

1. Cephalosporin antibiotics have been available since 1974 and have seen many approvals since the first in December of that year. Which is no longer?

- a. Cefibuten (Cedax)
- b. Cefixime (Suprax)
- c. Cephalothin (Keflin)

**d. Cephadrine (Velosef) (Discontinued June 2018) \***

\* Cephadrine is still available for veterinary use

2. Oral diabetes treatments often combine products for effects via differing pathways. Commercially available combinations fell out of use so individual components can be better tailored to the patient response. Some combinations are still available including these except:

- a. Linagliptin + empagliflozin (Glyxambi & Tradjenta)
- b. Pioglitazone + metformin (Actoplus MET & others)
- c. Repaglinide + metformin (Prandimet) \* (Sept 2020)**
- d. Sitagliptin + metformin (Janumet)

\* Repaglinide alone was unavailable due to supply issues. In August 2021 it was discontinued by the manufacturer

3. The 5-HT<sub>3</sub> antagonists, or "setrons," provided effective anti-nauseant and anti-emetic relief due to cancer chemotherapy. One formerly approved again was removed from the US market due to significant cardiac arrhythmias. That drug is:

**a. Dolasetron (Anzemet) (Discontinued July 2017)**

- b. Granisetron (Kytril)
- c. Palonosetron (Aloxi)
- d. Ondansetron (Zofran & others)

4. The World Health Organization recommends treatment with pan-genotypic direct-acting antivirals (DAAs) for persons over the age of 12 years infected with Hepatitis C Virus. Of the hepatitis C virus (HCV) NS5A inhibitor type of DAAs, which is no longer available:

- a. Boceprevir (Victrelis) (Discontinued December 2015) \*
- b. Daclatasvir (Daklinza) \*
- c. Ledipasvir (Harvoni with Sobosbuvir) \*
- d. Velpatasvir (Epclusa (with Sobosbuvir)) \*

\* Daclatasvir is the only uncombined NS5A still available

5. NSAIDs are intended for short term use only. Which of the following has had its term shortened to zero days in humans?

- a. Nabumetone (Relafen)
- b. Phenylbutazone (Butazolidine) (Discontinued 1983) \***
- c. Piroxicam (Feldene & others)
- d. Tolmetin (Tolectin brand disc, generic available)

\* Phenylbutazone is still available for veterinary use but its use in animals other than horses is limited.

6. Bisphosphonates are commonly used for the treatment and prevention of osteoporosis. Which has been discontinued in favor of more effective forms.

a. Alendronate (Fosomax & others)

**b. Etidronate (Didrone) (Discontinued August 2017) \***

- c. Ibandronate (Boniva & others)
- d. Zoledronic Acid (Reclast)

\* Although Etidronate was generally unavailable during most of the 2010s, it was not discontinued until 2017

7. The HMG-CoA reductase inhibitors (statins) have made major impacts on the treatment of hyperlipidemia. Other drugs have been used to treat high circulating lipids. Among these that came before lovastatin hit the market, which has been removed from circulation?

- a. Colesevelam (Welchol & others)
- b. Ezetimibe (Zetia & others)
- c. Mipomersen (Kynamro)

**d. Probucol (Lorelco) (Discontinued 1995) \***

Although Probucol was voluntarily removed from the market, chemical analogs are still being studied

8. Tetracycline antibiotics originated from specific strains of *Streptomyces* and were named for their four hydrocarbon rings. Many tetracyclines were developed since Oxytetracycline was first isolated. Of the following, which is not currently marketed?

- a. Demeclocycline (Declomycin & others)
- b. Lymecycline (Tetralysal)

**c. Meclocycline (Meclan) Discontinued \***

d. Oxytetracycline (Terramycin)

\* Although Meclan topical has been discontinued by Johnson and Johnson and no other meclocycline sulfosalicylate topical is commercially available, compounding pharmacies have advertised they can prepare the product presumably from bulk meclomycin

9. Antiprotozoal agents may come from a variety of drug classes. Still available agents include all of the following except:

- a. Albendazole (Albenza)
- b. Fexinidazole (No brand name) \*\*

**c. Furazolidone (Furoxone) (Discontinued 2009) \***

d. Pyrimethamine (Daraprim & others)

\* Furazolidone use in humans has been banned by the FDA but may still be available for veterinary use

\*\* Fexinidazole was recently (June 2021) approved in the US for African Sleeping Sickness by Sanofi Aventis