

4. Nano-pharmaceuticals

Prelims: Science & Technology

Mains: GS-III Science & Technology

Why in News?

- ▶▶ The Ministry of Health and Family Welfare released guidelines for evaluation of nano-pharmaceuticals, which are emerging as more potent tools for treating various diseases.

What are Nano-Pharmaceuticals?

- ▶▶ Nanopharmaceuticals represent an emerging field where the sizes of the drug particle or a therapeutic delivery system work at the nanoscale.
- ▶▶ They are derived by application of nanotechnology in medical therapeutics.
- ▶▶ In the pharmaceutical industry, a long-standing issue is a difficulty of delivering the appropriate dose of a particular active agent to specific disease site.
- ▶▶ Nanopharmaceuticals have enormous potential in addressing this failure of traditional therapeutics which offers site-specific targeting of active agents.
- ▶▶ Such precision targeting via nanopharmaceuticals reduces toxic systemic side effects, resulting in better patient compliance.

Benefits:

- ▶▶ They are expected to bring about a revolution in treatment strategies as they would enable targeting specific delivery of drugs and therapeutic molecules.
- ▶▶ They offer higher efficacy and lower toxicity in many disease conditions.
- ▶▶ They are expected to be of great use particularly in cancer treatment.

Why Need Guidelines?

- ▶▶ Every year several new nano-pharmaceuticals are being developed and marketed across the world.
- ▶▶ India too has a sizable pool of nano-scientists generating a large number of scientific publications in this domain.
- ▶▶ However, regulatory approval is the most important factor for translating laboratory research into bedside medicine.
- ▶▶ The new set of guidelines is designed to facilitate this process.

Guidelines:

- ▶▶ The guidelines cover all the aspects of evaluation from the definition and categorization of nano-pharmaceuticals to pharmacovigilance of the new set of therapeutics.

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- ▶▶ It has been prepared as a joint project by the Department of Biotechnology (DBT) in the Union Ministry of Science and Technology, and ICMR and Central Drugs Standard Control Organisation under health Ministry.
 - ▶▶ It will give a big boost to innovators and drug manufacturers to optimise their research and come out with medicines that would be safer and more affordable.

