

**Table 10.1.** Progression of Rheumatoid Arthritis

Stage 1 (early)	No destructive changes observed upon radiographic examination; radiographic evidence of osteoporosis is possible
Stage 2 (moderate)	Radiographic evidence of periarticular osteoporosis, with or without slight subchondral bone destruction; slight cartilage destruction is possible; joint mobility is possibly limited, but no joint deformities are observed; adjacent muscle atrophy is present; extra-articular soft-tissue lesions (e.g., nodules, tenosynovitis) are possible
Stage 3 (severe)	Radiographic evidence of cartilage and bone destruction in addition to periarticular osteoporosis; joint deformity (e.g., subluxation, ulnar deviation, hyperextension) without fibrous or bony ankylosis; muscle atrophy is extensive; extra-articular soft-tissue lesions (e.g., nodules, tenosynovitis) are possible
Stage 4 (terminal)	Presence of fibrous or bony ankylosis, along with criteria of stage 3

**Table 10.2.** Percentage of Autoantibodies Associated with Specific Connective Tissue Diseases

Autoantibody Type	Autoimmune Disease			
	Systemic Lupus Erythematosus	Rheumatoid Arthritis	Sjögren's Syndrome	Diffuse Scleroderma
ANA	95–100	30–60	95	80–95
Anti-native DNA	60	0–5	0	0
Rheumatoid factor	20	72–85	75	25–33
Anti-Sm	10–25	0	0	0
Anti-Ro	15–20	0–5	60–70	0
Anti-La	5–20	0–2	60–70	0

ANA, antinuclear antibodies; anti-Sm, antibody to Smith antigen; anti-Ro, antibody to Ro antigen (SS-A); anti-La, antibody to La antigen (SS-B).

**Table 10.3.** Five Goals of Management for Patients with Sjögren's Syndrome

Alleviating symptoms	Diet and habit modifications Frequent and regular sips of water Avoidance of dry, hard, sticky, acidic foods Avoidance of excess caffeine and alcohol Salivary substitutes and lubricants: rinses, gels, sprays Toothpastes Use of bedside humidifier during sleeping hours
Instituting preventive measures	Increased frequency of oral/dental evaluation and recall maintenance—every 3 months Daily use of highly fluoridated dentifrice Topical fluoride application at home and in office (solution, gel, foam, or varnish); topical: over the counter (0.05% sodium fluoride); prescription (1.0% sodium fluoride, 0.4% stannous fluoride)
Treating oral conditions	Dental caries: Restorative therapy, topical fluoride Oral candidiasis: clotrimazole troches: 10 mg dissolved orally four to five times daily for 10 days; nystatin/triamcinolone ointment for angular cheilitis: apply topically four times daily; systemic therapy for immunocompromised patients; denture antifungal treatment: soaking of denture for 30 minutes daily in chlorhexidine or 1% sodium hypochlorite Bacterial infections: systemic antibiotics for 7–10 days, chlorhexidine 0.12%: rinse, swish, and spit 10 mL twice daily Ill- or poor-fitting prostheses: denture adjustment, hard and soft reline, use of denture adhesives, implant-borne prostheses
Improving salivary function (if possible)	Sugar-free, xylitol-containing mints, candies, and gum Sialogogues: pilocarpine: 5–10 mg orally three times daily; cevimeline: 30 mg orally three times daily
Managing underlying systemic conditions	Multidisciplinary management with other health-care providers: Endocrinology Rheumatology Internal medicine Hematology/oncology Radiation oncology Nephrology/transplant medicine

**Table 10.4.** General Guidelines for Dentists Treating Patients with Connective Tissue Disease

*Before dental care*

- Consultation with the patient's physician/rheumatologist to assess extent of connective tissue-related end-organ disease and current therapies (as secondary conditions can themselves affect provision of care—e.g., end-stage renal disease and myocardial infarction)
- Obtain a baseline complete blood count with differential
- Consider routine chemistry panel in patients with lupus nephritis or PSS-related renal impairment
- Postpone elective care during SLE exacerbation or during pulse therapy
- Assess potential for adrenal suppression and use replacement therapy when appropriate
- Prescribe prophylactic antibiotics when indicated to minimize the risk of endocarditis and prosthetic joint infection
- Consider preoperative antibiotics for patients on immunosuppressive therapy and low absolute neutrophil count
- Use stress-reducing measures when appropriate:
  - Consider sedative premedication
  - Schedule short, morning appointments
  - Pain and anxiety control
- Be prepared for medical emergencies in the dental clinic:
  - Adrenal suppression
  - Cardiovascular status
  - Impaired hemostasis

*During dental care*

- Assess oral mucosal disease and TMJ involvement and treat as appropriate
- Assess xerostomia and provide treatment when appropriate
- Assess facial muscular pain and dysfunction in polymyositis
- Use sutures and adjunctive hemostatic agents when indicated
- Use stress-reducing measures when appropriate

*After dental care*

- Use appropriate dosing intervals of medications for patients with renal insufficiency/hemodialysis
- Use caution when prescribing NSAIDs/aspirin in SLE patients as they may precipitate a flare and consider dose adjustments for RA patients on NSAID regimens
- Consider oral suspension medications for scleroderma patients with reflux and esophageal involvement
- Consider postoperative antibiotics for patients on immunosuppressive therapy
- Evaluate for TMJ dysfunction and consider serial imaging studies
- Schedule frequent recall maintenance (every 3–4 months)

NSAIDs, nonsteroidal anti-inflammatory drugs; SLE, systemic lupus erythematosus; RA, rheumatoid arthritis; PSS, progressive systemic sclerosis; TMJ, temporomandibular joint.

**Table 10.5.** Orofacial Findings in Progressive Systemic Sclerosis and Their Management

Orofacial Findings	Management
Sicca syndrome	Cevimeline, pilocarpine, salivary substitutes
Periodontitis	Hygiene education, scaling and root planning, biannual maintenance sequences, antibiotic therapy
Plaque and/or anticoagulant-induced gingival hemorrhage	Hygiene education, scaling and root planing procedures, antifibrinolytic mouth rinses
Caries	Conservative dentistry, dental prophylaxis with fluoride treatment
Mandibular bone resorption	No treatment, simple follow-up
Severe MIO (<30mm)	3 months of elongation exercises
Edentulation	Fractionated in case of severe MIO; partial, complete removable dentures, dental implants
Perioral “whistle” lines	Pulsed CO <sub>2</sub> laser

MIO, maximal interincisal opening.  
Adapted from Alantar et al.<sup>23</sup>

**Table 10.6.** Drug Toxicities of Medications Used to Treat Connective Tissue Diseases

Drug	Disease	Toxicity
Azathioprine	RA	Stomatitis, nausea, vomiting, hepatotoxicity, pancytopenia, rash, arthralgia
Calcium channel antagonists	Raynaud's phenomenon	Gingival overgrowth, rash, dizziness, headache, congestive heart failure
Corticosteroids	RA, SLE	Candidiasis, hypertension, osteoporosis, cataracts, peptic ulcers, psychosis, delayed wound healing
Cyclophosphamide	SLE, PSS	Stomatitis, cardiotoxicity, myelosuppression, hepatotoxicity, pulmonary fibrosis, neoplasms, thrombocytopenia
Cyclosporine		Renal impairment, hypertension, gingival overgrowth
D-penicillamine	RA, PSS	Rash, stomatitis, dysgeusia, proteinuria, myelosuppression, infrequent but serious autoimmune disease
Danazol	Thrombocytopenia in SLE	Stomatitis, acneiform rash, cholestatic jaundice, anxiety
Gold, oral	RA	Same as injectable but less frequent, diarrhea
Gold salts, injectable	RA	Rash, stomatitis, myelosuppression, proteinuria, thrombocytopenia
Hydroxychloroquine sulfate	RA, SLE	Mucosal discoloration, lichenoid reaction, convulsions, retinal and corneal changes, leukopenia, thrombocytopenia, nausea, vomiting
Methotrexate	RA, SLE	GI symptoms, stomatitis, rash, alopecia, infrequent myelosuppression, hepatotoxicity, rare pulmonary toxicity
Mycophenolate mofetil	RA, SLE	Hyper- or hypotension, peripheral edema, chest pain, tachycardia, headache, insomnia, fever, dizziness, anxiety, rash, nausea, vomiting, abdominal pain, diarrhea or constipation, anorexia, dyspepsia, leukopenia, anemia, thrombocytopenia, leukocytosis, ascites, paresthesia, tremor, weakness, abnormal liver or kidney function, dyspnea, cough, sinusitis, pleural effusion, bacterial, candidal and herpetic infections
NSAIDs	RA	GI symptoms including indigestion, ulceration, hemorrhage, small-bowel ulceration; stomatitis, renal, neurological, pulmonary, hepatic, hematological, dermatological, displacement of protein-bound drugs
Omeprazole	Reflux in PSS	Xerostomia, mucosal atrophy, dysgeusia, diarrhea, abdominal pain, proteinuria, hematuria, pancytopenia
Sulfasalazine	RA	Stomatitis, Stevens–Johnson syndrome, hepatitis, convulsions, leukopenia, thrombocytopenia, toxic nephrosis, myocarditis

RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; PSS, progressive systemic sclerosis; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs.