When you are frustrated with me because of things I cannot do, just think how frustrated I must be because I am not able.

—One or more of the 91 million people in the United States with a musculoskeletal disorder

KEY POINTS

Approximately 33% of the US population has arthritis and/or back pain.
One out of every five office visits to a primary care provider and 10% of all surgeries are for a musculoskeletal problem.
Arthritis/back pain is the leading cause of chronic disability, second leading cause of acute disability, and most common reason for social security disability payments.

1. **What is rheumatology?**
   A medical science devoted to the study of rheumatic and musculoskeletal disorders (RMDs). RMDs are diverse and include autoimmune disorders, inflammatory arthritides, noninflammatory arthritides, diffuse and local soft tissue disorders, injuries, and osteoporosis.

2. **What are the roots of rheumatology?**
   First century AD—The term “rheuma” first appears in the literature. Rheuma refers to “a substance that flows” and probably was derived from phlegm, an ancient primary humor, which was believed to originate from the brain and flow to various parts of the body causing ailments.
   1642—The word rheumatism is introduced into the literature by the French physician Dr. G. Baillou who emphasized that arthritis could be a systemic disorder.
   1928—The American Committee for the Control of Rheumatism is established in the United States of America by Dr. R. Pemberton. It was renamed as the American Association for the Study and Control of Rheumatic Disease (1934), then American Rheumatism Association (ARA; 1937), and finally American College of Rheumatology (1988).
   1940s—The terms rheumatology and rheumatologist are first coined by Drs. Hollander and Comroe, respectively.

3. **How many rheumatic/musculoskeletal disorders are there?**
   There are over 200 rheumatic/musculoskeletal disorders (https://www.uems.eu/areas-of-expertise/postgraduate-training).

4. **How have these rheumatic/musculoskeletal disorders been classified over the years?**
   1904—Dr. Goldthwaite, an orthopedic surgeon, makes the first attempt to classify the arthritides in to five categories: gout, infectious arthritis, hypertrophic arthritis (probably osteoarthritis), atrophic arthritis (probably rheumatoid arthritis), and chronic villous arthritis (probably traumatic arthritis).
   1964—ARA classification.
   1983—The ARA classification is revised based on the ninth edition of the International Classification of Disease (ICD 9).
   2015—ICD 10 Diagnosis Codes are published. Chapter 13 (M00-M99) contains 6929 diagnosis codes related to diseases of the musculoskeletal system and connective tissue. Notably, there are other ICD 10 chapters that include diagnostic codes for other arthritides (e.g. psoriatic arthritis [L40.5], others]. ICD 11 is being developed.

5. **The ICD 10 diagnostic codes and classification systems are overwhelming. Is there a simpler outline to remember?**
   Most of the rheumatic diseases can be grouped into 10 major categories:
   1. Systemic connective tissue diseases.
   2. Vasculitides and related disorders.
   3. Serosive spondyloarthropathies.
5. Rheumatic disorders associated with metabolic, endocrine, and hematologic disease.
8. Nonarticular and regional musculoskeletal disorders.
10. Miscellaneous rheumatic disorders.

6. What is the origin and difference between a collagen vascular disease and a connective tissue disease?
1942—Dr. Klemperer introduces the term diffuse collagen disease based on his pathologic studies of systemic lupus erythematosus (SLE) and scleroderma.
1946—Dr. Rich coins the term collagen vascular disease based on his pathologic studies in vasculitis, indicating that the primary lesion involved the vascular endothelium.
1952—Dr. Ehrich suggests the term connective tissue diseases, which has gradually replaced the term collagen vascular diseases.

In summary, the two terms are used synonymously, although the purist would say that the heritable collagen disorders (see Chapter 55: Heritable Connective Tissue Disease) are the only true “diffuse collagen diseases.”

7. How common are rheumatic/musculoskeletal disorders in the general US population?
The number depends upon which RMDs are included. A recent study estimated that 36.8% of the adult population (91.2 million) had a chronic musculoskeletal condition. Less than two-thirds of these patients have symptoms severe enough to cause them to seek medical care, so an estimated 22.7% of the adults (54.4 million) have doctor-diagnosed arthritis. The prevalence of musculoskeletal disorders increases with the age of the patient population (56% of men, 69% women > age 65 years). Although noninflammatory RMDs are most common, a woman has a 1 in 12 risk and a man has a 1 in 20 risk of developing an inflammatory or autoimmune RMD during their lifetime.

8. What is the estimated prevalence for the various rheumatic/musculoskeletal disorders in the general population?
The estimated prevalence of rheumatic/musculoskeletal disorders in the US population is shown in Table 1.1.

9. What is the prevalence of autoimmune diseases in the general population?
Any organ system can be affected by autoimmunity. Presently there are over 80 autoimmune diseases with at least half of them considered rare. It is estimated that 4.5% to 5.3% of the population (14.7–23.5 million) have one or more autoimmune disease. Approximately 40% of these patients (2% of the population) have an autoimmune rheumatic disease. Of all patients with an autoimmune rheumatic disease, about half will have rheumatoid arthritis and half will have one of the other autoimmune rheumatic diseases (e.g. SLE, polymyositis).

| Table 1.1 Estimated Prevalence of Rheumatic/Musculoskeletal Disorders in the US Population |
|--------------------------------------------|-----------------|----------------|
| NUMBER OF PATIENTS                        | PREVALENCE (ADULTS) | NUMBER OF PATIENTS |
| All musculoskeletal disorders              | 23%-36%          | 54–91 million|
| Arthropathies                              |                  |                |
| Osteoarthritis                             | 12%              | 27 million     |
| Rheumatoid arthritis                       | 0.6%-0.8%        | 1.5–2.0 million |
| Crystalline arthritis (gout)               | 4%               | 8.3 million    |
| Spondyloarthropathies                      | 0.25%-0.7%       | 0.5–1.5 million |
| Connective tissue disease                  |                  |                |
| Polymyalgia rheumatica                     | <0.3%            | 0.3–0.7 million |
| Systemic lupus erythematosus               | <0.1%            | 240,000        |
| Systemic sclerosis                         | <0.025%          | 50,000         |
| Back/neck pain: frequent                   | 15%              | 33 million     |
| Osteoporosis (age >50 years)               | 10%              | 10 million     |
| Soft tissue rheumatism                     | 3%-5%            | 5–10 million   |
| Fibromyalgia                               | 2%               | 3–5 million    |

*Overall 54 million (23%) adults have doctor-diagnosed arthritis, and 300,000 children have arthritis with 50,000 having juvenile idiopathic arthritis.
10. Which autoimmune diseases primarily affect women?
The most common autoimmune diseases target women 75% of the time frequently during their reproductive years. Diseases suspected to be autoantibody-mediated (Th2 diseases) have the highest female predominance (Table 1.2).

11. How often is one of the rheumatic/musculoskeletal disorders likely to be seen in an average primary care practice?
About 1 out of every 5 to 10 office visits to a primary care provider is for a musculoskeletal disorder. Interestingly, 66% of these patients are aged <65 years. The most common problems are osteoarthritis, back pain, gout, fibromyalgia, and tendinitis/bursitis.

12. How many rheumatologists are there in the United States?
In 2015, there were approximately 5595 adult rheumatologists (4497 FTEs) and 300 pediatric rheumatologists (287 FTEs), although not all are actively seeing patients. These numbers are projected to decrease (20+ %) over the next 15 years and helps explain why there is often a long delay to see a rheumatologist.

13. Discuss the impact of the rheumatic/musculoskeletal diseases on the general population in terms of morbidity and mortality.
Arthritis/back pain is the leading cause of chronic disability and the second leading cause of acute disability (behind respiratory illness) in the general population (Box 1.1). An estimated 54 million US adults have doctor-diagnosed arthritis. Of these, 23 million (42%) have arthritis-attributable activity limitations, which equates into 9% of all US adults have at least one limitation. Of working-age adults (aged 18–64 years) with doctor-diagnosed arthritis, 31% have arthritis-attributable work limitations. Due to lifestyle factors, the frequency of work limitations are more common in rural than in urban areas. Because these are prime working years, musculoskeletal conditions cause significant loss of work productivity. Overall, one-quarter (25%) of social security disability payments are related to rheumatologic disorders, thus making it the leading cause of social security disability payments. Furthermore, 10% of all surgical procedures are for disabilities related to arthritis.

14. What is the economic impact of rheumatic/musculoskeletal diseases?
In 2014, the Medical Expenditures Panel Survey reported that 107 million persons reported one or more musculoskeletal conditions. The total aggregate direct medical costs ($882.6 billion) and indirect costs due to lost earnings ($97.5 billion) were estimated to be $980.1 billion. This is the equivalent of 5.76% of the gross domestic product.

### Table 1.2 The Female/Male Ratio of Autoimmune Diseases

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>FEMALE/MALE RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hashimoto’s disease</td>
<td>9:1</td>
</tr>
<tr>
<td>Systemic lupus erythematosus</td>
<td>9:1</td>
</tr>
<tr>
<td>Sjögren’s syndrome</td>
<td>9:1</td>
</tr>
<tr>
<td>Antiphospholipid syndrome</td>
<td>9:1</td>
</tr>
<tr>
<td>Mixed connective tissue disease</td>
<td>8:1</td>
</tr>
<tr>
<td>Graves’ disease</td>
<td>7:1</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>3:1</td>
</tr>
<tr>
<td>Scleroderma</td>
<td>3:1</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>2:1</td>
</tr>
<tr>
<td>Polymyositis</td>
<td>2:1</td>
</tr>
</tbody>
</table>

### Box 1.1 Morbidity and Mortality of Rheumatic/Musculoskeletal Diseases

- Symptoms of arthritis—30%–40%
- Symptoms requiring medical therapy—20%–25%
- Disability due to arthritis—5%–10%
- Totally disabled from arthritis—0.5%
- Mortality from rheumatic disease—0.02%
CLASSIFICATION AND HEALTH IMPACT OF THE RHEUMATIC DISEASES

BIBLIOGRAPHY


FURTHER READING

www.aarda.org.
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www.arthritis.org.
www.boneandjointburden.org.