

# Tumor Necrosis Factor Inhibitors Therapeutic Cheat Sheet

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## GENERIC AND TRADE NAME

- › Adalimumab (Humira)
- › Certolizumab pegol (Cimzia)
- › Etanercept (Enbrel)
- › Infliximab (Remicade)

## ADMINISTRATION

- › Subcutaneous injection: adalimumab, certolizumab pegol, etanercept
- › IV infusion: infliximab

## MECHANISM OF ACTION

- › Adalimumab
  - Human monoclonal TNF $\alpha$  antibody
- › Certolizumab pegol
  - Pegylated humanized Fab fragment, neutralizes membrane-bound and soluble TNF $\alpha$
- › Etanercept
  - Human dimeric fusion protein, binds to TNF $\alpha$
- › Infliximab
  - Chimeric monoclonal TNF $\alpha$  antibody

## FDA APPROVED FOR

- › Adalimumab
  - Adult and pediatric plaque psoriasis, psoriatic arthritis, hidradenitis suppurativa (HS), Crohn's disease, ulcerative colitis, rheumatoid arthritis, ankylosing spondylitis, uveitis
- › Certolizumab pegol
  - Adult plaque psoriasis, psoriatic arthritis, Crohn's disease, rheumatoid arthritis, ankylosing spondylitis
- › Etanercept
  - Moderate-to-severe adult and pediatric plaque psoriasis, psoriatic arthritis, rheumatoid arthritis, ankylosing spondylitis, juvenile idiopathic arthritis
- › Infliximab
  - Adult severe plaque psoriasis, psoriatic arthritis, Crohn's disease, ulcerative colitis, rheumatoid arthritis, ankylosing spondylitis

## ADULT DOSING

- › Adalimumab
  - Psoriasis: 80mg loading week 0, 40mg week 1, then 40mg every other week
  - HS: 160mg day 1, 80mg day 15, 40mg day 20, then weekly
- › Etanercept
  - 50mg twice weekly x 12 weeks, then 50mg weekly
- › Infliximab
  - 5mg/kg IV infusion week 0, 2, 6, then 5mg/kg every 8 weeks
- › Certolizumab:
  - > 90kg: 400mg week 0, then 400mg every other week
  - < 90kg: 400mg week 0, 2, 4 then 200mg every other week

## OFF LABEL USES

- › Pyoderma gangrenosum, Behcet's disease, sarcoidosis, vasculitis, pityriasis rubra pilaris, lichen planus

## ADVERSE EFFECTS

- › As a class<sup>1,2</sup>
  - Injection site/infusion reactions
  - TB, bacterial infections, fungal infections, opportunistic infections
  - Hepatitis B reactivation
  - Malignancy risk – lymphoma, skin cancer
  - Congestive heart failure
  - Progression or emergence of demyelinating disorders
  - Drug-induced psoriasis
  - Development of antidrug antibodies

## RISK OF LYMPHOMA

- › Limited studies of patients with rheumatoid arthritis<sup>2</sup>

## PREGNANCY AND LACTATION

- › Previously category B
- › Recommend certolizumab during pregnancy as it does not cross placenta due to lack of Fc region

## BASELINE MONITORING

- › History with particular attention to TB history, malignancy, demyelinating disorders, and congestive heart failure
- › CBC
- › CMP
- › Hepatitis screening
- › TB screening (PPD or Quantiferon Gold)
- › HIV

## FOLLOW UP MONITORING

- › All: Annual TB testing, routine skin exams, monitoring for infections<sup>3</sup>
- › Infliximab only: CBC, CMP after 3 months, then every 6-12 months<sup>3</sup>
- › Routine follow up every 3-6 months based on clinical response<sup>3</sup>