

# Clinical exposure of interns during a general practice placement

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## Background

For more than a decade, junior doctors have undertaken general practice rotations; however, little is known about the breadth of medical conditions seen. This study aims to determine the breadth of clinical presentations encountered by interns during a rotation.

## Methods

Data were collected on all patients seen by interns at an RA-2 general practice during 2012–13. Each condition identified was compared with the Australian Curriculum Framework for Junior Doctors (ACFJD) and coded according to the International Classification of Diseases 10th revision (ICD-10).

## Results

Interns saw an average of 482.2 (SD = 38) patients per rotation (10.7 patients per day), 150.3 (SD = 15.4) ICD-10 codes per rotation and 49.8 (SD = 4.9; 57.2%) of the listed clinical symptoms and conditions in the ACFJD.

Internship is a transitional year from medical student to medical practitioner, allowing students to build on and extend their theoretical knowledge and technical skills.<sup>1</sup> For more than a decade, interns have had the opportunity to undertake a rotation within a general practice setting.<sup>2</sup>

Studies from the United Kingdom have unanimously promoted the educational benefits of general practice rotations.<sup>3</sup> Junior doctors interviewed have reported the experience as beneficial, enjoyable and would recommend it.<sup>3</sup> Junior doctors working in general practice rotations had similar learning experiences to those on other rotations, including communication skills, consultation skills, awareness of illness presentation and the ability to investigate illness appropriately.<sup>4</sup> A British national evaluation report noted that in 26 of 51 areas measured, junior doctors in general practice were judged to be more competent than a hospital-based reference group.<sup>3</sup>

In Australia, qualitative research has shown that interns perceive general practice terms as enhancing their professional growth.<sup>2</sup> However, there has been little research done on the clinical exposure of general practice rotations. A recent literature review noted there was limited published research covering the

range of skills or competencies gained by junior doctors in rural general practice.<sup>5</sup> It is assumed interns will see a wide variety of medical conditions, as general practitioners (GPs) are responsible for providing primary care to patients of all ages, and the diversity of presentations to GPs is unparalleled in other medical specialties.<sup>6</sup> Australian GPs need to have a good understanding of 167 problems to cover 85% of the conditions they will see most frequently.<sup>7</sup>

The aim of this pilot quantitative study was to determine the breadth of clinical presentations encountered by interns during a general practice rotation.

## Methods

Ethics approval was provided by the Queen Elizabeth Hospital Human Research Ethics Committee (HREC/13/TQEHLMH/270). Interns undertaking a general practice rotation at a medical centre classified as inner regional, remoteness area 2 in the Australian standard geographical classification, during 2012 and 2013 collected data on all of the patients they encountered. The information they collected included the date of the encounter, the age of the patient, gender of the patient and patient presentation. For every clinical presentation, patients were reviewed by

a supervisor in accordance with usual practice. Internal feedback from interns and from the practice showed a high level of satisfaction with this rotation.

The number and gender of patients seen, the average number of patients

per day and the mean age, median age and age range of patients seen were calculated for each rotation. The number of children (<18 years) and the number of elderly patients ( $\geq 75$  years) were also calculated.

**Table 1. Patient load and demographics (group totals)**

	Group total	Average per rotation
Number of patients	3858	482.2 (SD = 38)
Number of consulting days	362	45.3 (SD = 3.5)
Mean patients per day	N/A	10.7 (SD = 0.7)
Female patients	2272	284 (SD = 28.8; 58.9%)
Mean age	N/A	34.5 (SD = 1.6)
Number of patients <18 years	1086	135.8 (SD = 20.1; 28.2%)
Number of patients $\geq 75$ years	204	25.5 (SD = 9.6; 5.3%)

**Table 2. ACFJD common symptoms and signs**

ACFJD common symptoms and signs	Percentage of interns who saw symptom and sign
Fever	100%
Dehydration	100%
Loss of consciousness	63%
Syncope	88%
Headache	100%
Toothache	75%
Upper airway obstruction	38%
Chest pain	100%
Breathlessness	100%
Cough	100%
Back pain	100%
Nausea and vomiting	100%
Jaundice	0
Abdominal pain	100%
Gastrointestinal bleeding	25%
Constipation	75%
Diarrhoea	100%
Dysuria or frequent micturition	100%
Oliguria and anuria	0
Pain and bleeding in early pregnancy	75%
Agitation	13%
Depression	100%

The data were mapped to the Australian Curriculum Framework for Junior Doctors (ACFJD) *Clinical Symptoms, Problems and Conditions* and also coded against the International Classification of Diseases 10 revision (ICD-10 codes).<sup>8</sup> The ACFJD outlines the knowledge and skills expected of junior doctors and has been developed using a collaborative, evidence-based and inclusive approach. The ACFJD is widely used in education settings across Australia.<sup>9</sup> If the interns listed more than one condition then all conditions were mapped and coded.

## Results

*Table 1* provides information on the patients seen by the interns as a group during the study period. Interns saw an average of 482.2 (SD = 38) patients per rotation; 284 (SD = 28.8; 59%) were female. The youngest patient seen was 6 weeks old and the oldest patient was 99 years; the mean age was 34.5 years (SD = 1.6).

*Table 2* shows the percentage of interns who saw the common symptoms and signs listed in the ACFJD. The most common clinical conditions seen were listed and the average number of times seen by each intern calculated (*Table 3*).

*Tables 4–7* are available online only. *Table 4* summarises the patients seen by interns in each of the eight rotations. *Table 5* summarises the ACFJD clinical symptoms, problems and conditions, and clinical codes seen by the individual interns. *Table 6* shows the ACFJD areas and clinical codes seen by the interns as a group during the study period. Interns saw an average of 49.8 (SD = 4.9; 57.2%) ACFJD clinical symptoms, problems and conditions. The least number of ACFJD conditions seen was 44 and the most was 58. Interns saw an average of 150.3 (SD = 15.4) ICD-10 clinical codes. *Table 7* summarises the percentage of interns who saw the common clinical problems and conditions.

## Discussion

Interns in this pilot study were exposed to a diverse range of conditions across all age ranges. All of the interns covered at

least half of the ACFJD clinical symptoms, problems and conditions curriculum in one rotation and saw in excess of 150 ICD-10 codes.

All interns saw paediatric and elderly patients throughout their rotation. Paediatric patients were commonly seen and represented 28% of patients. This is consistent with previous studies noting children aged 0–19 make up almost one-quarter (23%) of visits to general practice registrars.<sup>6</sup> This paediatric exposure is particularly important for junior doctors, as interns and resident medical officers (RMOs) are often unable to obtain a paediatric rotation and thus gain paediatric experience. General practice rotations may be an opportunity where this educational experience can be gained. Conversely, only 5% of patients seen by interns were  $\geq 75$  years. This limitation of this general

practice rotation can be covered by traditional hospital rotations where 22% of hospital separations are for patients  $\geq 75$  years.<sup>10</sup> The mean age of patients seen was 34.5 years, which is younger than the hospital mean age.<sup>10</sup>

During this rotation, interns worked an average of 38 hours per week and did not attend on call or after hours. Despite this, interns saw an average of 48 patients per week. This is equal to other hospital rotations and previous research has noted that interns see 35–50 patients per week across various rotations.<sup>11</sup> There are no available data on the breadth of curriculum seen in other hospital rotations for comparison with our data.

There has been little published work aligning clinical exposure with the ACFJD in general practice rotations.<sup>5</sup> This study reviewed the clinical symptoms,

problems and conditions of ACFJD and noted interns saw an average of 58% of those symptoms and conditions listed in one 10-week rotation. Interns were exposed to an average of 150 ICD-10 clinical codes. This supports work by Scallan in the UK, who noted multiple studies show pre-registration house officers are exposed to a wide variety of clinical experience, which in certain areas is superior to exposure in hospital terms.<sup>12</sup> As reflected by the demographics of patients seen, interns saw an average of 57 ICD-10 clinical codes for paediatric patients and fewer for elderly patients.

There has been debate in Australia as to whether general practice rotations can be considered emergency terms. To achieve full registration, interns must complete a core emergency term by providing supervised experience in 'the assessment and management of patients with acute undifferentiated illnesses, including assessment and management of acutely ill patients'.<sup>13</sup> Being primary healthcare providers, GPs are faced with undifferentiated illness on a daily basis. It has been noted in the UK that junior doctors' caseloads tend to lean more towards acute illness and 'on-the-day' patients.<sup>12</sup> This study also reflected this phenomenon.

A recent report in South Australia reviewed a core set of emergency conditions, including abdominal pain, breathlessness and chest pain, and noted there was no significant difference between interns undertaking their emergency rotation in general practice and interns undertaking a tertiary hospital emergency rotation with regards to the number of symptoms and conditions seen.<sup>14</sup> Although the number of high-acuity conditions seen on a regular basis for general practice interns was lower, they had a greater opportunity to have a direct role in caring for high-acuity patients.<sup>14</sup> Furthermore, a UK study reviewed junior doctors' self-reported confidence in managing conditions and found junior doctors were most confident

**Table 3. Most common ICD-10 codes**

Condition	Average number of times seen during each rotation
Acute nasopharyngitis	49
Back pain	37
Person attending for repeat prescription	25
Gastroenteritis	17
Otitis media	14
Urinary tract infection	13
Tonsillitis	10
Asthma	10
Sinusitis	9
Person consulting for investigation results	9
Contraceptive management	8
Hypertension	8
Depressive episode	7
Abdominal pain	6
Viral infection (site not specified)	6
Examination for drivers licence or issue of medical certificate	6
Soft tissue injury	5
Laceration	5
Gastro-oesophageal reflux disease	4
Ear wax	4

in managing chest pain and shortness of breath. They were significantly less confident in managing minor complaints.<sup>15</sup> General practice terms can help with this through exposure to multiple acute undifferentiated illnesses.

Across Australia, the number of interns commencing practice has risen by more than half, from 1531 in 2004 to 2394 in 2010.<sup>16</sup> As a public hospital internship is guaranteed for all Commonwealth-funded medical graduates,<sup>16</sup> general practice placements may be needed for training purposes for junior doctors. This study has shown these placements provide adequate exposure for doctors early in their career.

There were some limitations to this study. This was a pilot study with data collected from one general practice placement over 2 years. There was variability in the way each junior doctor recorded the reason for consultation, which influenced the way it was coded. For example, some junior doctors recorded viral infection, whereas other junior doctors recorded viral upper respiratory tract infection. In addition, many junior doctors only recorded one reason for visit when it is likely that multiple issues were raised during a consultation, as it is known that on average a GP deals with 1.4–8 ICD codes per consultation.<sup>17–19</sup> These limitations are likely to underestimate the number of ICD-10 codes and ACFJD clinical symptoms seen.

Further research on general practice placements could focus on reviewing intern clinical exposure in different general practices, including comparing urban with rural. It would also be beneficial to measure the interns' competency in managing these clinical presentations at the end of the rotation.

## Implications for general practice

- Interns are exposed to a variety of clinical conditions during a general practice rotation, despite only being in a general practice for 10 weeks.

- Interns see more than half of the clinical signs and symptoms listed in their junior doctor curriculum during one rotation.
- General practice placements provide invaluable opportunities for training the large numbers of junior doctors in the current Australian workforce.

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**Table 4. Patient load and demographics by rotation**

Rotation Number	1	2	3	4	5	6	7	8
Number of patients	485	546	451	453	505	488	504	426
Number of consulting days	46	47	44	48	47	47	46	37
Mean patients per day	10.5	11.6	10.3	9.4	10.7	10.4	11	11.5
Females, n (%)	314 (64.7)	331 (60.6)	257 (56.9)	266 (58.7)	291 (57.6)	290 (59.4)	278 (55.2)	245 (57.5)
Mean age (range)	34 (0.2–96)	34.6 (0.1–99)	36.7 (0.5–96)	34 (0.1–93)	34.8 (0.1–96)	35 (0.1–91)	31.3 (0.1–91)	35.7 (0.3–94)
Number of patients <18 years (%)	128 (26.4)	153 (28)	103 (22.8)	129 (28.5)	145 (28.7)	136 (27.9)	169 (33.5)	123 (28.9)
Number of patients ≥75 years (%)	13 (2.7)	28 (5.1)	22 (4.9)	19 (4.2)	39 (7.7)	23 (4.7)	20 (3.9)	40 (9.4)

**Table 5. Clinical codes and ACFJD clinical symptoms, problems and conditions seen by rotation**

Rotation Number	1	2	3	4	5	6	7	8
Number of ICD-10 codes	131	162	130	156	176	152	151	144
Number of ACFJD (total 87)	44 (50.6%)	52 (59.8%)	49 (56.3%)	55 (63.2%)	58 (66.7%)	45 (51.7%)	48 (55.2%)	47 (54%)
Number of ICD-10 codes in patients <18 years	50	59	47	54	71	53	64	61
Number of ICD-10 codes in patients ≥75 years	9	23	17	15	26	16	18	24

**Table 6. Clinical codes and ACFJD clinical symptoms, problems and conditions seen (group totals)**

	Group total	Average per rotation
Number of ICD-10 codes	1202	150.3 (SD = 15.4)
Number of ACF (total 87)	398	49.8 (SD = 4.9) (57.2%)
Number of ICD-10 codes in patients <18 years	459	57.4 (SD = 7.9)
Number of ICD-10 codes in patients ≥75 years	148	18.5 (SD = 5.6)

**Table 7. ACFJD common clinical problems and conditions**

<b>ACFJD common clinical problems and conditions</b>	<b>Percentage of interns who saw clinical condition</b>	<b>ACFJD common clinical problems and conditions continued</b>	<b>Percentage of interns who saw clinical condition</b>	<b>ACFJD common clinical problems and conditions continued</b>	<b>Percentage of interns who saw clinical condition</b>
Non specific Febrile illness	100%	Gout	63%	Anaemia	25%
Sepsis	25%	Septic arthritis	25%	Bruising and bleeding	75%
Shock	25%	Hypertension	100%	Management of anticoagulation	75%
Anaphylaxis	25%	Heart failure	50%	Cognitive or physical disability	25%
Envenomation	63%	Ischaemic heart disease	75%	Substance abuse and dependence	100%
Diabetes mellitus	100%	Cardiac arrhythmias	13%	Psychosis	38%
Thyroid disorders	100%	Thromboembolic disease	63%	Depression	100%
Electrolyte disturbances	0	Limb ischaemia	0	Anxiety	100%
Malnutrition	13%	Leg ulcers	25%	Deliberate self harm and suicidal behaviour	0
Obesity	38%	Oral infection	100%	Paracetamol overdose	0
Red painful eye	100%	Periodontal disease	75%	BZ and opioid overdose	0
Cerebrovascular disorders	50%	Asthma	100%	Common malignancies	75%
Meningitis	0	Respiratory Infection	100%	Chemotherapy and radiotherapy side effects	25%
Seizure disorder	50%	COPD	38%	The sick child	100%
Delirium	13%	OSA	25%	Child abuse	0
Common skin rashes and infections	100%	Liver disease	13%	Domestic violence	0
Burns	63%	Acute abdomen	88%	Dementia	13%
Fractures	100%	Renal failure	25%	Functional decline or impairment	50%
Minor trauma	100%	UTI and pyelonephritis	100%	Falls	88%
Multiple Trauma	25%	Urinary incontinence and retention	25%	Elder abuse	0
Osteoarthritis	75%	Menstrual disorder	100%	Poisoning/ overdose	0
Rheumatoid Arthritis	0	STI	63%		