DYNAMICS IN MPOX VACCINE IMMUNITY AFTER IMVANEX VACCINATION AMONG MEN WHO HAVE SEX WITH MEN IN AMSTERDAM, THE NETHERLANDS.

Authors:
TEKER B[1,7], JONGEN VW[1,6], VAN DORT KA[3,4,8], PRINS M[1,3,4], HOORNENBORG E[1,3], SOORS D' ANCONA M[1], DAVIDOVICH U[1,9], DE VRIES HJC[1,3,4,7], KOOTSTRA NA[3,4,8]

[1]Department of Infectious Diseases, Public Health Service of Amsterdam (GGD Amsterdam), Amsterdam, the Netherlands
[2]Department of Internal Medicine, Amsterdam UMC location University of Amsterdam, Meibergdreef 9, Amsterdam, The Netherlands
[3]Amsterdam Institute for Infection and Immunity (AII), Amsterdam, the Netherlands
[4]Amsterdam Public Health Research Institute (APH), Amsterdam, the Netherlands
[5]Department of Medical Microbiology, Amsterdam UMC location University of Amsterdam, Meibergdreef 9, Amsterdam, The Netherlands
[6]Stichting hiv monitoring, Amsterdam, the Netherlands
[7]Department of Dermatology, Amsterdam UMC location University of Amsterdam, Meibergdreef 9, Amsterdam, The Netherlands
[8]Department of Experimental Immunology, Amsterdam UMC location University of Amsterdam, Meibergdreef 9, Amsterdam, The Netherlands
[9]Department of Social Psychology, University of Amsterdam, Amsterdam, The Netherlands.

Background:
From July 2022, men who have sex with men (MSM) were eligible for mpox vaccination following the mpox outbreak in Europe, using Modified vaccinia Ankara—Bavarian Nordic (Imvanex). However, new cases of mpox have been observed among vaccinated individuals, leaving the duration of protection unclear. Here, we assessed the dynamics of mpox vaccine immunity and assessed immunological responses after one (in addition to a previous smallpox vaccination) or two vaccines.

Methods:
Thirty-four MSM from the Amsterdam Cohort Studies were included. Demographical and sexual behavioural data were collected at T0. Blood samples were collected at pre-vaccination (T0), one month post-vaccination (T1), and 6-9 months post-vaccination (T2). Antibody titres were measured using an IgG mpox antibody ELISA (Eurofins Ingenasa). Virus/vaccine-specific CD4 and CD8 T-cell responses were analysed using Activation Induced Marker (AIM).

Results:
The median age of 34 MSM was 52 years (IQR=46-58), with 3 (8.8%) of them living with HIV. Among these 34 MSM, 15 were vaccinated once, while 19 were vaccinated with two vaccinations. Mpox antibody response was observed in 21/34 (62%) participants at T1. Immunological T-cell responses with AIM-CD4 and AIM-CD8 were observed for 26/34 (76%) and 25/34 (74%) participants at T1, respectively. Among responders on AIM-CD4 and AIM-CD8, 10/26 and 10/25 had T2 test results, with 2/10 and 2/10 showing decreased responses, respectively. The odds of immunological AIM-CD8 response were lower among participants who received two Imvanex vaccinations

compared to those who received one dose after childhood smallpox vaccine (OR=0.1,95%CI=0.01–0.91).

Conclusion:
Two-thirds of participants showed an mpox-specific immune response one month post-vaccination. Vaccination induced T cell immunity declined in some responders at 6-9 months post-vaccination, which may contribute to breakthrough mpox infections. The combination of childhood smallpox vaccination and one dose Imvanex resulted in a higher AIM-CD8 immunological response compared to two Imvanex vaccinations.

Disclosure of Interest Statement:
None.