A Survey of Australian patient preferences regarding subcutaneous erythropoiesis-stimulating agents

Josephine Chow and Michael G Suranyi


Abstract:

Background: Understanding patient treatment preferences may help enhance compliance, empower patients and improve clinical outcomes. We surveyed adult patients with renal anaemia to investigate 1) the extent to which injection site pain and dosing frequency influence patient preferences regarding subcutaneous (sc) erythropoiesis-stimulating agent (ESA) treatment and 2) the practice pattern of how sc ESAs are used in Australia.

Methods: Adult patients with chronic kidney disease, who were receiving sc ESA, were recruited from renal units at seven sites in Australia. Patients were surveyed by independent, trained and accredited interviewers using a standardised, 20-item questionnaire.

Results: Of the 101 patients recruited, half (n = 55) experienced injection site pain. Slight, moderate or significant pain was reported by 27% of patients on darbepoetin alfa, 29% on epoetin alfa and 8% on epoetin beta. Patient preferences were influenced by injection site pain and dosing frequency; more than half (n = 58) of the patients reported that less injection site pain and less frequent injections would represent meaningful improvements in sc ESA treatment. Most (n = 64) patients indicated that they would be comfortable discussing sc ESA treatment options with their doctor. Patients were following current Australian treatment guidelines for sc ESA use. Most patients self-administered their sc ESA into their abdomen once weekly.

Conclusions: In our study, patient preferences regarding sc ESA were influenced by injection site pain and dosing frequency. Patients were following Australian treatment guidelines. We encourage healthcare professionals to promote patient empowerment and advocate patient preferences regarding sc ESA treatments.

Key Words
Anemia kidney failure, chronic. erythropoietin, recombinant. Injections, subcutaneous. patient participation

2008; Eprex Product Information, 2008; NeoRecormon Product Information, 2008). Unfortunately, injection site pain is a common adverse event associated with sc ESA administration.

Not all ESAs produce the same magnitude of effect on injection site pain following sc administration. Clinical trials have shown that sc administration of epoetin beta is less painful than sc administration of either epoetin alfa or darbepoetin alfa (Frenken et al., 1991; Granolleras et al., 1991; Schmitt et al., 2006; Vanrenterghem et al., 2002; Veys et al., 1998; Veys et al., 1992), and that sc darbepoetin alfa is significantly more painful than either sc saline or sc continuous erythropoietin receptor activator (Pannier et al., 2007). Understanding a patient’s response to injection site pain is important because injection site pain is a factor that contributes to sc ESA non-compliance (Wazny et al., 2002).

In addition to patient compliance, injection site pain may also influence a patient’s preference for a particular ESA treatment. A recent Australian study comparing injection site pain following sc administration of epoetin beta or darbepoetin alfa found that sc injection of

Introduction

Current international (KDOQI 2007; Locatelli et al., 2004; Moost et al., 2008) and Australian (Kidney Health Australia 2008) treatment guidelines recommend subcutaneous (sc) erythropoiesis-stimulating agent (ESA) administration for the treatment of anaemia in all patients with chronic kidney disease, except those receiving haemodialysis. In most patients, ESAs must be dosed frequently to maintain efficacy (Aranesp Product Information, 2008; Eprex Product Information, 2008; NeoRecormon Product Information, 2008). Unfortunately, injection site pain is a common adverse event associated with sc ESA administration.

Not all ESAs produce the same magnitude of effect on injection site pain following sc administration. Clinical trials have shown that sc administration of epoetin beta is less painful than sc administration of either epoetin alfa or darbepoetin alfa (Frenken et al., 1991; Granolleras et al., 1991; Schmitt et al., 2006; Vanrenterghem et al., 2002; Veys et al., 1998; Veys et al., 1992), and that sc darbepoetin alfa is significantly more painful than either sc saline or sc continuous erythropoietin receptor activator (Pannier et al., 2007). Understanding a patient’s response to injection site pain is important because injection site pain is a factor that contributes to sc ESA non-compliance (Wazny et al., 2002).

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epoetin beta was significantly less painful than darbepoetin alfa and that patients preferred epoetin beta (Roger et al., 2008). These results suggested that the difference in injection site pain was clinically meaningful (Roger et al., 2008). To date, limited data are available that examine the impact of injection site pain and its corollary, frequency of administration, on patient preference for sc ESA treatment.

Understanding patient preferences for sc ESA treatment is important for individualizing patient treatment decisions, ensuring compliance, enhancing patient satisfaction and empowering patients (Caress et al., 2005; Davison et al., 1997; Degner et al., 1997; Krahn et al., 2008). These patient-focused outcomes are recognized as being particularly beneficial for the management of chronic disease and can be associated with improved clinical outcomes.

In the current study, we surveyed adult patients with renal anaemia to understand 1) the extent to which factors including injection site pain and dosing frequency cause patients concern or discomfort, and influence patient preference of sc ESA treatment and 2) the practice pattern of how sc ESA is used in Australia in terms of the type of ESA received, the frequency of administration, the injection site location and who administers the ESA.

**Methods**

**Patients**

Adult patients with chronic kidney disease currently receiving an ESA via sc administration were invited to participate in a patient survey at the time of their visit to their renal unit. Seven sites in three Australian states participated in this study.

**Data collection**

Patients were interviewed between February and April 2008. The interviews were conducted independently by fully trained and accredited interviewers using a standardised 20-item questionnaire (Box 1). All interviews were conducted in accordance with the ethical guidelines recommended in the Australian Market and Social Research Society Code of Professional Behaviour and each interview took approximately 10 minutes.

**Data analysis**

Descriptive statistics are presented for each item included in the questionnaire.

**Results**

**Patient demographics and sc ESA practice patterns in Australia**

A total of 101 patients were included in the study (Table 1); approximately half (n = 50) were on dialysis. Practice patterns of sc ESA administration were consistent with international and Australian guidelines. Of the 101 patients, most (n = 78) were receiving either darbepoetin alfa (n = 66) or epoetin beta (n = 12); a minority (n = 6) were not sure what ESA they were currently receiving. Interestingly, approximately one in five patients (n = 17) were receiving epoetin alfa. Most patients self-administered their ESA into their abdomen at a frequency of once weekly (Table 2).

**Cause of pain, discomfort or concern from current ESA**

Approximately one in every two patients (n = 55) experienced some degree of pain or discomfort with their ESA injection. When the patient responses were stratified by ESA treatment, sc epoetin beta administration was associated with the lowest degree of pain or discomfort while sc darbepoetin alfa was associated with the highest degree of pain or discomfort (Figure 1).

**Table 1. Patient characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total population</th>
<th>Epoetin beta (n = 12)</th>
<th>Darbepoetin alfa (n = 66)</th>
<th>Epoetin alfa (n = 17)</th>
<th>ESA unknown (n = 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex, n</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>61</td>
<td>9</td>
<td>34</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Female</td>
<td>40</td>
<td>3</td>
<td>32</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Dialysis status, n</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not on dialysis</td>
<td>46</td>
<td>11</td>
<td>20</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Peritoneal dialysis</td>
<td>54</td>
<td>1</td>
<td>45</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Haemodialysis</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Comorbid diabetes, n</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No diabetes</td>
<td>64</td>
<td>6</td>
<td>43</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Type I diabetes</td>
<td>12</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Type II diabetes</td>
<td>20</td>
<td>4</td>
<td>13</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Has diabetes; patient unsure of type</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Patient does not know if they have diabetes</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Abbreviation: ESA, erythropoiesis-stimulating agent
A survey of Australian patient preferences regarding subcutaneous erythropoiesis-stimulating agents

### Table 2. Current ESA treatment

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total population</th>
<th>Epoetin beta (n = 12)</th>
<th>Darbepoetin alfa (n = 66)</th>
<th>Epoetin alfa (n = 17)</th>
<th>ESA unknown (n = 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency of administration, n</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once weekly</td>
<td>50</td>
<td>7</td>
<td>30</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Fortnightly</td>
<td>33</td>
<td>3</td>
<td>26</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Monthly</td>
<td>8</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Location of injection, n</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdomen</td>
<td>79</td>
<td>11</td>
<td>50</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Thigh</td>
<td>14</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Arm</td>
<td>12</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Who administers the injection, n</td>
<td>65</td>
<td>9</td>
<td>43</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Self</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Carer</td>
<td>17</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Hospital nurse</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other nurse</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>General practitioner</td>
<td>9</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Someone else</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Abbreviation: ESA, erythropoiesis-stimulating agent

* Some patients reported more than one injection site so numbers reported exceeds that of the total population.

### Patient preference: frequency of administration

The frequency of ESA administration was also an important factor in determining patient preference for ESA treatment, particularly for those patients receiving darbepoetin alfa. When patients were presented with the option of receiving an equally effective ESA that 1) was associated with less pain and discomfort and 2) required fortnightly administration, more than half (n = 58) of the patients said that they would prefer to receive that ESA instead of their current ESA. For the patients receiving darbepoetin alfa, the addition of the option for fortnightly administration to the option of receiving an equally effective ESA associated with less pain and discomfort increased patient preference from 43.9% to 62.1%. For the patients receiving epoetin alfa and epoetin beta, this additional option increased patient preference by 12% and 16%, respectively.

### Patient preference for ESA treatment: injection site pain and discomfort

Approximately one in every two patients (n = 52) would be more comfortable receiving their current ESA if it caused less pain and discomfort. Interestingly, patients’ responses to this question appeared to depend upon the ESA being received (Figure 3). When patients’ responses were stratified by their current treatment, the pattern of responses showed that more patients currently receiving either darbepoetin alfa or epoetin alfa, than patients receiving epoetin beta, would have chosen an ESA treatment associated with less pain and discomfort (Figure 3).

A similar pattern of response was apparent when patients were asked to consider a decision about their current treatment (Figure 4). More patients receiving darbepoetin alfa or epoetin alfa, than patients receiving epoetin beta, indicated a preference to receive an ESA with less injection pain instead of their current ESA (assuming the putative ESA was equally effective, safe and administered at the same frequency as their current ESA) (Figure 4).

### Patient preference for ESA treatment: frequency of administration

The frequency of ESA administration was also an important factor in determining patient preference for ESA treatment, particularly for those patients receiving darbepoetin alfa. When patients were presented with the option of receiving an equally effective ESA that 1) was associated with less pain and discomfort and 2) required fortnightly administration, more than half (n = 58) of the patients said that they would prefer to receive that ESA instead of their current ESA. For the patients receiving darbepoetin alfa, the addition of the option for fortnightly administration to the option of receiving an equally effective ESA associated with less pain and discomfort increased patient preference from 43.9% to 62.1%. For the patients receiving epoetin alfa and epoetin beta, this additional option increased patient preference by 12% and 16%, respectively.
Patient preference: factors that would improve ESA treatment

Patients indicated that there is room for improvement in ESA treatment. An ESA that caused less pain would be viewed by 36.6% (n = 37) of patients as providing a meaningful improvement in ESA treatment. An ESA that had to be injected less often would be viewed by 33.7% (n = 34) of patients as providing a meaningful improvement in ESA treatment. An ESA that could be left out of the refrigerator for longer would be viewed by 13.9% (n = 14) of patients as providing a meaningful improvement in ESA treatment.

Approximately one-third of patients (n = 38) responded that ‘something else’ would result in a meaningful improvement in ESA treatment. However, of these patients, the majority (n = 35) expressed satisfaction with their current ESA treatment and did not identify any other parameters that would improve ESA treatment.

Patient preference: involvement in ESA treatment decisions

When patients were asked if they would be comfortable discussing the different ESA options with their doctor, the majority (n = 64) said yes.

Discussion

Very few studies have investigated patient preferences regarding sc ESA treatment. Our study demonstrates that both injection site pain and its corollary, frequency of ESA administration, contribute to patient preferences regarding ESA treatment. Notably, patients would prefer to have less painful and less frequent injections. Although patients indicated that they would be comfortable discussing the different ESA options with their doctor, our research suggests that few currently do. Consistent with international and Australian guidelines, most patients in our study self-administered their ESA into their abdomen once a week. Our research provides unique information about patient preference and suggests that patients would like to be involved in their ESA treatment decisions. We encourage healthcare professionals to empower patients and advocate patient preferences when considering ESA treatment options.

Our finding that injection site pain influences patient preference for sc ESA treatment is consistent with the findings from a recent study comparing injection site pain following sc administration of epoetin beta or darbepoetin alfa (Roger et al., 2008). However, our finding contrasts with results from an earlier study conducted by the American Association of Kidney Patients which reported that the majority of patients (61%) felt that the possibility of injection pain was of no or little importance when choosing to receive an ESA via sc or intravenous injection (American Association of Kidney Patients 1997). Notably, this study evaluated patient preferences when sc ESA treatment options were limited. Injection site pain may impact patient treatment preference less when choosing between the sc or intravenous administration than when choosing between a variety of sc ESA treatment options.

Approximately one in every two patients in our study reported that they experience injection site pain, which caused some patients to feel anxious about their treatment. Most patients were reluctant to inform anyone about the pain or discomfort their sc ESA treatment caused...
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them. As a result, healthcare professionals are likely to be unaware of their patients’ concerns about sc ESA treatment. To bridge this gap in communication, we would encourage the prescribing clinician to initiate a discussion about ESA treatment choices and allow patients to make an informed treatment decision.

We also found that patients’ concerns with injection site pain were less pronounced in patients receiving epoetin beta than in patients receiving either darbepoetin alfa or epoetin alfa. In this regard, our results are consistent with results from other studies showing that sc administration of epoetin beta is less painful than either epoetin alfa or darbepoetin alfa (Frenken et al., 1991; Granoller et al., 1991; Schmitt et al., 2006; Vanrenterghem et al., 2002; Veys et al., 1998; Veys et al., 1992).

The impact of the frequency of ESA administration on patient preference may be related to the desire to avoid injection and the associated pain. Although the majority of patients would prefer to receive an ESA that would be administered less often, the frequency of administration appeared to be of most concern to patients receiving darbepoetin alfa. A large proportion (58%) of patients receiving darbepoetin alfa reported pain associated with injection; a large proportion (44%) of these patients also expressed preference for a treatment associated with less injection site pain. Our results suggest that it might be particularly helpful for patients receiving darbepoetin alfa and their healthcare professionals to discuss the risks and benefits of changing to an ESA treatment that may cause less pain and require fewer injections.

For patients with chronic kidney disease, the management of renal anaemia may be only one of the many conditions for which they are being treated. Shared care and decision-making are recognised as beneficial to the management of chronic diseases (Kaplan et al., 1989; DiMatteo et al., 1994). When the patient takes a more active role in their healthcare decisions, the healthcare professional becomes increasingly responsible for finding out what patients want, providing them with the appropriate information and supporting them in the decision making process (Krahn et al., 2008). The results from this study provide the busy healthcare professional with both a rationale to consider including the patient in ESA treatment decisions and much-needed information regarding patient preference for sc ESA treatment.

In terms of limitations, we recognise that our study had a relatively small sample size and issues concerning patient background (e.g., age, level of education) were not taken into account. These factors could limit the generalisability of our results. However, our study was conducted at multiple sites across Australia and, to this end, we believe our results offer useful insight into Australian patient preferences regarding sc ESA treatment.

We also acknowledge that we did not use a validated scale to assess patient preferences. To the best of our knowledge, however, there are no validated scales that assess the influence of injection site pain and frequency of administration on patient preferences. In addition, although no statistical analyses were performed, we believe that communicating the results of the study in a descriptive manner still provides the medical community with important, unique information regarding the patient’s perspective that could be incorporated into everyday practice to potentially improve patient satisfaction.

Conclusions

This research demonstrates that patient preferences regarding sc ESA treatment are influenced by injection site pain and frequency of administration. Patients would prefer less painful and less frequent injections, but few patients discuss these preferences with their prescribing healthcare professional. These findings underscore the need for prescribing healthcare professionals to promote patient empowerment and advocate patient preferences regarding sc ESA treatment. We encourage prescribing healthcare professionals to initiate a discussion about sc ESA treatment options with their patients and to take patient preferences into account when making sc ESA treatment decisions.

Acknowledgements

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References


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Eprex Approved Product Information. Date of TGA approval or last amendment 04/02/2008.


Q1: RECORD GENDER

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
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<td>![ ]</td>
</tr>
</tbody>
</table>

Q2: RECORD DIALYSIS

<table>
<thead>
<tr>
<th></th>
<th>Not on dialysis</th>
<th>Peritoneal dialysis</th>
<th>Haemodialysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![ ]</td>
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</tbody>
</table>

Q3: Are you a diabetic?

If “yes”, probe for type

<table>
<thead>
<tr>
<th>Type I diabetic (insulin dependent)</th>
<th>Type II diabetic</th>
<th>Diabetic – do not know type</th>
<th>Not a diabetic</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
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<td>![ ]</td>
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</tbody>
</table>

Q4a: Which ESA are you currently receiving? ESA is also known as EPO, or as erythropoietin.

<table>
<thead>
<tr>
<th>Aranesp (darbepoetin alfa)</th>
<th>Eprex (epoetin alfa)</th>
<th>NeoRecormon (epoetin beta)</th>
<th>(DO NOT READ OUT)</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
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<td>![ ]</td>
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</tbody>
</table>

For those patients who answered Aranesp to Q4a, ask the following:

Q4b: Are you using the Aranesp SureClick pen?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
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</tr>
</tbody>
</table>

Q6: How often do you receive your ESA?

<table>
<thead>
<tr>
<th>Once a week</th>
<th>Fortnightly</th>
<th>Monthly</th>
<th>Some other duration (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
</tr>
</tbody>
</table>

Q7: Who most commonly administers your ESA injections?

<table>
<thead>
<tr>
<th>Self</th>
<th>Carer (such as relative, friend or partner)</th>
<th>Hospital nurse</th>
<th>Some other nurse</th>
<th>General practitioner (GP)</th>
<th>Someone else (specify)</th>
</tr>
</thead>
</table>

Q8: What location do you administer your ESA injection?

<table>
<thead>
<tr>
<th>Abdomen</th>
<th>Thigh</th>
<th>Arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
</tr>
</tbody>
</table>

Q9: If you had a choice, what would you consider to be a meaningful improvement to your treatment?

<table>
<thead>
<tr>
<th>One which causes less pain or discomfort upon injecting</th>
<th>One which had to be injected less often</th>
<th>One which could be left out of the refrigerator for longer</th>
<th>Something else (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
</tr>
</tbody>
</table>

Q10a: To what extent do you find your ESA causes you pain or discomfort on injection?

<table>
<thead>
<tr>
<th>Significant pain</th>
<th>Moderate pain</th>
<th>Slight pain</th>
<th>Minimal pain</th>
<th>No pain at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
</tr>
</tbody>
</table>

Box 1. Questionnaire items
Q10b: Have you ever found your ESA to hurt or cause discomfort when injected?
- Yes □ 1
- No (If no go to Q 15.) □ 2

Q11: And, when ESA is injected, how often does it hurt or cause discomfort?
- Every time □ 1
- Most times □ 2
- Sometimes □ 3
- Not very often □ 4
- Never □ 5

Q12: Which of the following statements would you say best describes the level of anxiety injecting your ESA causes you.
- I worry about it, and it makes me nervous □ 1
- I can be anxious, but it is not too bad □ 2
- It bothers me a little, but have learnt to cope with it □ 3
- It only bothers me very slightly □ 4
- It does not bother me at all □ 5

Q13: Have you discussed the pain or discomfort of your ESA injection with any of the following people?
- Hospital nurse □ 1
- General practitioner / GP □ 2
- Someone else (specify) □ 3
- No one □ 4

If answer to Q13 included specialist, nurse or GP:
Q13a: Having discussed (ANSWER FROM Q12) the pain your ESA can cause, what action (if any) was taken? What, if anything, did they suggest or recommend?
- Yes □ 1
- No □ 2

Q14: What are the main reasons why you have not mentioned the pain your ESA can cause to a doctor or nurse?
- Current ESA □ 1
- ESA which causes significantly less pain and discomfort □ 2
- No preference □ 3
- (DO NOT READ OUT) □ 4
- Don’t know □ 5

Q15: Would you be comfortable to have your doctor talk to you about the differences between ESAs, so you could be involved in choosing your treatment?
- Yes □ 1
- No □ 2

Q16: Thinking back to when you first started taking ESA, if your doctor had offered you an ESA which causes less pain and discomfort, would you have chosen it instead of the ESA you are currently taking (assuming it was equally effective, equally safe and was administered with the same frequency)?
- Yes □ 1
- No □ 2
- Don’t know □ 3

Q17: Would you be more comfortable receiving your current ESA, if it caused less pain or discomfort?
- Yes □ 1
- No □ 2
- Don’t know □ 3

Q18: And, if there was an ESA available now which causes less pain and discomfort, which would you most likely prefer (assuming both were equally effective, equally safe and were administered with the same frequency)?
- Current ESA □ 1
- ESA which causes significantly less pain and discomfort □ 2
- No preference □ 3
- (DO NOT READ OUT) □ 4
- Don’t know □ 5

Q19: Would you prefer to receive once weekly injections with less injection pain, instead of your current ESA?
- Yes □ 1
- No □ 2
- Don’t know □ 3

Q20: Would you prefer to receive fortnightly injections with less injection pain, instead of your current ESA?
- Yes □ 1
- No □ 2
- Don’t know □ 3

RSA Journal Cover Photos Wanted

Do you have a photo/picture for the front cover of the RSAJ? If yes, please email to paul.bennett@flinders.edu.au. (Please note that consent is required all people identified in photographs used in The RSAJ).