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# Assessing pathology training needs

## Results from a survey of general practice registrars

### Background

The number of pathology tests ordered by general practitioners is rising. Some of this increase may reflect overtesting, overutilisation or training deficiency. The aim of this study was to identify the pathology training needs of general practice registrars in regards to test ordering and interpretation of common conditions found in general practice.

### Methods

A pathology training needs assessment survey was distributed to 82 South Australian general practice registrars.

### Results

The survey response rate was 55%. Pathology training diminishes as participants move through their medical training. General practice registrars had most difficulty with test ordering and interpretation in the areas of fatigue, menopausal complaints, arthritis and menstrual problems.

### Discussion

These findings will assist those who supervise and support general practice registrars in their training. Targeted pathology training in areas identified as difficult may assist in reducing healthcare expenditure and improve the management of patients' clinical conditions.

### Keywords

pathology; vocational education/graduate education; education, medical

The number of tests ordered by general practitioners (GPs) has risen significantly in recent years, contributing to increasing health expenditure.<sup>1</sup> While some of this relates to the increase in patients with chronic diseases,<sup>1</sup> it may also reflect inappropriate test ordering.

Overtesting or overutilisation is related to training and levels of experience. Research suggests that training at the undergraduate and postgraduate level promotes effective and appropriate use of laboratory tests.<sup>2,3</sup> Spike and Britt<sup>4</sup> found that general practice registrars in Victoria had significantly higher rates of pathology test ordering compared to experienced GPs. It is unclear which tests and conditions general practice registrars find most difficult regarding test ordering and interpretation.

This study aimed to identify the training needs of general practice registrars in regards to pathology ordering and interpretation associated with common conditions in general practice.

### Methods

A needs assessment questionnaire was developed for this study based on the literature, a focus group with general practice registrars and interviews with pathology providers. The questionnaire was designed to gather information on respondent demographics; pathology training received; pathology use of blood tests and urine microscopy/culture/sensitivity (ie. excluding histology and Pap tests) including difficulties in test ordering (eg. selecting the appropriate test) and interpretation (eg. borderline results); and pathology use in managing a presentation of tiredness.

The self administered questionnaires were sent to 82 general practice registrars registered

with the Adelaide to Outback GP Training Program in South Australia between December 2008 and January 2009. To maximise response rate the Dillman method<sup>5</sup> was applied, which includes two follow up reminders after the initial mailout.

Questionnaire data were analysed using the SPSS for Windows (Version 15.0) statistics package. Descriptive analysis was undertaken.

This study was approved by the University of Adelaide Human Research Ethics Committee.

### Results

Questionnaires were received from 45 general practice registrars, giving a 55% response rate. Of the respondents, there were slightly more females (64%), and a majority were under 45 years (91%), with most aged between 25 and 34 years (62%). Distribution was fairly even across both urban (44%) and rural (38%) locations (18% did not indicate location) and within each of the three training levels (GPT1 to GPT3). Most participants were working full time (62%) and had graduated from an Australian university (87%) between 2001 and 2005 (73%).

### Pathology training

A majority of the general practice registrars (89%) reported receiving pathology training during their medical degree and that this diminished during their prevocational (42%) and vocational training (36%). Gaps in their pathology training were reported by 36% of registrars, although 53% were unsure if they had training gaps. They wanted more training in specific tests, particularly reproductive hormone and hepatitis serology tests as well as information on new tests.

### Test ordering and frequency

The most frequently self reported pathology test ordered on a daily basis was the full blood

count (FBC) (87%) followed by electrolytes, urea and creatinine (EUC) (84%), liver function test (LFT) (82%), lipid (67%) and glucose tests (62%). Thyroid function tests (TFTs) and erythrocyte sedimentation rate (ESR) (62% for both), and HbA1c (49%) tests tended to be ordered more on a weekly basis. The most common monthly tests ordered were infertility/pregnancy (62%), hepatitis serology (58%), human immunodeficiency virus (HIV) and prostate-specific antigen (PSA) (56%). Hormone assays (27%) and HIV (22%) tests were ordered more frequently on a yearly basis.

### Difficulties in test ordering and interpretation

Pathology tests that participants reported as most difficult to interpret were hormone assays (67%) and infertility/pregnancy (38%) tests. The reasons they found these tests difficult were the uncertainty of their usefulness, the significance of the result and when to order which test.

The clinical problems that were most frequently reported by the general practice registrars as causing difficulty in ordering tests were weakness/tiredness (29%), viral disease (24%) and depression (22%) (Table 1). The clinical

problems that caused the most difficulties in interpreting test results were malignant skin neoplasms (16%), menopausal symptom/complaint (11%), arthritis (9%) and menstrual problems (9%). The clinical conditions reported as most difficult in both test ordering and interpretation were menopausal symptom/complaint (31%), weakness/tiredness (29%), menstrual problems (27%) and arthritis (24%). No difficulties in test ordering and interpretation were reported for urinary tract infection and diabetes.

### Case scenario – tiredness

Pathology testing for the clinical problem of tiredness was further explored through a case scenario (Table 2). Participants were asked to rank the top 10 actions, in order of importance, from a list of 16. Of the 40 general practice registrars who completed this question, all rated equally high the following actions to perform in an initial consultation: focused history and physical examination, assessment for presence of anxiety or depression, FBC and TFT. The majority would also order EUC, glucose, LFT and ESR tests as well as assessing for current life stresses and past trauma and abuse (Table 3).

## Discussion

The results of this study provide evidence that pathology training diminishes as participants move through their levels of medical training. While those who reported receiving pathology training were satisfied with the training provided, a majority indicated that there are, or they are unsure if there are, gaps in their training. The findings of this study support other literature that found a paucity in the provision of pathology training to general practice registrars.<sup>6,7</sup>

The general practice registrars' self reported profile of most frequently ordered tests is similar to the profile of test ordering by experienced GPs reported in Britt's study on pathology ordering.<sup>8</sup>

The clinical problems that caused respondents most difficulty in test ordering and interpretation were weakness/tiredness, menopausal complaints/symptoms and arthritis and this corresponded with the tests that were reported as most difficult to interpret – hormone assays and infertility/pregnancy tests. This is unsurprising as these conditions can be associated with vague symptoms and numerous potential diagnoses and can be challenging to assess.<sup>9</sup> The tiredness case scenario provides evidence that general practice registrars

**Table 1. Reported difficulties in ordering and interpretation by clinical problems (n=45)**

Clinical problem	Difficulty test ordering only		Difficulty test interpreting only		Difficulty test ordering and interpreting		No difficulties test ordering or interpreting	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Weakness/tiredness	13	29	0	0	13	29	19	42
Viral disease not otherwise specified	11	24	2	4	7	16	25	56
Depression	10	22	1	2	2	4	32	71
Menopausal symptom/complaint	6	13	5	11	14	31	20	44
Gastroenteritis	6	13	0	0	2	4	37	82
Menstrual problem	5	11	4	9	12	27	24	53
Arthritis	5	11	4	9	11	24	25	56
Pre-/post-natal check-up	5	11	0	0	1	2	39	87
Cardiac check-up	5	11	0	0	2	4	38	84
General check-up	4	9	0	0	3	7	38	84
Hypertension	3	7	0	0	1	2	41	91
Malignant neoplasm skin	2	4	7	16	1	2	35	78
Ischaemic heart disease	1	2	0	0	3	7	41	91
Thyroid problem	0	0	3	7	1	2	41	91
Pregnancy	0	0	1	2	1	2	43	96
Lipid disorder	0	0	2	4	0	0	43	96
Diabetes	0	0	0	0	0	0	45	100
Urinary tract infection	0	0	0	0	0	0	45	100

**Table 2. Tiredness scenario**

Penny Lane is 45 years of age and works part time as a receptionist in a busy medical practice. She also attends to the financial records of her husband's business. She has grown-up children. She is assisting her daughter with plans for her up and coming wedding. Penny presents with complaints of constantly feeling tired, having lower back pain that at times radiates to her legs and pain in her neck and shoulders. She has been feeling this way for the past 2 months and is struggling to find the energy to go to work. Penny has no chronic illnesses and has a past history of good health
Please rank the top 10, in order of importance, of the following as actions you would perform at the initial consultation (1 = most important, 10 = least important)
• Full blood count
• Erythrocyte sedimentation rate
• Assessment for presence of anxiety or depression
• Liver function test
• Glucose test
• Focused history and physical examination
• Electrolytes, urea and creatinine
• Thyroid stimulating hormone and thyroid function test
• Urinalysis
• Assessment of current life stresses and past trauma and abuse
• Creatine kinase
• Ferritin
• X-ray cervical/lumbar spine
• Cortisol
• C-reactive protein
• Other, please specify

**Table 3. List of actions associated with the case scenario of tiredness (n=40)**

Action	General practice registrars	
	N	%
Focused history and physical examination	40	100
Assessment for presence of anxiety or depression	40	100
Full blood count	40	100
Thyroid function test	40	100
Electrolytes, urea and creatinine	38	95
Glucose test	34	85
Assessment of current life stresses and past trauma and abuse	33	83
Liver function test	31	78
Erythrocyte sedimentation rate	31	78
Urinalysis	17	43
Ferritin	17	43
X-ray cervical/lumbar spine	14	35
C-reactive protein	15	38
Creatine kinase	5	13
Cortisol	0	0

know the importance of performing a history assessment and physical examination. Ordering pathology tests at the first consultation was also high on their action list, although this may be due to the study design. A study on tiredness in general practice undertaken by Gialamas and Beilby<sup>10</sup> concluded that 'most tests do not yield a significant diagnosis' in this situation. Some researchers have suggested that the development of clinical guidelines in this area would be beneficial; however, at this stage, this is hampered by lack of evidence.<sup>9,11</sup>

Where good clinical guidelines exist<sup>12–15</sup> or decision support material is available, such as in diabetes, general practice registrars had the least difficulties in ordering and interpreting tests.

An important outcome of this study is the identification of specific pathology tests where registrars have some difficulties as well as the conditions where appropriate testing and interpretation is most difficult for them. This information could be used by regional training providers to develop educational packages to address these gaps.

## Study limitations

Despite follow up strategies the response rate (55%) was low, although it achieved a higher response rate than other surveys of general practice registrars.<sup>16</sup> The timing of the survey may have contributed to the lower response rate (December to January).

The case scenario involved ranked actions which may have overemphasised the ordering of pathology tests; that is, registrars may not have usually ordered pathology tests in this scenario but were forced to rank these as options.

The participants were from one general practice training program in South Australia, which limits the generalisability of the results. However, the demographic characteristics of the study population are a representative sample of Australian general practice registrars as reported in the 2007 General Practice Registrar Satisfaction Survey.<sup>16</sup>

This study collected self reported data and therefore the results need to be viewed with caution as they may be influenced by responder bias. Other methods such as audits would provide a more accurate indication of test ordering frequency, but were beyond the scope of this study.

## Conclusion

The results of this study indicate that many general practice registrars perceive they may have gaps in their pathology training. In particular, they identify difficulty in test ordering and interpretation in the complex of areas of tiredness, menopause and rheumatology. Specific education packages for registrars in these areas may be useful.

## Implications for general practice

- These findings will assist those who supervise and support general practice registrars in their vocational training.
- Specific training in pathology testing and ordering for certain conditions such as weakness/tiredness, menopausal complaints/symptoms and arthritis would be beneficial for registrars.
- Development of pathology guidelines for clinical scenarios may assist in reducing healthcare expenditure and improve the management of patients' clinical conditions.

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