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Editorial Note on Anti-HIV Medicines in Development

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Editorial

The National Institute of Allergy and Infectious Diseases (NIAID) are involved in various stages of antiretroviral medication development. Due to the development of resistance to existing treatments and the unfavorable side effects associated with some current drugs, the hunt for new drugs remains a top priority. The National Institute of Allergy and Infectious Diseases (NIAID) funds basic research to find new ways to prevent HIV from taking hold and multiplying in the body, as well as preclinical research to develop antiretroviral medications that can be tested in patients.

There are exactly 20 anti-HIV medications that have been licensed (authorized) for clinical usage, with more than 30 anti-HIV compounds in the (pre)clinical stage. There are five types of anti-HIV medications that have been approved by the FDA. Nucleoside reverse transcriptase inhibitors (NRTIs) include zidovudine, didanosine, zalcitabine, stavudine, lamivudine, abacavir, and emtricitabine; nucleotide reverse transcriptase inhibitors (NtRTIs) include tenofovir disoproxil fumarate; non-nucleoside reverse transcriptase inhibitors (NNRTIs: nevirapine, delavirdine and efavirenz). The drugs in clinical (Phase I, II, or III) or preclinical trials are either targeting the same specific viral proteins as the approved medications, or they are not (i.e., reverse transcriptase [NRTIs: PSI-5004, (-)-dOTC, DPC-817, elvucitabine, alovudine, MIV-210, amdoxovir, DOT; NNRTIs: thiocarboxanilide, UC-781, capravirine, dapivirine, etravirine, rilpivirine], protease [PIs: tipranavir, TMC-114]).

Attachment inhibitors are AIs, such as BMS-488043; integrase: L-870,812, PDPV-165; capsid proteins: PA-457, alpha-HCG); or cellular proteins (e.g., gp120: cyanovirin N; attachment inhibitors: AIs, such as BMS-488043; integrase: L-870,812, PDPV-165; capsid proteins: PA-457 (CD4 downmodulators: CADAs; CXCR4 antagonists: AMD-070, CS-3955; CCR5 antagonists: TAK-220, SCH-D, AK-602, UK-427857). To maximize efficacy, minimise toxicity, and reduce the possibility of resistance development, combination therapy is expected to remain the gold standard for the treatment of AIDS. To improve patient compliance and save treatment costs, the pill load should ideally be decreased to once-daily dosage.

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