

Registrars' Realm

Each year, general practice registrars in the General Practice Education Programme Stage 1 (GPEP1) test their clinical mettle by writing up an 'evidence-based' response to a clinical problem brought in by a patient in the practices in which they work. We call these 'vignettes'. The next two editions of the 'New Zealand Family Physician' will feature some of the vignettes prepared by the 2008 GPEP1 registrars, along with a brief comment from an experienced general practitioner.

Acute calf swelling

Francois Terblanché, GPEP1 Registrar 2008, Nelson

'I enjoyed the contrast of being a registrar in rural Golden Bay vs more urban Blenheim. My short-term goals are to welcome our third child (due 6 Oct and we're curious to see if it's going to be a 3rd boy!) into the family, as well as to locum as a GP in the Nelson area for the next two years starting January next year.'



The patient

You think you are alone on a remote stretch of coastline, standing outside your caravan on holiday when an old acquaintance from uni yells your name from the direction where the waves are beating. After exchanging pleasantries, your friend casually mentions: 'Look at dad's leg. It became swollen today. What do you make of it? Can it be dangerous?' You are many miles from civilization and decide you have to make an assessment of his father. Your friend's father, Don, turns out to be a healthy 69-year-old man, on no medications and with no known allergies. You realise you can probably cross off (venous) stasis, drugs (NSAIDs, calcium channel blockers, oestrogen) and degenerative diseases of the elderly that could cause leg oedema (CHF, cancer, anaemia),¹ especially since he doesn't have any systemic symptoms (e.g. dyspnoea).

You ask if the leg swelling is *unilateral* (e.g. ruptured baker's cyst, acute arterial occlusion, ruptured head gastrocnemius, DVT, cellulitis and compartment syndrome) or *bilateral* (systemic causes). Don's swelling is unilateral and came about over the past 24 hours, fairly gradually. You want to exclude a red flag, a DVT, if you can.

You remember a recent article you read in the *Journal of Family Practice* on meta-analyses of papers on calf swelling and DVTs: *Whether you start with Wells score or D-dimer, the combination of negative D-dimer and low or intermediate Wells score indicates no further testing.*² Since you cannot do a D-dimer (D-dimer levels can be elevated in pregnancy, myocardial infarction, cancer, trauma, and post surgery³), you want to proceed with the Wells score.

Wells score estimates probability of deep vein thrombosis. You calculate:

1 point each for:

- Active cancer
- Paralysis, paresis, recent plaster immobilisation of lower limb
- Recently bedridden for >3 days or major surgery in past four weeks
- Localised tenderness along distribution of deep venous system
- Entire leg swollen
- Calf swelling >3 cm compared to asymptomatic leg
- Pitting edema
- Collateral superficial veins.

-2 points for:

- Alternative diagnosis as likely or more likely than that of DVT.

Probability of a DVT is:

- High: ≥ 3 points
- Intermediate: 1 or 2 points
- Low: <1 point

(In real life you could not remember the exact Wells criteria, but on your wireless satellite powered laptop you do a Google search and find plenty of online Wells score calculators...)

While you ponder his very low Wells score, Don remembers that he manhandled a bull on the farm yesterday, and that he took a blow on the lower leg. Come to think of it, the leg was a bit swollen and sore after the incident and the swelling and tenderness gradually increased from then onwards. His wife arrives and promptly asks you if it was a good idea for everyone to take two aspirins this morning before they set out driving on holiday, since a friend of hers had a clot in her leg once and she had heard that aspirin can prevent blood clots.

Before you can say anything someone mentions the food is ready and everyone disappears and starts eating. You feel more at ease after dinner, when Don exhibits clear signs of bruising to his lower leg. While you wonder if D-dimer testing strips exist, you think that, if you really had suspected a DVT after the Wells score, an ultrasound would have been needed as the gold standard next investigation.

References

1. Murtagh J. General Practice (2nd Ed). Roseville, NSW: McGraw-Hill, 2000.
2. Schumann S-A, Ewigman B. Is it DVT? Wells score and D-dimer may avert costly workup. J Fam Pract 2007; 56(12): 1010-12.
3. General practice Notebook – a UK medical encyclopaedia on the world wide web. <http://www.gpnotebook.co.uk/simplepage.cfm?ID=-234501566&linkID=1772&cook=no>

COMMENTARY

Clinical decision making in non-traditional settings draws on core clinical skills, especially if access to diagnostic testing is limited. In these situations good history taking is the most important issue (90% of relevant information comes from the history) and this may have elicited the recent

trauma earlier in this case. An assessment of the Wells score is the next most appropriate step as D-dimers may be difficult to interpret with increasing age and are most useful in excluding a DVT (100% negative predictive value for people under 65 with Wells Score less than 2).

He may now wish to rest up and repair the contused damaged vessel or small tear: is the next step advice to reduce his risk of a DVT from trauma?

Dr Nina Sawicki
GP, Wellington

GPEP1 Audit: Rural Hospital Transfers

Valerie Montalvo was a GPEP1 Registrar at Rawene Hospital in the Hokianga when she prepared this audit

Aim

To review patient transfers to tertiary care centres from a small rural hospital.

Background

Rawene Hospital in the rural Hokianga region of Northland serves a population of nearly 7000 enrolled patients. For many of those patients, Rawene Hospital is the only secondary health care centre within more than one hour's drive. The hospital provides maternity services as well as acute medical care. There is no operating theatre or intensive care facility currently at Rawene. The purpose of this project is to review the circumstances under which patients admitted to the hospital require transfer to a tertiary care facility, and the reasons for patients being transferred.

Summary

Rawene Hospital admissions and transfers were reviewed over a 12-month period, from 1st April 2007 through 31st March 2008. During that time, 687 acute admissions occurred. Sixty-four admissions were maternity cases resulting in delivery at the hospital. Of all acute admissions, in 118 cases the patient was subsequently transferred to either Whangarei Base Hospital or Auckland Hospital for further care. This represents 18.9% of all non-maternity admissions. The total number of patients transferred was 111, as several patients required transfer on more than one admission. Fifty-one transferred patients were female (45.9%) and 60 were male (54.1%). The median age of transferred patients was 59 years, ranging from five months to 92 years. Twelve patients (10.8% of patients) are documented to have been trans-

ported to the tertiary facility by helicopter, but this is likely to be an under-estimate of the true number, due to incomplete recording of the mode of transfer in the notes.

The most common overall reason for patient transfer was to obtain review for fractures and other trauma (15 patients, 12.7% of transfers). This includes referral to the Emergency Department consultants as well as direct referral to the orthopaedic surgeons. Acute myocardial infarction or unstable angina was the next most common reason for patient transfer (14 patients, 11.9% of transfers), followed by surgical review for abdominal pain (11 patients, 9.3% of transfers), cellulitis or abscess treatment (eight patients, 6.8%) and evaluation for suspected cerebrovascular accident (seven patients, 5.9% of transfers). Only four labouring mothers required transport to Whangarei Base Hospital for complications of labour (5.9% of maternity cases).

The primary reason for transport to the outside facility was to achieve definitive treatment for a defined medical condition. This was especially relevant for the admissions due to trauma and for patients with unstable angina or myocardial infarction who went on to Auckland for angiography, stenting, or bypass grafting. Patients were also sent to treat upper GI bleeding and epistaxis.

Accessing tests not available at Rawene Hospital was a common secondary reason for transport. For example, CT and ultrasound scans, gastroscopy and colonoscopy were requested in transfer letters. Occasionally, routine labs, blood gases, and X-rays, which were not available at Rawene Hospital at the time (i.e. on the weekends), were mentioned as reasons for transfer. Rarely, patients were transferred to Whangarei Hospital if their medical

conditions were not clarified, for example in the case of unexplained hypotension or collapse.

Overall, as expected, Whangarei Base Hospital received the vast majority of patient transfers, with Auckland only directly receiving four patients (0.3%), although several patients evaluated at Whangarei were later sent on to Auckland for further treatment.

Conclusion

In the 12-month period between April 1st 2007 and March 31st 2008, approximately 18.9% of all acute ad-

mission to Rawene Hospital subsequently resulted in the patient being transferred on to a tertiary care facility. The majority of transfers were undertaken in order to access specialty imaging and interventions that are not available in Hokianga. At Rawene Hospital, we feel that this represents an appropriate use of a primary/secondary care hospital, which makes an important contribution to relieving strained District Health Board resources. We expect the percentage of transfers to drop slightly in the future as advances such as point-of-care testing become available at our rural hospital.

COMMENTARY

There is lack of clarity over the role of rural hospitals in New Zealand, especially for those never having had the pleasure of working in one.

Rawene Hospital (eight acute beds, four maternity beds) is an essential part of the integrated primary care services of Hauora Hokianga. All medical services (including 24/7 emergency care) are provided by the salaried GPs. In contrast to much of the rest of the country, shared maternity care is alive and well. The closest base hospital is

in Whangarei – two hours away by road. Although the hospital work is a 'traditional' part of general practice in the Hokianga, increasing availability of specialised technologies for diagnosis and treatment means we face increasing challenges in achieving equity of access for our high needs population.

Dr Montalvo's audit provides a starting point to look at how acute care is provided in the Hokianga. It suggests that one of the roles of the rural hospital may be that of facilitating appropriate and timely access

to specialists and diagnostic services for the acutely unwell. It also suggests that many patients can be managed in their own community hospital.

The audit will obviously need to be repeated on an annual basis, but it may also be important to compare this audit with other rural hospitals of similar size around the country.

Dr Kati Blattner

Rawene Hospital

Smoking cessation resources

Charlotte Harris, GPEP1 Registrar 2008, Wellington Region

'I came to New Zealand in August 2007 with my husband. I am hoping to practice as a GP at Masterton Medical in the near future. I live in Greytown in the Wairarapa and love the Kiwi way of life.'



The patient

A 40-year-old local woman, a factory worker, has smoked 30 cigarettes a day for over 20 years. Her husband has just had a heart attack and her children have asked her to stop smoking. She states she is very stressed at the moment with her husband being in hospital and

she needs to smoke to 'calm her nerves'. She stated she has tried stopping in the past but they both smoke and there isn't any point as it's too hard. She states she can't do it alone. What resources are available for health professionals and patients?

Table 1. Smoking cessation resources

Resource and website	Resource description
QUIT – http://www.quit.org.nz	Resources for health workers, information for people who want to quit. National telephone service for all people wanting help to stop smoking and also offers subsidised Nicotine Replacement Therapy (NRT): 0800 778 778
Australian QUIT – http://www.quit.org.au/	Australian version of the above
ASH – New Zealand http://www.ash.org.nz	The most comprehensive site with resources, legislation, links, current issues, litigation, statistics, health promotion and newsletter
http://www.tehottumanawawa.org.nz	Aukati Kai Paipa – Service provided by Maori organisations for Maori who smoke. 09 638 5800

Table 1 cont.

Resource and website	Resource description
National Drug Policy Group , Ministry of Health http://www.ndp.govt.nz	This site aims to promote and communicate work being undertaken under the National Drug Policy (NDP).
Cancer Society – http://www.cancernz.org.nz	Anti-smoking resources in pdf. Good for the health promotion workforce.
Framework Convention on Tobacco Control http://tobacco.who.int/en/fctc/	A WHO cabinet project created to focus international attention, resources and action on the global tobacco pandemic.
The Heart Foundation http://www.heartfoundation.org.nz	Click on Workplace health, then smokefree for a guide to policy and the Smokefree Environments Act.
The new Smokelink Site http://www.smokelink.org.nz	
Simon Chapman's page on Tobacco Control http://www.health.usyd.edu.au/people/simonc.html	Research, articles
The Alcohol and Public Health Unit http://www.apfru.ac.nz	Research and evaluation
The Health Promotion Forum http://www.hpforum.org.nz	
The MOH resources database of resources http://www.health.govt.nz	Presently restricted to MOH approved and distributed resources, but likely to be extended to other resources from credible sources.
Tracey Pirihi – Tracey@quit.org.nz	Tracey Pirihi is the Quit-Card co-ordinator for providers throughout New Zealand – 04 460 9899.
The NZ Smoking Cessation Guidelines moh@wickliffe.co.nz	The NZ Smoking Cessation Guidelines, Ministry of Health 2007, are available by e-mailing or by calling 044962277
Wairarapa DHB	Smokefree co-ordinator – 06 946 9800 – Linda Spence
Aukati KaiPaipa Cessation Programme gabby@kokiri-hauora.org.nz	7–9 Barnes Street, Lower Hutt; Ph: 04 939 4630 or 0800 926 257
Cancer Prevention Trainer , Wellington Division Cancer Society New Zealand corriannes@cancersoc.org.nz	52 Riddiford Street, Wellington; Ph: 04 389 0054
Central Region Smokefree Auahi Kore Coordination kristen.foley@huttvalleydhb.org.nz	Private Bag 31-907, Lower Hutt; Ph: 04 570 9022

A swollen knee joint

Eva Beckmann-Aiono, GPEP1 Registrar 2008, Palmerston North

'I have previously trained in Germany and the UK and currently work part-time at Aramoho Health Centre in Wanganui. I'm also the mother of two children aged 6 and 12.'



The patient

Mr N, a 43-year-old builder, presents with intermittent pain and swelling of his left knee, following an incident four days earlier. He had lost balance while pushing a wheelbarrow of concrete over a plank and felt a sharp pain in his left knee as he tried to regain control over the wheelbarrow. Due to the pain he had to let go and his load tipped over.

History

Contact injury (extrinsic) or
non-contact injury (intrinsic)? **Intrinsic**
Did patient hear or feel a snap/pop/break? **No**
Was/is patient able to weight bear? **Yes**
Did the knee lock/give way/patella dislocate? **No**
Normal movement? **Clicking**
Did the knee swell? Within first 2 hours? **Within 2 days**

- Post-traumatic swelling over 1–2 days = EFFUSION (synovial fluid)
- Rapid painful post-traumatic swelling = HAEMARTHROSIS
- torn ligaments, synovium or # bones – for X-ray, orthop. review

Examination: – *supine, go through structures*

Alignment	(Average male 5% varus, female 7% valgus)	No
Quadriceps	Wasting starts early, up to 5% of muscle bulk/day, sensitive for knee injuries but not specific	No
Effusion	Tense = easily seen Moderate = patella tap Mild = patella sweep	Mild
Range of motion	Compare both sides,	No
MCL and LCL	Palpate first, compare contra-lateral side: Grade 1: 5 mm increase in laxity Grade 2: 5–10 mm in laxity Grade 3: >10 mm in laxity	No
ACL	Lachman test – check at 30° flexion (checks posterolateral bundle, 70% area) Anterior drawer – check at 90° flexion (checks antero-medial bundle, 30% area) Pivot shift test – subluxes, difficult, poor sensitivity	No
PCL	Tibial tuberosity normally anterior to patella (sideprofile) Posterior drawer – check at 90° flexion	No
Patella	Patella apprehension test, at 30°, for lateral dislocation	No
Meniscus tears and grind tests	Point joint line tenderness Pain on meniscus grinding, at 90° flexion McMurray's rotation test positive (unreliable) Effusion – as above Springy block to extension Pain on squatting	Yes, medial Yes Positive Yes No Yes

Don't forget neurovascular exam!

Assessment of Mr N's knee

Although there is no locking or loss of extension – what indicates a Meniscal Tear?

- Meniscal tears are common and associated with lots of sports – soccer, basketball etc.
- Medial meniscal tears are three times more common than lateral tears
- Meniscal tears occur typically in flexion, with a shear stress force on the meniscus through rotation
- In middle-aged and older people injury can occur with more trivial movements
- Meniscal tears occur in two-thirds of knees with ACL tears
- Catching, locking, pain and swelling are suggestive of meniscal tears
- A history of squatting or twisting injury, associated with joint line tenderness, an effusion and loss of extension are strongly suggestive of meniscal tears
- Locking is common in meniscal tears, but is also seen with ACL tears, loose bodies, degenerative changes and muscle spasm.

Management

- If the knee is acutely locked, refer for arthroscopy. It might be a bucket handle tear
 - If there is no acute locking, ACC recommend analgesia, and possible X-ray
 - Orthopaedic referral (+MRI) should come after trial of rehabilitation for six to eight weeks, or if symptoms persist or if Mr N is not achieving milestones
 - Orthopaedic management ranges from conservative to partial to total meniscectomy. Meniscectomy postop care is:
 - Full weight bearing allowed Day 1
 - Functional activities by Day 7
 - Running by Day 10–14.
- No routine post-op physio needed post-op (if recovery slow)
Sedentary work – return to light duties after 3/7
Physical work – return after 2–4/52.

How is Mr N doing?

- ACC, physio, orthopaedic referral at first visit
- Orthopaedic assessment after 5/52 – no improvement, X-ray normal
- MRI after 10/52: tear of the posterior horn of the medial meniscus left knee
- Currently awaiting arthroscopy.

References

ACC Management of knee injuries; video presentation by Mr Mark Clatworthy.
ACC Guidelines: The diagnosis and management of soft tissue knee injuries.

Collier J, Longmore M, Brinsden M. Oxford handbook of clinical specialties. Oxford University Press; 2006.
Murtagh J. General practice (2nd Ed). Roseville, NSW: McGraw-Hill; 2000.