Management and progress of inflammatory joint disease with biological agents and the development of a seamless service

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The World Health Organisation and the United Nations designated the first decade of this century as the Decade of Bone and Joint Disease.\(^1\) This heralded dramatic and unprecedented changes in the management of inflammatory joint diseases such as rheumatoid arthritis (RA), psoriatic arthritis (PsA), ankylosing spondylitis (AS) and other disorders.

These diseases used to follow an almost invariably destructive pathway, albeit retarded by traditional disease modifying anti-rheumatic drugs (DMARDs). Patients were eventually left with gross deformities and became profoundly disabled (Figure 1).

The introduction of methotrexate (MTX) and later the ‘biologic’ drugs currently used in the treatment of inflammatory joint disease has changed this completely, resulting in sustained suppression of disease in most patients, and the now achievable goal of disease remission.

As a clinical nurse manager in rheumatology one of our main roles is in the education regarding these drugs, initiation of
There are currently nine such drugs licensed in this country to treat RA (Table 1) and some of them are also used to treat some of the other inflammatory diseases in other specialities such as gastroenterology. One of these, anakinra, is rarely used because of its disappointing therapeutic response.

**MEDICAL CHALLENGE**

Such treatments present society, the medical profession and the nursing profession with considerable challenges. These treatments are very expensive, have some significant potential side effects and require a good deal of support and monitoring from nurses over the longer term.

The practice nurse is in a particularly pivotal position in this regard. Patients on these treatments require regular blood test monitoring and often need help in initiating and administration of these drugs.

An understanding of the mechanism of action, modes of administration and possible adverse events is therefore extremely important to help the practice nurse in helping to support these patients.

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In rheumatoid arthritis, **JAK signaling** stimulates pro-inflammatory cytokines that perpetuate joint destruction\(^1\,^2\)

Janus kinase (JAK) signaling stimulates the production of pro-inflammatory proteins (eg, cytokines and chemokines), which contributes to the persistent inflammation and joint destruction found in rheumatoid arthritis (RA).\(^1\,^2\)

Discover more about the role of JAK signaling in the pathogenesis of RA at JAKpathways.com

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**References:**

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Pfizer
There are international guidelines which provide a common pathway which rheumatologists will usually follow providing a sequence of drugs and supports, either singly or in combination until these diseases are controlled. These recommendations for RA, AS and PsA are not only aimed at rheumatologists but also GPs and allied professionals in primary care.

There are a number of aspects of care that all of these drugs have in common. They are as follows:

1. **Prescribing**: Most biologic drugs are co-prescribed with traditional DMARDs such as Methotrexate (MTX). Biologics are usually only initiated when there has been an inadequate response to MTX. Their efficacy is usually better when co-prescribed with DMARDs.

2. **Infections**: Biologics can be associated with an increased incidence of infections such as respiratory tract infections. If a patient has an infection requiring antibiotic treatments it is usual practice to stop the biological treatment until the infection has resolved and the antibiotic course has been completed.

   Rheumatology departments usually recommend that patients on biologics avail of the annual influenza vaccine and the pneumovax every five years.

3. **Pre-screening**: There is an increased incidence of tuberculosis in patients taking biologics. This is especially the case if the patient has had previous TB infections. Therefore pre-screening is standard practice. A chest x ray and, either a Mantoux test, or Quantiferon blood test, are performed by the treating rheumatology department prior to commencing treatment.

4. **Anti-TB treatment**: If screening indicates previous TB infection the patient is usually commenced on anti-TB treatment (usually isoniazid and pyridoxine). TB prophylaxis treatment is usually continued for nine months and biologic treatment is normally started four weeks after this has been commenced.

   It should be noted that isoniazid may cause abnormalities in liver function tests (LFTs). As the LFTs are part of the monitoring required for MTX therapy confusion can occur as to which drug is implicated in any abnormalities of the LFTs and if necessary these tests should be communicated to the treating rheumatology department who will be in a position to decide the best way to manage things.

5. **Monitoring**: Patients on DMARDs and biological agents require regular blood test monitoring which are usually performed as part of a shared-care protocol. The prescribing rheumatology department provide guidelines as to which bloods are required, the frequency of such tests and the parameters to follow.

6. **Administration**: The routes of administration of biologics vary. Some are given by sub-cutaneous injections and the rest are administered by infusions, which are organised by the prescribing rheumatology units.

   Although most biological agents commonly prescribed are self administered by subcutaneous injection, the delivery systems of these drugs vary from simple prefilled syringes to prefilled pens.

   If patients are having difficulties with the various delivery techniques the general practice nurse should liaise with the prescribing rheumatology department who are likely to have support systems in place to assist.

### Table 1. Comparison of biologic drugs in rheumatic disease (frequency of administration may vary with initiation and from patient to patient)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Inhibits what?</th>
<th>Type of biologic</th>
<th>How given</th>
<th>Given how often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatacept</td>
<td>T cells</td>
<td>Receptor antagonist</td>
<td>Intravenous infusion</td>
<td>Every 4 weeks</td>
</tr>
<tr>
<td>Adalimumab</td>
<td>TNF</td>
<td>Antibody</td>
<td>Subcutaneous injection</td>
<td>Every 2 weeks</td>
</tr>
<tr>
<td>Anakinra</td>
<td>IL-1</td>
<td>Receptor antagonist</td>
<td>Subcutaneous injection</td>
<td>Daily</td>
</tr>
<tr>
<td>Certolizumab</td>
<td>TNF</td>
<td>Antibody</td>
<td>Subcutaneous injection</td>
<td>Every 2 weeks</td>
</tr>
<tr>
<td>Etanercept</td>
<td>TNF</td>
<td>Receptor</td>
<td>Subcutaneous injection</td>
<td>Weekly</td>
</tr>
<tr>
<td>Golimumab</td>
<td>TNF</td>
<td>Antibody</td>
<td>Subcutaneous injection</td>
<td>Every 4 weeks</td>
</tr>
<tr>
<td>Infliximab</td>
<td>TNF</td>
<td>Antibody</td>
<td>Intravenous infusion</td>
<td>Every 8 weeks</td>
</tr>
<tr>
<td>Rituximab</td>
<td>B cells</td>
<td>Receptor Antagonist</td>
<td>Intravenous infusion</td>
<td>Every 6 months</td>
</tr>
<tr>
<td>Tocilizumab</td>
<td>IL-6</td>
<td>Receptor antagonist</td>
<td>Intravenous infusion</td>
<td>Every 4 weeks</td>
</tr>
</tbody>
</table>
Pre-conception and pregnancy advice: There is a female predominance in RA, and many of them are of childbearing age. There is a requirement that women taking a biologic agent will need to discontinue any biologic drugs they are taking before conception. The length of time to abstain is individual depending on the biologic agent. They will require care from a multidisciplinary team including the rheumatologist, obstetrician, GP, midwife and practice nurse. Fortunately a large percentage of women with RA improve during pregnancy.

Postpartum: Postpartum flare can occur in as many as 90% of these women within three months at a time when they are trying to cope with all the stress and pressures of becoming a mother. It is important to make these women aware of this sudden change in disease activity and to have a plan of reinitiating treatment quickly. This can also affect the decision of the women breastfeeding.

In summary the treatment and support services for inflammatory joint disease has evolved such that with proper treatment and support, patients can look forward to a normal working, leisure and family life.

Because of the complexities of the different treatment options, which are likely to be life long, patients require the support and care of the clinical nurse manager in rheumatology and the general practice nurse now more than ever.

References