the JDF’s for the senior and junior posts.

They have a 37 bed transitional care unit in the SRH. The indications vary according to whom you talk. It as almost like our proposed Welltel unit in that they need a single skilled therapy eg wound care

- Debbie Margolis, Deputy Supervisor OT

Their staff ratios are the same as ours, possibly a little lower for the TBI and the SCI units at 1:6 or 7.
They have 7 day therapy, and have a hand-out on the indications (I have it). It works out as a 6 day programme well tolerated by the older patients, there is quite a bit of therapy on the Saturday and less so on the Sunday. For eg they have the following staff attending:

Sat 8 OT’s, most 8 hourly, some 10 hourly ie 2 mothers who work part-time and share 20 hours work on the Fri and Sat.
Sun 4OT’s all 8 hourly

All take time in lieu, the dept’s have no budget for overtime.

Therapists work 24 units a day, these are 30 min periods, and equate to other programmes that I have seen.

FIM is measured at least fortnightly, there are no other tools that they use.

- **Winston, Director, IP Physio.**

  They rotate their physios through all the dept’s, I think. Interestingly she was previously at another rehab setting and where they had 19 satellite units (for OP) to service as the director, and had no difficulty in achieving it.

  Endorses the 6 day week for patient therapy. She was the first person to state that it wasn’t very popular with the therapists, they did in fact receive extra pay for it ($1.35 an hour!) whilst still working a 5 day week. The indications for weekend treatment were:
  - new admissions (they admit over weekend and quite late at night)
  - ventilator patients
  - chest patients
  - orthopaedic patients.

  They had many more staff on c/f the OT’s for the w/e Saturday and Sunday: 26 physios and 7 aids.

JOHN F KENNEDY-JOHNSON REHABILITATION HOSPITAL, NEW JERSEY

- **Christa Reineke, IP Allied Health Manager.**

  Her ratios are as follows

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<thead>
<tr>
<th></th>
<th>PT</th>
<th>OT</th>
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<tbody>
<tr>
<td>Orth- 18 beds</td>
<td>9:1</td>
<td>9:1</td>
</tr>
<tr>
<td>Neuro-24 beds</td>
<td>7:1</td>
<td>7:1</td>
</tr>
<tr>
<td>Cardiac-24 beds</td>
<td>7:1</td>
<td>7:1</td>
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</tbody>
</table>

  there are 2 supervisors, each 0.5 in OT and PT who help supervise the therapists.

  They work a 40 hr week, and are expected to be actively treating patients for 11.5 ‘treatments’ a day ie 11.5 x 30 mins = 5.75 hours a day ie 71% of day

**Rehabilitation aids** common to both groups comprising 6.0 FTE for IP support and 0.5 for hydrotherapy.

**Social workers**

- 0.5 supervisor
- 2x 1.0 FTE
Recreational therapists 2x 1.0 FTE
1.5 FTE aide

2 who share a 40 hr week and who come in at all times, they have no overheads or super etc, and this allows them to be employed over weekend and at night and when they can meet and teach the families of the patients.

I later met 2 of the therapists Wendy Bonavita and Linda Serieka. They have a 4 yr college degree plus a 12 to 16 week internship, getting paid $12 hour vs +- $20 for the PT/OT. This is another reason why they can be employed. Their roles are as follows:

- Orthopaedic patients—mainly leisure activity eg craft projects
- Community out trips alt. weekly
- Integrate between OT/PT in areas such as augmenting skills
- Adaptive skills in treating UL and LL problems in strokes

Social skills esp in the evenings which is where the part-time recreational therapists come into play, and where families can attend. These cover things such as how to handle wheel chairs, getting in and out of cars etc.

INSTRUMENTS.

They have used the FIM for years, although struggle with some of the aspects of it. Doesn’t work as well with OP

ABI
Paeds

Knows that the CARF and JCHOA are getting together.

Monitoring the therapists (and the doctors!).

They have achieved this by feeding back to them patient outcome surveys. Don’t do the sort of tests that I would do such as post-discharge falls, re-admissions, managing ADL’s, mobility etc. Perhaps this is something we should be doing although I am certain that there are surveys available. They do use clinical pathways, and I think she gave me some.

Patient work load:

Much like the NRH, the patients have 6 to 7 days therapy!
The way it works is that there is no overtime for the therapists, unlike the NRH, they will have days in lieu.
Orthopaedic—TKR 7 days a week
THR PT aid will work with the over w/e
Strokes- the older ones can tolerate a heavier programme.

ORUP HOSPITAL HELSINGBOR

Staffing for the rehabilitation area was as follows:
PT12 /38 ie 1:3 but includes OP (they don’t like rotating between the various disease groups)
Occupational Therapist same
Recreational Therapist 1/38
Social Worker 4-5/38
**LYNDHURST HOSPITAL TORONTO**

- **Elaine Aimone** - Head of OT PT Recreational Therapy and Assistive Technology

  Staff ratios for the 60 IP and OP

<table>
<thead>
<tr>
<th></th>
<th>IP</th>
<th>OP</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT</td>
<td>1:8 or 10</td>
<td>1:5</td>
</tr>
<tr>
<td>OT</td>
<td>1:13</td>
<td>0.4</td>
</tr>
<tr>
<td>RT</td>
<td>1.0</td>
<td>0</td>
</tr>
</tbody>
</table>

  Have a copy of staff ratio’s for SCI for PT, OT, Rec. T, RN’s, SW and Psych, of all the rehabilitation centres in Ontario, and with GFS as a comparison.

  The recreational therapist is very useful in areas such as

  - integrating patients into the community
  - assist with the burden on OT’s
  - demonstrate to the patients how to have fun
  - assist with diversional treatment early in the admission

  They use ASIA which largely replaces the Frankel neurological and functional classification system. The ASIA impairment scale which is modified from the Frankel is as follows:

  A to E ie from no sensory or motor function in the particular region to normal function, with the clinical syndrome being:

  - central cord
  - Brown-Sequard
  - anterior cord
  - conus medullaris
  - cauda equina

  I have a copy of the original article (Spinal Cord. 1997 35.266-274)

  It is used as a classification tool in SCI and is complementary to the FIM.

**QUEENS SQUARE-LONDON**

Staffing ratio’s are as follows:

- Occupational Therapist 3/18 patients
- Physiotherapist 3/18 patients
- Speech and Language Therapist 0.6/18 patients
- Social Worker 0.5/18 patients

Do not have 7 day therapy, it’s a bit controversial (according to Jane Johnson, the CNS for neuro-rehabilitation). Regarding nursing care and their specialisation in caring for one disease group eg stroke, she did not feel that there was any merit in the suggestion, and that the disease groups could be mixed without any detriment to their rehabilitation prospects. The wards are in the ‘Florence Nightingale’ format and not really conducive to it, but whatever, mixing doesn’t seem to be a problem.

**GF STRONG VANCOUVER**

- **Peter Quick and Colleen Heenan, Programme Manager and Nurse Educator** to the SCI unit. They manage all the non medical staff. Are well endowed with staff as follows:
They have several other posts:
- vocational counsellor
- peer mentor
  - post for an ex patient who acts as a spokesman and adviser for the patients
- follow-up coordinator

FIM, although were initially told that their funding would be tied to it, when it didn’t happen after a few years they dropped it. It’s use in high cervical lesions was unhelpful. They are about to trial an Israeli tool called SCIM (spinal cord independence measure). Compared to the FIM it doesn’t handle the Psycho-social too well otherwise it appears reasonably suitable.
I have a copy.

NATIONAL REHABILITATION HOSPITAL WASHINGTON

- Martii Carroll Physiotherapist in the ‘Independence Square’ at NRH
  In charge of the stroke and ABI programmes. They treat the patients the ward areas rather than in a combined gymnasium. Benefits of a recreational therapist are:
  - sports programming
  - community re-integrating
  - horticultural programming
  - bridge to the real world
  - help with aquatic therapy
  - community outings with specific goals in mind
  - interdigitate with OT’S

They are not funded for recreational therapy.

Interestingly they work a 7 day programme ie PT only, the OT’s and SP’s work 6 days a week. It works by having the therapists working a 5 day week, those who work on Sat get overtime, on the Sunday they get a day off in lieu and they tend to get college students to do the Sat. under supervision, and which works out much cheaper.

The patients tolerate it (ie 6 day therapy a week not 7 days though), the only patients they see on the Sunday are the strokes that were admitted on the Friday any with major problems and the hips and knees post operatively. Don’t quite meet the 3 hours therapy on the Sat.

Use rigid dressings with the amputees, and have as many AKA’s as BKA’s.
Are using the JCAHO for accreditation rather than the CARF. Use the ASIA, on SCI’s but not done officially.

JOHN F KENNEDY -JOHNSON REHABILITATION HOSPITAL, NEW JERSEY

Recreational Therapists 2 x 1.0 FTE
1.5 Aide
2.0 who share a 40 hr week and who come in at all times, they have no overheads or super etc, and this allows them to be employed over w/e and at night and when they can meet and teach the families of the patients. I later met 2 of the therapists Wendy Bonavita and Linda Serieka. They have a 4 yr college degree plus a 12 to 16 week internship, getting paid $12 hour vs +- $20 for the PT/OT. This is another reason why they can be employed.

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- adaptive skills in treating UL and LL problems in strokes
- social skills esp in the evenings which is where the part-time rec. therapists come into play, and where families can attend. These cover things such as how to handle wheel chairs, getting in and out of cars, etc.

Debbie Margolis OT Supervisor-Spaulding Hospital

Recreational therapists

2x 1.0 FTE’s in the hospital, this is a reduction on previous no’s, for financial reasons. They tend to round out the rehab programme and are more broad-based. She gave me the JDF’s for the senior and junior posts.

BAYCREST CENTRE FOR GERIATRIC CARE

- Dr Michael Gordon, Medical Director, Baycrest Centre.
- This is a huge complex with the following beds:

  - Apartment complex (hostel) 220 places
  - Long term care 160 places(mean LOS 3 years!)
  - Rehabilitation 32 beds
  - Psychogeriatric 20 beds
  - Behavioural unit 20 beds
  - Palliative care 30 beds
  - Alternative level of care beds 30 beds
  - Geriatric Assessment and treatment Unit (GATU) 10 beds (mean LOS 3 weeks)
This is a mainly Jewish complex with 1600 employees, they have 7.0 FTE Geriatricians, with the usual complement of PT and OT. They also have 12 GP’s in full time and part time positions.

UNIVERSITY OF WASHINGTON, SEATTLE, USA

The University of Washington (UW) runs its rehabilitation programme from the major hospital, the University of Washington Medical Centre (UWMC) and where Prof Walter Stolov is based. He has a large number of staff under his care, administering the schools of Physiotherapy, Occupational Therapy, and Prosthetics and Orthotics, and the Divisions of Rehabilitation Counselling, Clinical and Neuropsychology, Speech Pathology, Electrodiagnosis, Residency training, undergraduate training and Research and Development.

The rehabilitation involves hospitals at the UW medical centre (30 beds), Harborview Medical Centre (26 beds), VA medical centre (20 beds for rehab and 38 beds for spinal) and the Children’s Hospital Medical centre (CHMC 12 beds). There are also beds at other hospitals and SNF’s (Skilled Nursing Facilities or ‘sniffs’).

The biggest difference between the US and Australian systems of health care is in the funding. They don’t have problems with ‘bed- blockers’ as they inform them that they have to leave, when there’s no more funding for them. They don’t have bed ratio’s either as the hospital to which you are admitted will depend on your funding, so whilst the major trauma may end up in the tertiary hospital, a stroke may well be admitted to a SNF and stay there for all their rehabilitation, ie no integration of services, due to the vagaries of funding. At least Dr. Stolov has a resident doing 3 rounds a week at the SNF’s to supervise the patients care. There are no teaching hospital’s in the nearby states of Wyoming Alaska Montana and Idaho (WAMI), and they are therefore the receiving hospital for all the trauma from these states. So they are experienced in providing distance treatment.

It would appear that most rehabilitation hospitals in N America subscribe to an organisation called CARF (Commission for Accreditation of Rehabilitation Facilities). Much like our ACHS, this is a voluntary group, but they have a very comprehensive manual detailing standards, policies and procedures for rehabilitation. They have an update every 3 years and the 1998 edition’s extra’s, deal with the adequacy of patient information and on ethics. They use the FIM and have some interesting ways of utilising it e.g LOS efficiency which is the average change in FIM score per day of stay. The higher the number the more efficient the hospital. For all conditions LOS efficiency for the USA is 1.63 and for UWMC it’s 1.59. What it does reflect is their short LOS, which in turn is a legacy of their funding system. One of the benefits of belonging to UDS (the controlling body for FIM), are the quarterly reports comparing your unit to those of the region and the nation.

Their staff ratio’s are probably the same as ours with the possible exception of the paediatric hospital where they are down as low as 1:4 for both PT and OT. I then met the various members of the Professor's department at UWMC.

- Kathryn Waddell, Rehab coordinator UWMC ie manages all the allied health and nursing staff. They have a concept, where the allied health and nurses form themselves into teams, having 4 teams for the 29 patients on their ward. They will be multiskilled when necessary so as to focus on the patient as much as possible. This may mean that the PT will have to take the patient to the toilet if the nurse is busy, but she is assisted as soon as the nurse is free! The team has a ‘cuddle’ each am instead of a hand-over, which makes it makes it patient focussed. She finds that CARF is helpful for the organisation of the dept.
• **Terry Corkery, UWMC, an RN and certified case manager.** Watches over the actual functional management of the facility. She is trying to formalise a weekly functional assessment of each patient, on a data base, without in any way increasing the workload of the staff. This doesn’t mean FIM’s but just clicking into a computer screen. It maybe worth contacting her at the end of the year to see whether she has succeeded or not.

• **Kurt Johnson** UWMC clinical psychologist. Counselling patients, he sees every patient of working age. Staff to patient ratio 1:12 ! This is for both in and out patients. He thinks our video tele-conferencing is a very efficient way of dealing with distant patients.

• **Ann Buzaid** UWMC manager of assistive aids ie rehabilitation technology. No real difference to ours, they have an interesting way of programming their wheelchairs, a hand held device which plugs into the wheelchirs. Its manufactured in N Z by Penny and Giles (photo taken).

It also appears that you can service the wheelchairs via a modem called an Elyria made by Invacare (1800 333 6900 -Illinois)-photo taken.

• **Mark Jensen UWMC Rehab. Psychology**, he deals with chronic disabling pain of which 40 % back pain 15 % headache

In the very difficult patients they will probably admit them for a 3 week session of intensive therapy with a 60% success rate

a decrease in pain of 10%
a decrease in depression of 30% to 50%
a decrease in disability of 50%

A Swedish study showed that if 1/10 persons in such a programme returned to work, then the savings accrued would pay for the remaining 9 to stay on the programme.

• **Arlene Libby CHMC OT/PT Manager.**

An interesting bit of information is that by Federal Law all schools must have OT/PT in schools. This obviously makes continuing rehab much easier.

They have 12 in patient beds admitting about 80 pa with mean LOS of 21 days, consisting of

| ABI   | 60% |
| SCI   | 10% |
| Amputee | the remainder |

Staff ratios are very generous as mentioned 1:4 for both OT and PT.

ADL instruments use the PEDI (copy given) rather than the FIM or WEE FIM which is only used by about 10% of the US rehabilitation faculties.

**PUGET SOUND V.A. WASHINGTON, USA**

• **Jo Czerniecki, Physiatrist in Charge of the Amputee programme.**

Approximately 100 patients pa, 50:50 above and below. He strongly believes in pre op assessment for many reasons, one of the more important being the advocacy role for a more
conservative amputation, especially when dealing with the general surgeons. I got the impression they put on rigid dressings ie cast’s in theatre with little problem as far as infection etc. The patients stayed with the surgeons only 7 to 10 days then went to a sub-acute facility till stable and they were then able to return at about 3 to 4 weeks for their fittings. LOS in their PMR (Physical medicine and rehabilitation) unit was 20 to 23 days. They fitted the thermoplastic interims by computer generation, and could do this in a day or two, it also allowed them to alter them very easily and cheaply. Rather than using the FIM which isn’t very useful at the higher levels ie 6 (i.e., a ceiling effect) and, for example, doesn’t reflect the change from wheel chair independent to walking, they use the SF 36. They use the Welltel concept although don’t call it as such. Regarding power prostheses, they are used in upper limbs in kids, using a battery via myoelectric control. They prescribe them infrequently, and they tend to use in-house prostheses, and as the kids grow they ‘move’ through the bank of prostheses. I got the impression that this unit was very highly ranked in the US.

G.F. STRONG REHABILITATION CENTRE, VANCOUVER, CANADA

Dr Hugh Anton Medical Director Rehabilitation CPU (clinical patient unit, same as our Divisional structure).

- This is **the** tertiary rehabilitation hospital in Vancouver, serving the Vancouver General Hospital (VGH), also drains the University of British Columbia (UBC) hospital.

- There are 8 community hospitals in the metropolitan area of Vancouver (pop. 1.7 million) 4 of which have rehabilitation beds of approx 15 beds each. It’s generally estimated that rehab beds should represent about 10% of acute hospital beds (cf the 7% mentioned for the USA). The GFS has 105 funded beds although only 90 are in use. They are made up as follows:

<table>
<thead>
<tr>
<th>Bed Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI</td>
<td>25</td>
</tr>
<tr>
<td>SCI with additional 8 for high cervical lesions</td>
<td>33</td>
</tr>
<tr>
<td>ABI</td>
<td>30</td>
</tr>
<tr>
<td>Adolescent</td>
<td>4</td>
</tr>
<tr>
<td>Arthritis</td>
<td>25</td>
</tr>
<tr>
<td>Dr Higenbottam (see later) is unsure of their future, doesn’t believe that they should be in the rehab setting. Probably should have beds in the acute hospital.</td>
<td></td>
</tr>
<tr>
<td>VGH</td>
<td>16</td>
</tr>
</tbody>
</table>

- **Shirley Williams RN Coordinator for the ABI unit.** The make-up of patients is not what you would expect from the title. They have true ABI patients strokes and some tumours. On this day there were:

  - 7 strokes
  - 2 Guillain Barre
  - 2 MS
  - 8 ABI
  - 1 Hypoxic encephalopathy
  - 1 Hydrocephalus
  - 1 Abscess

  About 80% are from the VGH

She gave me the admission and discharge guidelines for the unit. They don’t really take the insentient patients, which are sent to the geriatric units, although have had significant problems with some families resisting the transfer to geriatric units. If any patients become ill they are usually transferred back to the VGH, as there are no Drs
other than the consultants (who do everything for them), in addition to being on call each night.

- **Drs Acob and Jung, part time consultants on the SCI unit**
  
  LOS for
  
  quadriplegia - 4 to 6 months
  paraplegia - 2 to 3 months

  Asked about annual evaluations as recommended by Steven Stein at the Puget Sound VA, it would really only be on the high risk patients, and their follow-up programme would in any case identify them. They didn’t have much to offer in the way of any new procedures, or policies. They use the FIM but were unaware of CARF.

- **Bruce Sandy in charge of Ancillary Services.** I wasn’t quite sure why I was seeing him, except that he spoke about revenue raising methods in the OP area, giving me pamphlets on some of these eg:

  - Prosthetic and Orthotic services
  - Work Ability services
  - Driver Rehabilitation Centre
  - Computer skills centre
  - Access to careers and training

  These programme’s raised $C 1.5 of their $C 2 million budget.

- **Peter Quick and Colleen Heenan, programme manager and nurse educator to the SCI unit.** They manage all the non medical staff. Are well endowed with staff as follows:

  - PT 8.4 for 33 IP  
    80 OP
  - OT 6.4 for the same
  - SP 0.2 “ “ “
  - PSYCH 1.0 for the same
  - Dietitian 0.4 “ “ “
  - SW 4.0 “ “ “

  They have several other posts:
  - Vocational counsellor
  - Peer mentor a 1.0 post for an ex patient who acts as a spokesman and Adviser for the patients
  - Follow-up co-ordinator
FIM, although were initially told that their funding would be tied to it, when it did not happen after a few years, they dropped it. It’s use in high cervical lesions was unhelpful.

They are about to trial an Israeli tool called SCIM (spinal cord independence measure). Compared to the FIM it doesn’t handle the Psycho-social too well otherwise it appears reasonably suitable.
I have a copy.

• Pam Aiken a recent appointment to oversee the NMS (neuro-muscular-skeletal) programme combining a hotch-potch of clinical conditions.
  4 Adolescent in-patients (12 to 20 years) with SCI or ABI
  60 OP
  ALS (Amyotrophic lateral sclerosis) patients
  Amputees
  C3 ward at VGH

• Dr John Higenbottam Psychologist. Administrator of the GFS.

  Feels that the best site for a rehabilitation unit would be for a stand alone unit on the same campus as the tertiary hospital. For all the reasons that were previously listed. He sees a role for burns in a rehabilitation setting.

  They haven’t yet developed a clinical pathway for strokes, but it’s something that ‘s on their agenda.

  CARF- some Canadian rehab facilities belong to the organisation, he makes a good point that when facilities are accredited this is done by US physiatrists, not Canadian, where there are obvious differences between the systems. They are developing their own set of criteria, he has given me a draft of these, and which may be useful in the future.

  When quizzed about the monitoring of patients progress, they too are concerned about patients out staying their hospitalisation when they are probably independent enough to return home. They are actually looking at means of monitoring this through the CIHI (Canadian Institute of Health Indicators) and who are developing instruments. This will be available through the Web, which Dr Higenbottam will inform me about.

  FIM, whilst he accepts that some form of monitoring of ADL’s is mandatory, he believes that as long as it's being performed, it doesn’t matter what form it takes, so long as it is a recognisable instrument.

  ABI’s and case managers- agrees that this is the only way to ensure that we can prevent the type of behavioural problems that frequently follow the patients who present well after the initial event. They are looking to develop some means of identifying them when they present to the ED dept, even if it’s with an unrelated problem. We should follow this.

  They have no doctors other than the consultants at the GFS. Once a year they will have a training registrar for 3 months, but no interns and otherwise everything medical is the responsibility of the consultants. If there are any problems, then the patients are transferred to the acute hospital. The staffing issue is present for 2 reasons.

  The patients are generally, medically stable (they very seldom have any deaths) and I know in both Sydney and Melbourne they only have training registrars at the
rehabilitation hospitals, so there are precedents. The other reason is the Canada wide policy of making medical students decide in their final year what their career path will be from then on, and they start their higher training in their first year as a doctor.

- **Dr Andrea Townson. Physiatrist** recently appointed to the VGH and GFS. Young and enthusiastic! Her major interests are Amputees. Their policy is very much like that at RPH where most are treated as OP, the indications for IP are the same, they are as not aggressive as the Drs at the VA in Seattle regarding rigid dressings (and doesn’t believe they make any difference in the long run). What she is keen on doing is to develop a clinical pathway for amputee’s, with the aim of improving their pre-amputation assessment of patients.

Early discharge ward. They have a 16 bed ward in the VGH, run by 4 physaitrists to which patients are admitted as soon as possible from the acute wards. The maximum length of stay is 3 to 4 months (which doesn’t sound right but I’ll check on it), most patients are discharged home, one of the admission criteria being that they must have a good chance of returning home following rehabilitation. In discussion with her a system like the Blaylock which we are proposing at RPH would be even more appropriate.

**LYNDHURST REHABILITATION HOSPITAL- TORONTO**

Lyndhurst is a specialised spinal unit with 70 established beds but with a current ceiling of 60 beds. They do not deal with ventilator-dependant patients. The other hospitals within the group ie Bloorview and Sunnybrook deal with children and general rehab other than spinal respectively. Sunnybrook is also an acute hospital. There are a no. of rehab. centres throughout Toronto and which seem to be specialised. This will emerge as the week progresses. There are also a no. of quite substantial rehab. units outside Toronto, doing away with the need for a network across the province.

**Dr David Berbrayer, Chief Executive Officer**

On this day they’d heard the outcomes of their responses to the Province’s Health Dept edict of a year ago regarding bed ratio’s for all health services. In the latter document, the recommendation was made of 20 beds /100,000 population with bed places by age group and type ie tertiary or secondary. Works out about 10% of their acute beds, similar to the figure of John Higenbottam in Vancouver. 4 beds/ 100,000 for tertiary beds calculated as follows:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Beds/100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 to 19</td>
<td>0.06</td>
</tr>
<tr>
<td>20 to 44</td>
<td>0.03</td>
</tr>
<tr>
<td>45 to 65</td>
<td>0.03</td>
</tr>
<tr>
<td>65+</td>
<td>0.07</td>
</tr>
</tbody>
</table>

This obviously means that geriatric rehab. will need to be included in the calculations for rehab beds, but I will clarify this later.

He supports the ideal of having a rehabilitation unit on the same campus as the tertiary acute hospital as did his colleagues Dr Bill Geisler and orthopaedic Prof Gordon Hunter.

He is lukewarm about Rheumatology patients being in rehab beds. Accepts the limitations of FIM, they don’t belong to UDS, and nor do they subscribe to CARF. Have their own rehab accreditation system.

Accepts burns patients could be on the rehabilitation wards.
- **Pat Ridley, Director of Nursing**

  The ratio of traumatic to non-traumatic spinal injuries had changed over the years eg
  1996 129 new patients-74 trauma, 55 non trauma
  1980 112 new patients 78 trauma, 34 non trauma

  Not unlike the GFS, there are no residents or interns, so that any acute problems have to be
  referred to the teaching hospital.

  Concerned about her nursing ratio’s and wanted me to check up with Kerry McCallum, (Nurse Co-
  Ordinator, SPC) concerning our ratios:

  | Time | 26 patients | am | 5 RN’s  |
  |      |            |    | 2 orderly’s |
  |      |            | pm | 2 RN’s |
  |      |            | eve | 1RN |
  |      |            |    | 2 orderly’s |
  |      |            |    | 1 orderly |

  They have difficulties in discharging patients due to problems such as
  - housing
  - attendant care
  - equipment in the homes
  - no day hospital- told her we didn’t have one

- Elaine Aimone- head of OT PT Recreational therapy and assistive technology

  staff ratios for the 60 IP and OP

<table>
<thead>
<tr>
<th></th>
<th>IP</th>
<th>OP</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT</td>
<td>1:8 or 10</td>
<td>1:5</td>
</tr>
<tr>
<td>OT</td>
<td>1:13</td>
<td>0.4</td>
</tr>
<tr>
<td>RT</td>
<td>1.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

  Have a copy of staff ratio’s for SCI for PT,OT,Rec. T,RN's,SW and Psych, of all the
  rehab.centres in Ontario, and with GFS as a comparison. The recreational therapist is very
  useful in areas such as :
  - integrating patients into the community
  - assist with the burden on OT’s
  - demonstrate to the patients how to have fun
  - assist with diversional treatment early in the admission

  They use ASIA which largely replaces the Frankel neurological and functional classification
  system. The ASIA impairment scale which is modified from the Frankel is as follows:

  A to E ie from no sensory or motor function in the particular region to normal function, with the clinical syndrome being

  - Central cord
  - Brown-Sequard
  - Anterior cord
  - Conus Medullaris
  - Cauda Equina

  I have a copy of the original article (Spinal Cord. 1997 35.266-274)
  It is used as a classification tool in SCI and is complementary to the FIM.
Ultimate plans were released on the 27th April of which I have a copy of the rehabilitation section. Have also obtained excerpts of the initial proposals released in July 1997, and to which all parties were requested to respond. These contain the overall bed ratios as well as ratios for each of the disease states covered, making it a very useful source of information.

The initial recommendation was that there should be 17 beds /100,000 for all rehabilitation. This included geriatric beds. This was increased to 20 beds /100,000 and then after further responses, the current recommended ratio is 25 beds divided as follows:

4 per 100,000 regional rehab (ie tertiary)
20 local rehab (ie equiv to our ‘spoke’)
1 transition to independent living spaces.

This is for specific housing for ABI and SCI patients who need prolonged rehab, but in the community. This would equate to the Oats St and Kyeema complexes in Perth.

They acknowledge that home and community care needs to be improved, and a separate report has been made of which I have a copy, but as yet to read.

Sandra Leggat was originally on the HSRC and had a great deal to do with the rehab chapter. She has since changed jobs. The ‘V’ referred to in the section is the group undergoing rehabilitation, ie, they have no DRG hence them calling this group by something different. The report covers the period till 2003, as they are unable to make any predictions after that.

The fuzzy areas are a group where they have set aside beds for the transition to independent living spaces, we are well served in this respect by the Para-Quad centre and the Brightwater initiative with the young ABI’s. There is also a section on sub-acute beds or ALC (alternate level of care) beds. Another term they use is ‘shadow’ beds, which are those acute beds which are not being used for acute care ie they may have contain a rehabilitation patient. I haven’t read the section on subacute care, but this may allow us to increase our ratio of rehab beds by adding them to the 25 beds and by correspondingly reducing acute beds.

Our better early discharge service will make a contribution as will our better community support, but she emphasises that beds need to be closed to ‘pay’ for the Home-based Rehabilitation Service (HBRS).

In the final report for all the disease entities needing rehabilitation they endorse earlier initial planning guidelines, but they suggest that cardiac and trauma rehabilitation utilisation be increased by 25%. They are very impressed by the former especially the unit at Toronto Rehab Centre.

As to the cost effectiveness of rehabilitation, if you can increase the rate of FIM improvement or any other index of independence, then you will drive down the cost of hospitalisation. This really means doing innovative care like the ‘fast-track’ and ‘welltel’.

We discussed their use of Day Hospital’s for the younger patients, and I believe that our community rehabilitation services will adequately cater for them.

There was a potentially very useful reference on the area set aside for recent publications by the Toronto University Health Economics group.
Economic consequences of Multiple Sclerosis for Canadians  
Asche CV, Ho E Chan B and Coyte PC  

REHABILITATION INSTITUTION OF TORONTO

TORONTO REHABILITATION CENTRE

- Dr Terry Kavanagh, Medical Director - Cardiac Rehabilitation Programme. He was away at the time of the visit. This is probably the largest of it's kind in the world, but not unique to either Toronto or Canada. Established in 1968 they moved into their present building in 1980 and built a 200 metre indoor track in 1992. There is an outdoor track of 200 m as well.

They have a staff of 40 consisting of

- physicians (inc. GP’s)  5- 2x 1.0 FTE
- 1X 0.6
- 1 to 2x 0.1

- Registered Nurses
- Physical Instructors
- Lab technicians
- Office staff

Funding (about $1 to $2 million) comes from the Ministry of Health (MOH) as the cost-effectiveness of the programme has been shown. There is a 178 page report from the US Agency for Health Care Policy and Research on Cardiac Rehabilitation and which justifies this. This can be pulled off the Internet at

www.nlm.nih.gov
www.cdc.cdc.gov/noish

I have a leaflet on suggested references for the establishment of cardiac rehabilitation programmes.

They have between 1500 and 1600 patients attending pa most show an improvement especially those with angina, but also with cardiac failure. They take anyone with any cardiac problem. There are 12 classes a week with each class having up to 60 patients.

Each patient is thoroughly assessed prior to entry into the programme, they attend once a week and are expected to repeat the exercise for the other 4 days of the week. Usually they attend for up to a year and then stop. Some, from the promotional video, progress to marathon running.

General Rehabilitation Clinic - on the same site as the cardiac centre, they share a budget of $6, from the MOH, although neither will say what proportion belongs to each. Dr Ted Robinson an ex GP is the fulltime director of the clinic. This is essentially a very large day hospital providing a service for the whole of greater Toronto a population of +- 6 million. Everyone has to find their own way to the clinic.

2000 patients a year attend the clinic, their average age is 40 and the average case load is 400. 100 a day attend between 2 to 5 x week. Most attend for up to 3 months, the management is similar to a day hospital in that they have weekly team meetings a review patients monthly.
Staffing is as follows:

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT</td>
<td>8.0 + 2.0 vocational trainers</td>
</tr>
<tr>
<td>PT</td>
<td>8.2</td>
</tr>
<tr>
<td>SP</td>
<td>2.0</td>
</tr>
<tr>
<td>SW</td>
<td>3.0 one being a welfare officer</td>
</tr>
<tr>
<td>Therapy Assistants</td>
<td>2.7</td>
</tr>
<tr>
<td>Aides</td>
<td>2.0</td>
</tr>
</tbody>
</table>

The clinic was established 30 years ago, when asked about cost effectiveness, none has been performed.

The make up of those attending the clinic is as follows:

- Musculo-skeletal: 60%-arthritis/back pain
- Neurology: 25+%
- Mainly strokes
- Chronic neurological diseases: 10-20%
- ABI: 5%
- Spinal: few - mainly at Lyndhurst.

**BLOORVIEW-MacMILLAN CENTRE - TORONTO**

A combination of two separate units, with the Macmillan being the OP research and administrative arm of the two and Bloorview the IP area for the approximately 75 paediatric patients. With the restructuring of hospital facilities it is envisaged that the two will combine at another rehab institute which is about to relocate.

One of the major programmes of the Macmillan is the provision of prostheses for amputees both adult and children. The remainder is given over to developmental problems on kids. (The Chief Medical Officer, Dr Peter Rosenbaum, a paediatrician who did his training with Dr Trevor Parry of the Child Development Unit, PMH.)

- **Dr Mickey Milner, Director of Research and Rehabilitation Engineering.** Besides research they do most of the childrens prostheses (all the upper limbs) in the province as well as 33% of all adult prostheses and work very closely with private industry. The remainder of the adults done by Sunnybrook, this is the rehab in the acute hospital.

- **Sheila Hubbard.** Probably the foremost expert of childrens prostheses (especially power) in North America. See about 600 patients pa evenly distributed between the two age groups. Gave me a paper on the incidence of congenital UL deformities in kids. Most kids with UL stumps (congenital >> traumatic) will get fitted with a myoelectric prosthesis $6000 for below elbow, $15000 above elbow. I have a book chapter written by her on myoelectric management of the upper limb amputee. With lower limbs congenital still out-number traumatic, although trauma produces more LL than UL amputations. Almost all the prostheses are produced by hand, and you cannot really use tele medicine for the fitting of limbs.

- **Virginia Wright.** The expert on instruments in children. Has given me a resume on the tools they use, as they must not only measure ADL’s, but quality of life, family stress/burden, community integration, behaviour and coping strategies, and individualised goals! There is
also the child version of the SF 12 and 36 and many others. The FIM and FIM/FAM, and the WeeFIM and PEDI (copy from children’s hospital Seattle) are amongst the better known ones.

**Jane-Anne Bradbury, Director of Planning at the MacMillan.** Organised the copy of the latest report (released on 27th April) of the Health Services Restructuring Commission (HSRC) for me. Also tried to engineer a meeting with Bev. Nickoloff from the HSRC to talk methodologies in restructuring rehabilitation. Gave me a copy of the technical report of reinvestment on and use of Home care services which was published in Nov 1997.

**ROCHESTER GENERAL HOSPITAL NY**

- **Dr Joshua Hollander, Head of Neurology and of Rehabilitation.**
  
  Rehabilitation is not properly coordinated mainly because of funding issues.
  
  They have a 9 bed acute stroke ward and a 16 bed rehabilitation unit on the same floor. Cannot take ABI and SCI who are admitted to other hospitals.
  
  The clinical pathway in stroke, is for them to be admitted to the acute ward and where they are trying to reduce the mean LOS to 5.5 days, following which they are transferred to the rehabilitation side - but only if they can tolerate >3 hours of physiotherapy and occupational therapy a day.
  
  If not, they go to a SNF where they may get an hour a day of varying quality therapy. He would much prefer if they could remain in the acute hospital for at least another week of two, as would be the case in one of our rehabilitation beds. The mean LOS in the rehabilitation ward is 23 days.
  
  He has a report from the HAS (Health systems agency) from Fingerlees, and which deals with bed numbers for rehabilitation. Bob McCann will send it on.
  
  They do take the occasional amputee, it has to be an AKA, it’s unfortunate if you are a BKA.
  
  He would welcome rehabilitation respite for MS patients.

**NATIONAL REHABILITATION. HOSPITAL, WASHINGTON D.C.**

- **Dr Janet Sutton-senior research associate to Gerben DeJong.**
- **Rachel Halpern- research associate**
- **Dr Bonnie O’Day- research associate**
- **Phillip Beatty-research associate.**

  All very bright young researchers with Dr De Jong. Their main area of interest is in models of care health, policies, finance and planning. Have given me all types of papers and names of researchers to contact for further information.

  They have given me names such as the Medirisk formation which predicts outcomes in the subacute system. Medirisk is a Chicago-based company, which is a rival to CARF in gathering health statistics. Need to check up with one of the above about it.** Pam Leiter is the person to contact in Chicago, I have an address. Also need to find out about Dr Nathan Cope and Paradigm. This is a group which assists individuals, who have long term financial responsibilities for catastrophically injured patients.
There is also Dr Andrew Kramer who may know about a Blaylock type of assessment, as well as the cost-effectiveness of outcomes vs systems in #NOF and stroke. The article appears in JAMA(1998). Dr William Stason is apparently the expert when it comes to cardiac and stroke rehabilitation. He lives in Boston, and should be contacted when there. My concern is that this is all very well, but how referable is it the Australian health system.

On the question of cost-effectiveness of rehabilitation they quoted the huge study entitled ‘The state-of-the-service in medical rehabilitation’ Volume 1 prepared by Gerben De Jong and Birch & Davis Assoc. It’s called the CHAMPUS Study and has not been released by the Government, for no obvious reason. I was allowed to look at a copy, but it may not leave their office. I do, however, have a list of all the authors and their subjects so there is nothing to stop us writing to the individuals for information.

There is the AHCPR (agency for health care policy and research) and which sponsors cardiac and stroke guidelines. Are on the net: http://www.dhhs.gov

- **Dr Andrew McCarthy-Medical Director Brain Injury Programme**

  Main interest is ABI, has 40 beds for ABI and the same for Stroke. Moving the difficult patients is very tough, they use an outside review board, if the families object.

- **Dr Brendan Conroy, Physiatrist, in charge of the Stroke Recovery Programme.**

  Stay in the acute ward for 3 days, mean age is 70 and mean stay in acute rehab is 19.5 days. Don’t take TACI’s, only LACI and prob PACI’s. TACI’s go to the SNF’s. Monitors patients with FIM scores on a weekly basis, and has a current list of the FIM score and LOS of his and his colleagues stroke patients. Uses recreational therapists for vocational re training.

- **Dr Michael Rosen, Rehabilitation Engineering**

  They are into tele-medicine. They are about to apply for funding for studies which go far beyond what we imagine tele-medicine can achieve. Examples of this were direct training and consultation with providers and trainers, it’s use in monitoring the health status and progress of patients:
  - functional status
  - EMG/heart rate
  - delivery of therapy at a distant site
  - eg using exercise machines
  - using virtual reality to teach rehabilitation

  They are currently using a programme called Dragon for voice activated typing, apparently much faster than the IBM programme that was demonstrated in Perth. Worth keeping in contact with him.

- **Marti Carroll PT in the ‘Independence Square’ at NRH**

  In charge of the stroke and ABI programmes. They treat the patients the ward areas rather than in a combined gymnasium. Benefits of a rec therapist are:
  - sports programming
  - community re-integrating
  - horticultural programming
  - bridge to the real world
  - help with aquatic therapy
• community outings with specific goals in mind
• interdigitate with OT’S

They are not funded for recreational therapy. Interestingly they work a 7 day programme ie PT only, the OT’s and SP’s work 6 days a week. It works by having the therapists working a 5 day week, those who work on Saturday receive overtime; on the Sunday they get a day off in lieu. They tend to employ college students on Saturday’s under supervision, and which works out much cheaper.

The patients tolerate it (ie 6 day therapy a week not 7 days though), the only patients they see on the Sunday are the strokes that were admitted on the Friday any with major problems and the hips and knees post operatively. Don’t quite meet the 3hours therapy on the Saturday

Use rigid dressings with the amputees, and have as many AKA’s as BKA’s.

- Dr Lauro Halstead, Physician in charge of the SCI patients x 12 years.
  Their numbers have stabilised over the last few years due to:
  • road traffic laws
  • seat belts
  • air bags
  • better roadside management

Most of theirs are due to gunshot. He believes that annual evaluation would be very helpful, best performed as an outpatient.
The best for telemedicine is the Shepherd Centre at Howard University in Atlanta.

LOS for tetra’s is 58 days
para’s 20 days
- demands on them by the insurers are “criminal”.
Paraquad is a great idea.
Agrees that the SCI unit must be on the acute hospital site.

- Dr Robert Bunning, physician NRH, Director of the Musculo- Skeletal Rehabilitation at NRH

Is really a rheumatologist, does not see a role for rheumatology patients in rehabilitation - should either be seen in OP or admitted under acute medicine. He takes the #NOF’s at a few days and gets them home at 2 to 3 weeks, the same for THR and TKR’s. There is an article in JAMA of 18.March, 1998, on the early inpatient rehabilitation of the latter comparing rehabilitation commencing at 3 or 7 days post-operatively. Mostly elderly patients, with co-morbidities and who not surprisingly did better with early rehabilitation. Didn’t compare orthopaedic surgeons with physiatrists, it was just the latter doing it.

JFK- JOHNSON REHABILITATION INSTITUTE, EDISON, NEW JERSEY

- Prof Tom Strax-Chairman of the Departemnt of PMR at JFK-J

A newly refurbished rehabilitation hospital ($60 mill) of 94 beds with the following bed distribution:
• 26 beds dedicated for ABI
• 12 -14 for orthopaedic cases
• 54  general neurology

They belong to the Solaris group of hospitals with the JFK and Muhlenberg being the acute ones, they have a number of SNF beds:

• 20 in 300 at the Shore site
• 60 beds elsewhere
• 20 beds at Point Pleasant

They drain the whole of NJ, although only have 25% of their patients coming from this area. NJ population is approx 12 to 13 mill. The University of NJ has 2 acute hospitals the JFK-J and the St Peters. There are 19 1.0 FTE physiatrists at the JFK-J with 10 part-timers ie about 25 physiatrists. Remainder are GP’s.

They are not into SCI only dealing with those of middle aged and above. They are a non-profit organisation with in addition to the above, 50 beds for prolonged care for ABI at another site.

• **Pat Dulin, Director of Clinical Services**

Her role is in case finding for patients for rehabilitation, such is the competition for cases! She has 5 FTE nurses out in the hospitals looking for cases, and working with the local social workers and nurses at case finding. They deal with every diagnostic group. There is a unit at the Muhlenberg hospital which has a unit not unlike the proposed BRASS unit.

Had a look around the hospital, and, surprisingly for such a newly refurbished place, the actual ward space was not much better than we have at SPC.

• **Dr Stephen Escaldi, DO ie Doctor of Osteopathy.** They are well qualified to practice as physiatrists, and are accepted as doctors. He manages the Day Hospital. They have 20 to 30 patients a day, coming 3-5 x a week, mean attendance is 4-6 weeks, with set goals (but no scoring system such as ours). They do the FIM on admission and a 2 weekly intervals. The patient population is from ABI, orthopaedics, neurology (about 75% of those attending), amputee’s, SCI and CP.

Their staffing is as follows:

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<thead>
<tr>
<th></th>
<th>2 FTE</th>
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</thead>
<tbody>
<tr>
<td>OT</td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td></td>
</tr>
<tr>
<td>SW</td>
<td>1 FTE</td>
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</table>

they have access to a social worker.

The patients spend most of the day there as they feel the social reasons are important, with their families providing the transport. Interestingly they have an Independence Square funded by local groups, but doubt it’s cost effectiveness, although say that it’s influence in attracting patients in preference to attending other rehabilitation centres is a factor!

• **Dr Heikki Uustal, Director, Amputee Clinic**
Their case load is 600 and they see between 120 and 150 pa, 75% are non-traumatic. Have very few in-patients, the patients are kept in hospital for a very short period ie sometimes as short as 3 days, they then go to a sub-acute unit, to return to the P and O clinic when ready, prostheses made in 2 to 3 days, 50% computer made.

5 to 10% of patients are seen pre-operatively, and which is obviously the ideal. Quite a few of the orthopaedic surgeons use rigid dressings to good effect.

- **Anthony Cuzzini, Vice-President Administration, JFK-J.**

$40 million annual budget, with in-patient costing about $400-700 per day, cf the acute hospital $1200 per day. He and the Prof strongly believe in the hub and spoke approach, and are actively involved in the JFK-J purchasing sub acute beds to implement this. The fact that the JFK-J is on the same site as the rehabilitation is of great benefit. Another benefit of this factor is that you can take ‘sicker’ medical patients due to the proximity of the acute hospital.

- **John Forbes deputy chief of the subacute unit at the Muhlenberg acute Hospital.** They created a 23 bed area in Aug 97 for patients very much like the population we targeted in our RAF trial. I was given a list of the admission criteria (similar to ours).

- **Their stats are as follows:**
  
  usual conditions accepted  
  post-operative bowel surgery  
  cholecystectomy  
  pain control  
  PEG  
  colostomies  
  
  mean age 65 to 85  
  mean LOS pre admission 2 days to 2 weeks  
  may only stay a max of 8 days and then must be discharged, although are altruistic and will keep patients longer if others have had shorter than 8 day stays.

  Have yet to be evaluated. Patients are either discharged home, to LT subacute or to the acute hospital. Only 4 occupied beds at the time of my visit!

- **Claudia Sommerer, SP, coordinating Paediatric Rehabilitation** All are OP, and wasn’t of much interest to me or us.

- **Dr Iqbal Jafri, Physiatrist involved with Cardiac Rehabilitation.** He has 12 to 14 beds for rehab, the major conditions treated are:
  post CABG  
  Valve replacement  
  MI  
  chronic heart failure  
  80% via the admitting nurses picking the patients at the hospital they visit  
  20% via direct referrals  
  median age of patients is 65-80  
  usually are transferred about 7 days post admission  
  median LOS 14 days  
  discharged to either home or SNF  
  case throughput 100 to150 pa (sounds to me very much like a geriatric rehabilitation unit)
He also manages the **PAIN** service

90% are seen as OP and the majority are due to failed back surgery.

Clinic staff consist of clinical psychologist x 2
OT, PT, SW, Vocational rehabilitationist
Anaesthetist on demand

see 7 -10 per session

each patient has a maximum attendance of 12 sessions

**Marci Geitter PT in charge of OP Allied health**

source of patients is

<table>
<thead>
<tr>
<th>Source of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP discharges</td>
<td>20%</td>
</tr>
<tr>
<td>acute hosp.</td>
<td>10%</td>
</tr>
<tr>
<td>GP referral</td>
<td>70%</td>
</tr>
</tbody>
</table>

see 300 new patients a month
attend 1-2 x a week
usual LOS 4 - 6 weeks
look after wound care.

Nurses do not mind
Use electrical stimulation
Whirlpool
Ultra-sound
Pulsa-vac ie like irrigation

One member of her staff full-time liaising between the hospital and the insurers.

**Spastic service**

He has given me a disc of his lectures on the indications for and the use of Phenol in particular in Spastic patients. It has to be done more accurately than Botox which is generally given into the muscle, with the Phenol being given into the nerve and thus is not only more difficult, but more effective.

- **Dr Jonathan Quevedo, General Physiatrist involved in SCI, Pain Clinic and Strokes.**

  SCI ALOS - tetra 6 weeks
  para 4 weeks

  Strokes ALOS 21 days, but they don’t take TACI’s, sending them to the subacute units instead, and if they improve then ? re-admit them to the stroke unit.

**Spaulding Rehabilitation Hospital, Harvard Medical School, Boston, MASS.**

**Dr David Slovik, Chief of Service and Endocrinologist.**

They have a 296 bed facility with each floor of 37 beds, but have an open policy towards bed places. They are unique in the USA as although they are an acute rehabilitation facility, they have been designated as a long term care unit which sets their ALOS as 25 days. This allows them to be more
altruistic than any other rehabilitation unit I have seen, but at the same time they take the acute rehabilitation cases. The beds exclude a 15 bed unit at the nearby Massachusetts Ear and Eye Institute which they use for patients who need rehabilitation but are too medically unwell to make the move to SRH. The beds are divided as follows:

- 37 cardio-pulmonary
- 37 stroke/neurology
- 37 transitional care unit (need special nursing and at least one therapy eg physio- unlike our Welltel)
- 37 TBI/paeds
- 37 Complex medical/additional care. Incl burns/amps
- 37 Oncology/SCI
- 37 Dialysis/Ventilator Weaning programme
- 37 Pain

They have connections with 6 neighbouring rehab areas, and have strong bonds to a rehabilitation unit at Cape Cod and less so to a unit at Burbank and Rhode Island.

The dialysis unit came about by finding that a large of their patients were having to be shipped to dialysis 2 to 3 times a week, thus interrupting their rehab such that they now have their own dialysis/rehabilitation unit. They also established that there were a large no of patients undergoing ventilator therapy, and this was for those outside the ICU's as well, and if they had rehabilitation prospects then they would be admitted.

Agrees about the rehabilitation unit being on the same site as the acute hospital. They don't have interns, but do have residents. As to orthopaedics and rehabilitation, he agrees on the need for the 'at risk' elective orthopaedic patient being screened for rehabilitation.

The mean LOS is 14 days.

- **Dr Joel Stein, Physiatrist in Charge, Neurology Programme.**

They have a liaison nurse employed by the SRH to 'find ' the patients for their neurology wards. They see the patients quickly, will take TACI's, as they need to fill the beds. There are 38 beds for strokes, mean age is 70 and LOS is 35 days. They will also send patients to sub-acute care, these may be TACI's, in theory they could return them to the acute unit if they showed any sign of improvement, but this very rarely happens in practise.

Gave me a JAMA reference:

Outcomes and costs after Hip fracture and stroke: A comparison of rehabilitation settings. Going to subacute care did not have an impact on # NOF’s but did on strokes. Also, there is quite a good publication on Stroke rehab put out by the US dept of health Human public health service- Post stroke rehabilitation - clinical practise guideline no 16.

Asked about chronic neurological disorders, did not wholly agree with the philosophy of prospective admissions of MS patients to rehab, but did accept their need. Wasn’t too fussed about phenol vs botox, phenol is cheaper and more long-lasting.

- **Dr Oruc, Physiatrist for the Amputee's.**

Has 18 beds and takes them at 2 to 3 days post op. ALOS 4-5 weeks. Mean age 70 years. Go straight for definitives rather than interims, as is more cost effective. Uses Silicon for suspending
the prosthesis, and appears kinder to the skin. 36% of her patients are on dialysis and in rehabilitation.

- **Dr Michelle Alpert, SCI Unit**
  Nothing much to learn here LOS is the same as elsewhere ie 4 months for tetraplegia and 2 for para’s. They use the FIM alternative weeks.

  Quite a few patients received only an hour a day over each w/e day c/f 1 hour during the weekdays.

- **Dr Paul Laraia, Director, Cardio-Pulmonary Rehabilitation**
  18 to 19 beds at any one time, two types of patient, those post cardiac surgery ie valve replacement:
  
  - CABG\]
  
  - transplant\}
  
  and those cardiac’s for whatever reason, but with complications ie, infected sternal and leg wounds, wound dehiscence etc. This is unlike the group whom I saw at the JFK-J where the cardiac rehab was really for deconditioned people with none of the above conditions. Their ALOS before transfer fell into 2 groups, those with complications could be in the teaching hospital for up to 2 months, for the post surgical it was of the order of 2-3 days. ALOS in his unit was 14 to 15 days. A conventional CABG would take 6 to 7 days in the acute hospital before being discharged home. 95% of the patients in the above programmes were discharged home.

  He also briefly discussed the pulmonary component of rehabilitation, took patients following lung transplant, and with pulmonary cachexia, rehab’ing them very successfully, such that most had a shortish stay before being discharged home. This is obviously a selected group of patients.

- **Sue Glasser, VP for Strategic Planning and Development**
  Helpful when discussing matters like bed no’s. She will send me a document published by the Commonwealth of Massachusetts from 1985 discussing bed no’s per capita per disease state. The overall recommendation was for 20 beds/100,000.

  She was responsible for the establishment of the 15 bed unit at the Massachusetts Ear and Eye Institute (MEEI) with a 20 day limit on LOS, and which sounded very much like our Blaylock proposal. We may have to find out more about it, as it has only been going for 6 months.

  **Dr Kerrigan, Gait Analysis Laboratory**

  She wasn’t present but I spoke to her research assistant, and who gave me the chapter that Dr Kerrigan has just written for the textbook on Rehabilitation, and which gives a very good overview of the indications etc.

**HELSINGBORG REHABILITATION CENTRE, HELSINGBORG, SWEDEN**

- **Dr Bo Agren, Rehabilitationist** in charge of 20 beds at the hospital, this is a 400 bed institution, they don’t have a geriatrician on the staff. The south of Sweden (population 1.5 million) has been coordinated into a type of ‘hub and spoke’ system, with the major hospital being at Lund, to which all SCI and ABI are referred, with the rehabilitation being at Orup.
• **Orup Rehabilitation Hospital.** This is at Hoor a small (pop 4000) town in the middle of the region where they have converted an old TB hospital into a 38 bed rehab unit. It is set in 100 hectares of forest (with deer), with a large nearby lake, and a host of buildings which supported the old TB sanatorium, and it's an altogether idyllic setting for rehabilitation. But the huge drawback is it's the isolation from acute hospitals and the main population centres. It is 35 or more Km’s from both Lund and Helsingborg, they can only perform basic blood tests, otherwise all tests have to go to the nearest general hospital or Lund. The only X-ray is some 10 mins away, and to assess referred patients they have to travel more than 50 km to each of the hospitals in the area.

- Are 38 beds for rehabilitation as follows
  
  - SCI 12 beds-2 OP
  - ABI 7 beds
  - General 16 beds-10 OP
  - Neurology 3 beds- MS, Parkinsons etc.

  These serve the local area and comprise patients with strokes, cardiac problems etc.

There are 2 consultants for each of the main areas ie 6 consultants in all, although they have to do rounds in the teaching hospital, which is time consuming. There are 3 training registrars for the 38 in-patients and OP work. No interns.

Are members of CARF, and have already passed their first accreditation. Did not have the same criticism of CARF as did the Canadians. The hospital has quite recently been lavishly refurbished eg electronic control of cupboards and basins to assess patients needs. These were also available in their ‘hotel’. Superb hydrotherapy pool.

They have converted one of the outbuildings to an hotel of 25 beds- have 4 ‘receptionists' who provide some of the care if needed, 4 of the rooms have been adapted for disabled patients with electronically controlled basins and cupboards. They admitted it had more beds than necessary, they did use it for patients families, and it is not quite like the Welltel that we are planning but could be adapted.

Staffing for the rehabilitation area was as follows:

- PT 12 /38 ie 1:3 but includes OP (they do not like rotating between the various disease groups)
- OT same
- Rec T. 1/38
- Soc W 4-5
- Clinical Psych. 2/38

No weekend cover for patients, too expensive and quite a few are sent home!

He believes in Alan Thompson’s (from National Neuro-Rehabilitation Unit, UK) approach to MS. Bo Agren disagrees and tends to admit them when necessary. They use Interferon and Prednisolone a great deal in MS patients.

• **Ake Wallberg, in charge of the SCI Unit.** Has been to Shenton Park Campus. Was consulted and agreed to the move to Orup, but would now far rather have it based at the teaching hospital, but as an entity rather than being incorporated into the acute hospital. They have 12 beds for the 1.5 million pop of the area, their incidence rate is
13 / million c/f WA at 26/ million which explains why they need as few beds as they do.

**OPTIONS**

* LOS-Tetraplegia 6 months
  * Para’s 3 months

ALOS pre-transfer is about a week. Have ventilated patients. Have alternate year admissions for all ex SCI’s for re-assessment for about 2.5 days, but is unsure whether this is cost effective and admits that they don’t pick up very much pathology.

**Helsingborg Hospital**

20 bed rehabilitation unit, with very little geriatric input. Most patients are from the acute hospital, the majority being cerebro-vascular and the rest orthopaedic. Mean age is 70 years, average LOS pre-transfer is 7 days and the average LOS is 4-5 weeks. PT OT ratio is 1:7.

They use community hospital’s for their ‘sub-acute’ care with the type of patients admitted being:

- Amputee’s- admitted after 7 days post-op and who stay till stump is healed.
- Orthopaedic
- Strokes for long-term care who stay about 6-8 weeks

50% return home with follow up OP therapy. The remainder go to NH care. Dr Agren himself looks after these patients.

There is also another community hospital (38 beds), run by GP’s for respite care, with a non-medical assessor for admission. LOS is 4-6 weeks.

**NATIONAL HOSPITAL FOR NEUROLOGY AND NEURO-SURGERY (NHNN)
NEURO-REHABILITATION UNIT (EAST FINCHLEY- LONDON)**

18 beds with the majority (45%) being filled by patients with MS. Strokes are about 25-30% with non-traumatic SCI (13% and mostly below T6) and others filling the remainder. The unit has been at it’s present site for 30 years, it will be closing next year and moving to be part of Queens Square.

It is a very old and run-down Institution, totally unsuited to rehabilitation, but obviously the staff are it’s greatest asset.

All patients are assessed before admission in the OP and if a reversible problem has been identified, they are then placed on the waiting list and will be admitted between 1 and 6 weeks later.

Staffing ratio’s are as follows:

<table>
<thead>
<tr>
<th>Therapy Type</th>
<th>Ratio</th>
</tr>
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<tbody>
<tr>
<td>OT</td>
<td>3/18</td>
</tr>
<tr>
<td>PT</td>
<td>3/18</td>
</tr>
<tr>
<td>Speech and Language Therapists</td>
<td>0.6/18</td>
</tr>
<tr>
<td>SW</td>
<td>0.5/18</td>
</tr>
</tbody>
</table>

Do not have 7-day therapy, it is a little controversial (according to Jane Johnson, CNS Neuro-rehabilitation).

Regarding nursing care and their specialisation in caring for one disease group eg stroke, she did not feel that there was any merit in the suggestion, and that the disease groups could be mixed...
without any detriment to their rehabilitation prospects. The wards are in the ‘Florence Nightingale’ format and not really conducive to it, but whatever, mixing doesn’t seem to be a problem.

This is an Institution for highly specialised neuro-rehabilitation, ie a quaternary referral centre and with long waiting lists one does not feel that it should, or could, be replicated in WA.

- Multiple sclerosis- about 50% of admissions with the following distribution between the 3 groups.

<table>
<thead>
<tr>
<th>Type</th>
<th>%</th>
<th>ALOS(Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary progressive</td>
<td>the remainder</td>
<td>26</td>
</tr>
<tr>
<td>Secondary progressive</td>
<td>75%</td>
<td>21</td>
</tr>
<tr>
<td>Relapsing Remitting (RR)</td>
<td>the remainder</td>
<td>29</td>
</tr>
</tbody>
</table>

EDSS (Expanded Disability Status Scale Kurtzke functional systems) is the scale to use for documenting the impairments and hence the progress of MS. It is said to have a moderate correlation with the Barthel and FIM. The RR type are the group that change most during admission.

- **Dawn Langdon, Clinical Psychologist,** (1.0 FTE) whose primary interest is in MS, has the following approach.
  - Assess
  - Goal set
  - Emotional assessment
  - Discharge planning

  She talks of ‘submarine dementia’ ie runs silent and deep in MS and which is unlike cortical or sub-cortical dementia. Will be sending me a paper on the report of MS services in the British Journal of Rehabilitation Medicine as well as various other papers on MS. Very much in favour of the trial that they performed in calculating the impact of rehabilitation on MS, although admits that there may be criticism of the control group which had the normal waiting period of 6 weeks as their control, ie reflected the normal waiting period for patients awaiting admission. There was no regular follow-up nor were there any pre-emptive admissions.

- **Strokes.** They have no upper age limit, although the patients tend to be young (mean age 50 years) complex and medically stable. The duration from the initial event varies but they take them from other hospitals and from Queens Square, and the ALOS is between 6 weeks and 4 months. They have no exit block.

**DEPT NEUROLOGY, UNIVERSITY OF COPENHAGEN, DENMARK BISPEBJERG HOSPITAL**

- **Prof Gudren Boysen, Neurologist, in charge of the Acute Intervention Unit**

  Since February 1998 there has been a coordinated stroke service for the inner area of Copenhagen (population 0.6 million), incorporating 5 hospital’s and an acute unit. There is a push for the stroke plan to be extended to greater Copenhagen - population 1.6 million. This took a year to plan, and one hospital has still to commence operations. Although not specifically asked about it, it appears that this was a Government decision, although the rules were agreed to amongst the doctors.

  The hospital’s involved are as follows:
  
  - Bispebjerg -BBH 12 bed acute intervention unit
  - 40 bed rehab unit (900 bed acute hosp)
This equates to 25 beds/100000 for neurology alone, she accepts that this is a high figure. It was calculated by Dr Olsen the neurologist running the 40 beds at the BBH, on the basis that a stroke patient was in hospital for an average of 38 days. The hospital’s are distributed in such a way that they represent a ‘hub and spoke’ type pattern.

Admission policy is as follows:

Patients contact the ambulance service, and if it can be established that the stroke was less than 6 hours after the stroke, then they have been instructed to bring the person directly to BBH, warning the unit of the patients impending arrival at the ED. There they are assessed, CT scanned, and if the diagnosis is confirmed and it’s less than 6 hours after the stroke, then they are admitted to the acute unit. If it’s a stroke and it is more than 6 hours old or of undetermined duration, then they are admitted to a conventional stroke and rehab unit, in the hospital closest to their residence. This is because of the participation of the unit in international stroke trials, but it doesn’t in any way detract from the major role of the unit in stroke diagnosis and management. There is a strict policy that the patients stay only 7 days before either being discharged (which may be earlier than 7 days) or transferred to the stroke unit nearest to their domicile.

There is a protocol for the patients stay in the unit, this includes the usual instruments such as the Barthel’s (done on day’s 3 and 5). They use the Scandinavian stroke score (SSS- first introduced in 1986), performed 2 hourly in the first 24 hours, 4 hourly for the next day and then tds thereafter. When questioned about instruments, there is apparently quite a useful article in last year’s edition of Stroke on the Cochrane evaluation of acute trials covering such tools as the SSS, Matthew and the NIH. They also use the Bamford classification of strokes, accepting that it’s fairly gross.

The only patients remaining in the unit after 7 days are those whose trial protocols dictate it (such as the Tinzaparin - a low molecular weight heparin given in combination with aspirin for 10 days trial), and those who are terminal. 40% of the patients from the unit are discharged home before 7 days, the remainder, including the TACI’s are transferred to the other stroke units in those closest to their home. Geriatricians play no role in any of the care of strokes, they do assess the patients for nursing homes (to which about 15% of their patients are admitted), and she admits that there is a block at this stage, due to lack of beds.

Follow up of the patients is for 3 months with Rankin and Barthels scores, there is no coordinated day hospital care, nor is there any early discharge rehabilitation such as in RPH, and which they would like to have. They have to rely on OP treatment organised locally, and have no Day hospitals. At present there is no plan for coordination of the overall system ie director of stroke care with appropriate nursing and allied health counterparts, although they do meet regularly.

Similar stroke systems are in place in Cologne and Helsinki. The 7 day cut-off was selected as it was the period in which it was felt that the patient would stabilise sufficient for them to be assessed for their continuing care, as well as being long enough for them not to feel rushed, before being transferred to the other acute/rehab units. They do not have a social worker on the team, but one is available. The reason for this is that if the patient is well enough to be discharged from the unit then they don’t need a social worker, or if they do then that can be achieved post-discharge. Similarly with aids to daily living.

Average age for the unit is 70 to 75 years.
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