JOURNEES THEMATIQUES REGIONALES
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STRASBOURG

CENTRE DE VACCINATION
Calvados • Manche • Orne
CHU CAEN NORMANDIE

HD les données qui pourraient le placer dans le calendrier en préférentiel

Jocelyn Michon

Service de maladies infectieuses

CHU de Caen

Pré requis d'un campagne anti grippale efficace

- Vaccin efficace
  - Adapté à la souche circulante → OMS
  - Immunogénicité forte→ HD > SD ?
- Vaccin accepté → Communication +++
- Vaccin disponible → AMM/Recommandations
  Autorité de santé/Laboratoire

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

DGS-URGENT

DATE : 23/04/2024 **REFERENCE :** DGS-URGENT N°2024_05

TITRE : PROLONGATION DES PRECOMMANDES DES VACCINS CONTRE LA GRIPPE SAISONNIERE ET RETRAIT DU MARCHE DU VACCIN EFLUELDA®

De plus, nous souhaitons vous informer du retrait du marché du vaccin Efluelda® commercialisé par le laboratoire Sanofi dans les prochaines semaines. Cette décision n'affectera pas l'approvisionnement en vaccins antigrippaux, le laboratoire s'étant engagé à remplacer intégralement les précommandes du vaccin Efluelda® par le vaccin VaxigripTetra®.

Dans son avis du 1er juillet 2020 [2], la Commission de la transparence (CT) avait estimé qu'EFLUELDA n'apportait **pas d'amélioration du service médical rendu** (ASMR) dans l'immunisation active des personnes de 65 ans et plus en prévention de la grippe, par rapport aux autres vaccins disponibles indiqués dans cette population.

La base de remboursement d'EFLUELDA (1 seringue avec aiguille) était fixée à 30,90 euros, contre 11,75 euros pour les autres vaccins.

Cette décision a été prise par le laboratoire Sanofi pour des **raisons économiques**. Dans un récent communiqué, il explique que *« les autorités ont décidé de fixer un nouveau prix non soutenable pour Sanofi au regard des coûts de production et de distribution, malgré un investissement majeur déjà engagé par Sanofi pour localiser en France une partie de la production d'EFLUELDA ».*

Fardeau de la grippe

Tableau 5. Répartition par **classes d'âges du nombre et du pourcentage parmi l'ensemble des hospitalisations après passage aux urgences codés pour grippe/syndrome grippal**, au cours des épidémies de grippe 2011-2012 à 2021-2022 (source : réseau Oscour®)

Epidémie	Moins de 2 ans		2-5 ans		6-14 ans		15-64 ans		65 ans et plus		Tous âges
	N	%	N	%	N	%	N	%	N	%	N
2011-12*	390	21%	186	10%	71	4%	422	23%	765	42%	1 835
2012-13*	625	20%	372	12%	293	10%	1 065	35%	711	23%	3 067
2013-14*	288	22%	138	10%	61	5%	523	40%	306	23%	1 315
2014-15*	714	16%	353	8%	195	4%	1 110	25%	2 051	46%	4 424
2015-16	736	22%	508	15%	287	9%	1 016	30%	795	24%	3 342
2016-17	529	8%	305	5%	155	2%	1 094	17%	4 472	68%	6 555
2017-18	1 261	13%	857	9%	305	3%	2 345	23%	5 267	52%	10 035
2018-19	1 009	9%	670	6%	373	3%	2 121	19%	6 709	62%	10 887
2019-20	994	16%	710	11%	386	6%	1 849	30%	2 240	36%	6 179
2021-22	814	12%	814	12%	404	6%	1 675	25%	3 036	45%	6 743
Moyenne	***736***	***16%***	***491***	***10%***	***253***	***5%***	***1 322***	***27%***	***2 635***	***42%***	***5 438***

58 %

Santé publique France / Fardeau de la grippe en France métropolitaine : bilan des données de surveillance des épidémies de 2011-2012 à 2021-2022

Admissions en réanimation France

- 12 179 cas graves nécessitant admission en réanimation entre 2011 et 2022

Population	% des admissions en réanimation	% comorbidité	% vacciné	% décès	% décès porteur de comorbidité	% pop générale
< 2 ans	4%	25%	3%	8%	32%	2%
2-5 ans	3%	38%	8%	10%	44%	5%
6-14 ans	3%	38%	12%	10%	36%	11%
15-64 ans	46%	56%	15%	15%	55%	62%
> 65 ans	44%		39%	23%	64%	20%

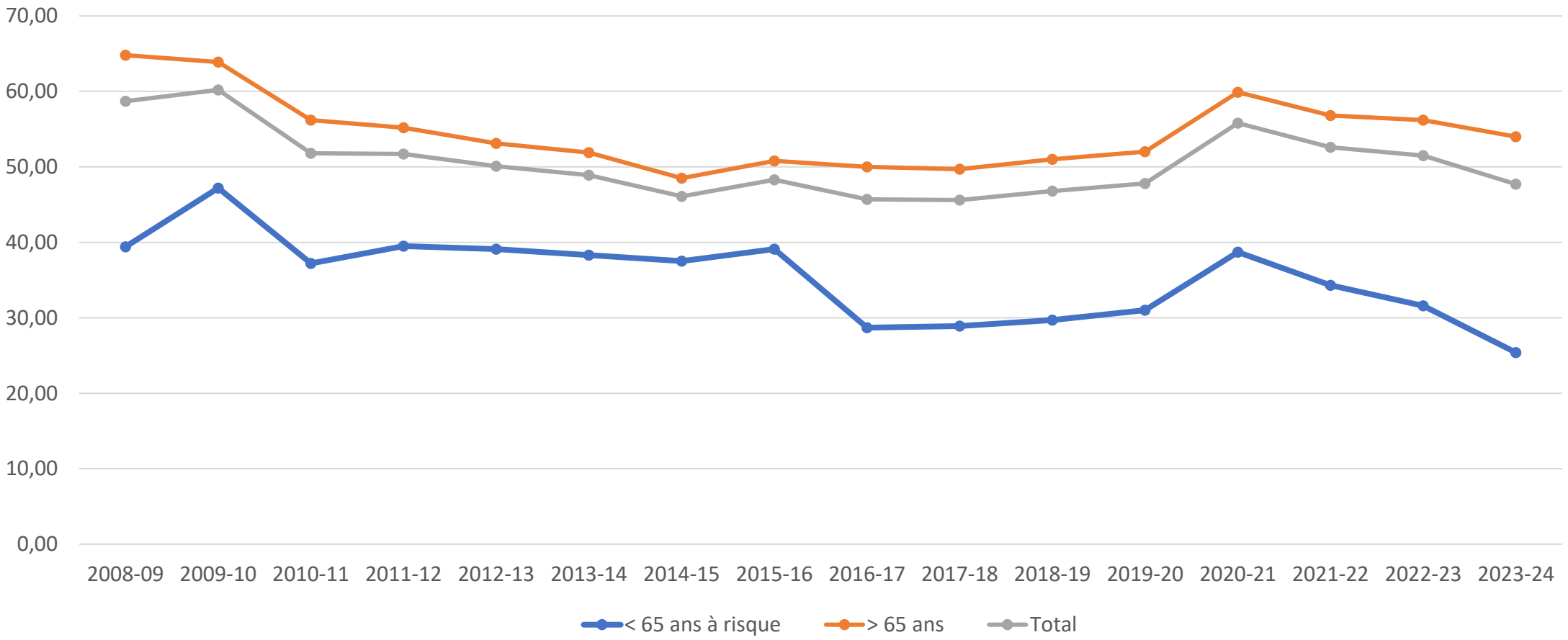
Santé publique France / Fardeau de la grippe en France métropolitaine : bilan des données de surveillance des épidémies de 2011-2012 à 2021-2022

Impact de la grippe en pop spécifique

- Cancérologie: 9% de décès chez les patients hospitalisés pour grippe
- Transplantation:
  - 17% des IRBasses chez le transplanté,
  - formes sévères pneumonie : 22% à 49% cas,
  - 11-16% admission en réanimation, 8% décès.
  - Risque de rejet de greffe majoré.
- Path inflammatoire: grippe compliquée x 2,75
- VIH: 40% des inf respiratoire fébriles basse liées à la grippe

1. Epidemiology and outcomes of serious influenza-related infections in the cancer population· C D. Cooksley, Cancer 2005
2. Outcomes from pandemic influenza A H1N1 infection in recipients of solid-organ transplants: a multicentre cohort study D Kumar, Lancet Infect Dise 2010,
3. Rheumatoid arthritis and the incidence of influenza and influenza-related complications: a retrospective cohort study. BMC Musculoskelet Disord. 2012 Blumentals W
4. Sometimes, more is better, E T Overton JID 2012

CV anti grippale France



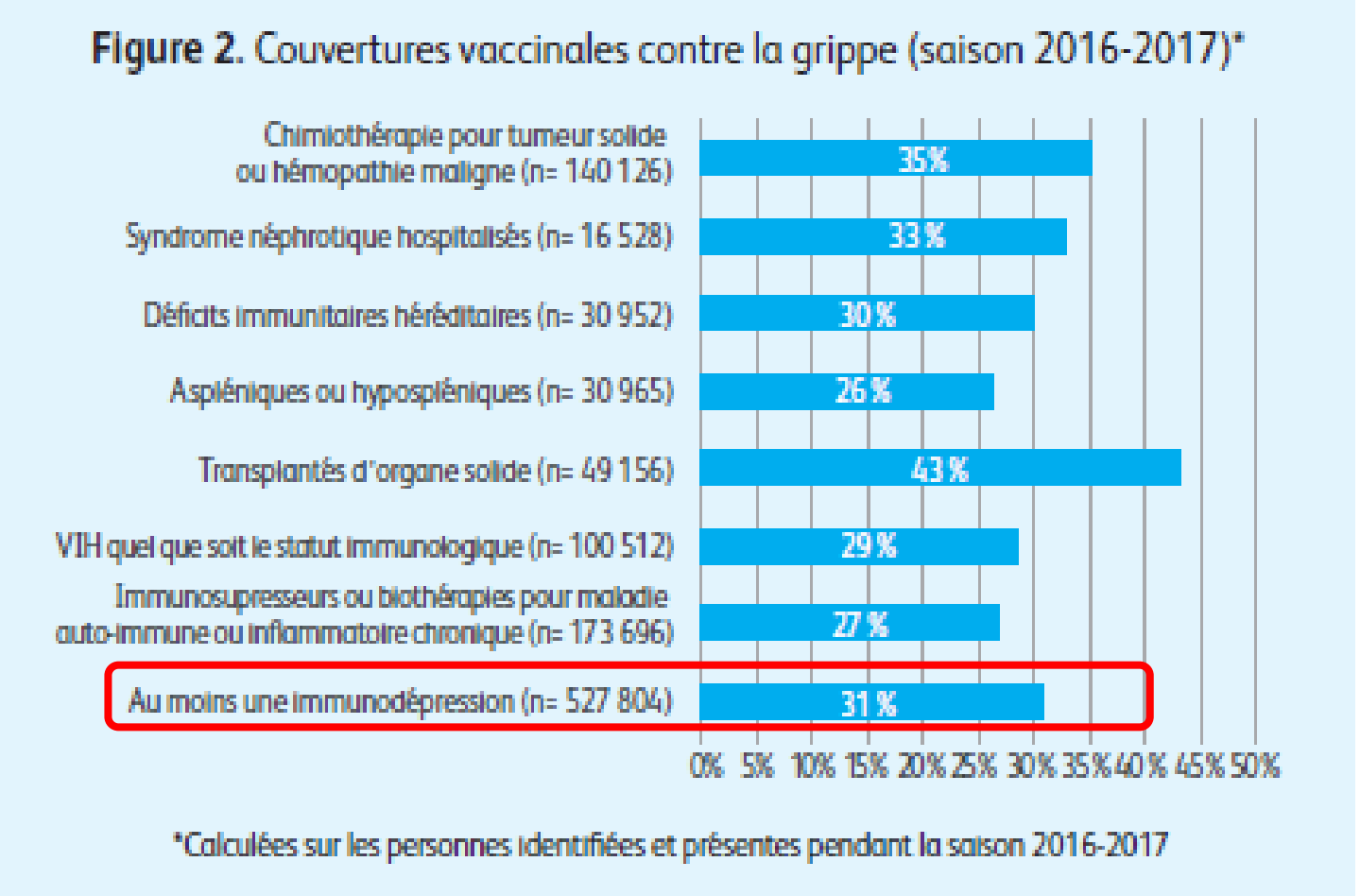
Données de couverture vaccinale grippe par groupe d'âge. Données Santé Publique France. Mis à jour le 22 avril 2024

Couverture vaccinale anti grippale IS

Données de couverture vaccinale grippe par groupe d'âge.
Données SPF

Saison grippale	16-17
Moins de 65 ans	28,7%
65 ans ou +	50,0%
TOTAL	45,7%

Covarisq (estimation de la COuverture VAccinale des adultes à RISQue) :
Couvertures vaccinales des malades atteints de comorbidités en France en 2017



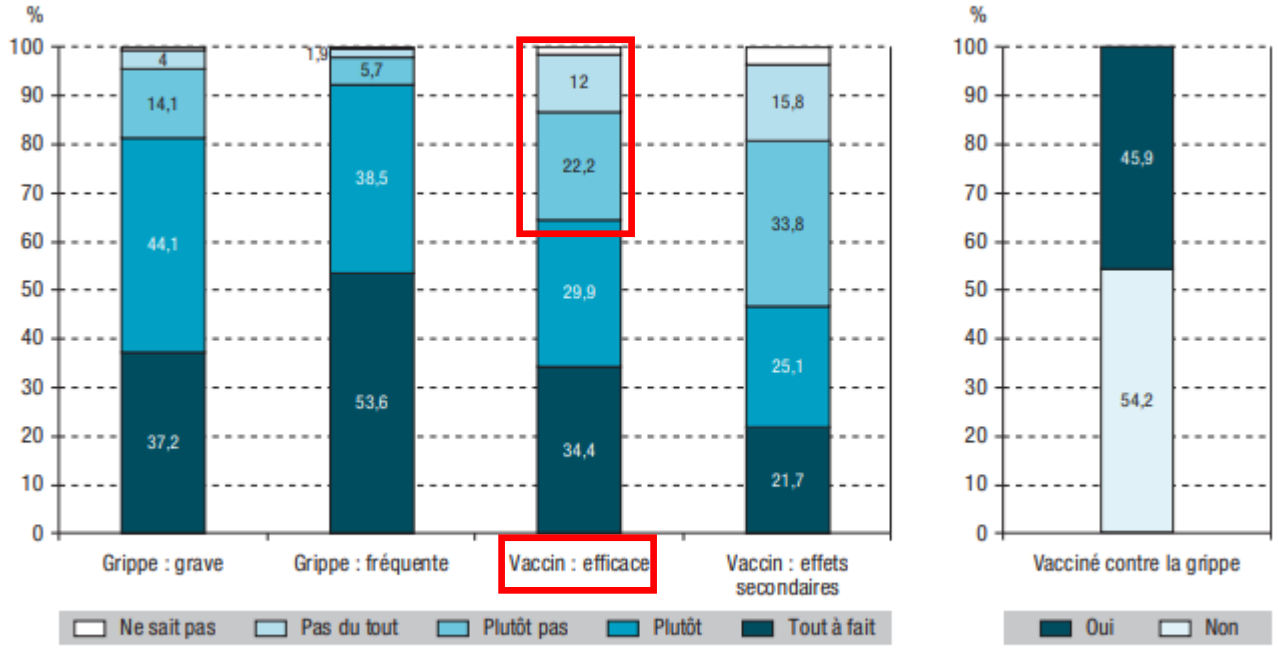
Vaccin anti grippal: le mal aimé

- Perçu comme peu efficace
- Les patients ont raison:

Absolute Influenza Vaccine Effectiveness for Prevention of Laboratory-Confirmed Influenza Hospitalization Among Adults Aged ≥65 Years, HAIVEN Study, 2015–2016 to 2016–2017

		Adjusted VE (95% CI)[a]
	N	SD-IIV
Influenza type/Subtype		
All influenza A/B	1487	6 (−42, 38)
Influenza A(H1N1)pdm09	1266	23 (−84, 68)
Influenza A(H3N2)	1360	−6 (−86, 40)
Influenza B/Yamagata	1264	31 (−50, 68)
Season		
2015–2016	500	26 (−58, 66)
2016–2017	987	3 (−58, 41)
Age group		
65–74 y	792	0 (−73, 43)
≥75 y	696	18 (−54, 56)

Perceptions des personnes âgées de 65 à 75 ans sur la grippe saisonnière et son vaccin et pratique de la vaccination lors de l'hiver 2015-2016 (N=2 418), France, 2016



Source : Baromètre santé 2016, Santé publique France. Questions posées : « *Pensez-vous que la grippe est une maladie grave ?* », « *Pensez-vous que la grippe est une maladie fréquente ?* », « *Pensez-vous que le vaccin contre la grippe est efficace pour prévenir cette maladie ?* », « *Pensez-vous que le vaccin contre la grippe peut provoquer des effets secondaires graves ?* ».

Relative and Absolute Effectiveness of High-Dose and Standard-Dose Influenza Vaccine Against Influenza Related Hospitalization Among Older Adults—United States, 2015–2017 Joshua D. Doyle CID 2021

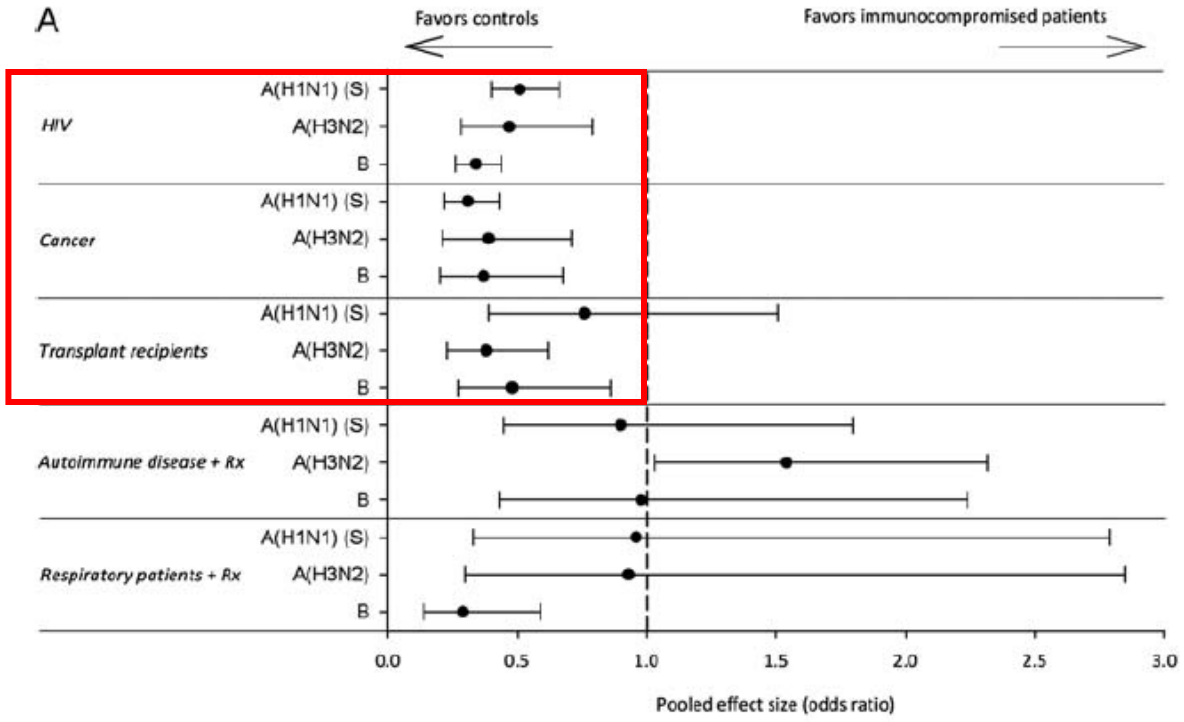
Réponse IS

Influenza Vaccination for Immunocompromised Patients: Systematic Review and Meta-analysis by Etiology

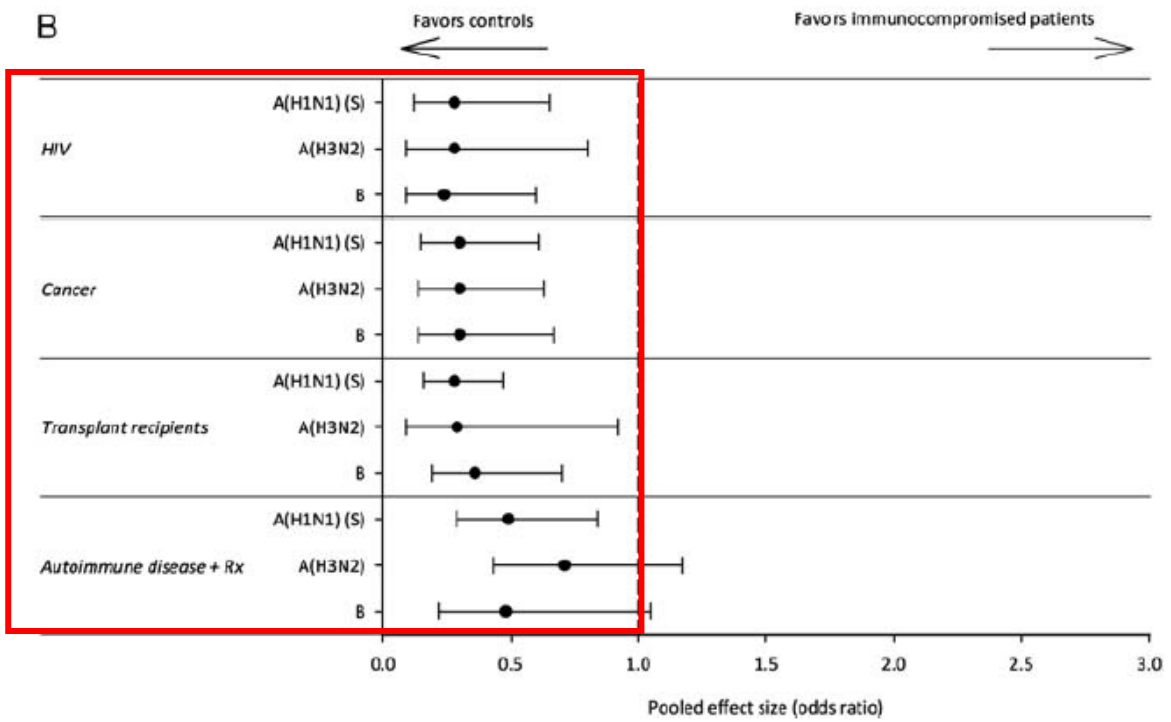
Charles R. Beck,[1] Bruce C. McKenzie,[1] Ahmed B. Hashim,[1] Rebecca C. Harris,[2] University of Nottingham Influenza and the ImmunoCompromised (UNIIC) Study Group,[a] and Jonathan S. Nguyen-Van-Tam[1]

- Moindre réponse vaccinale chez l'immunodéprimé

Séroconversions (titre x 4)



Séroprotection: titre > 1/40^{e}

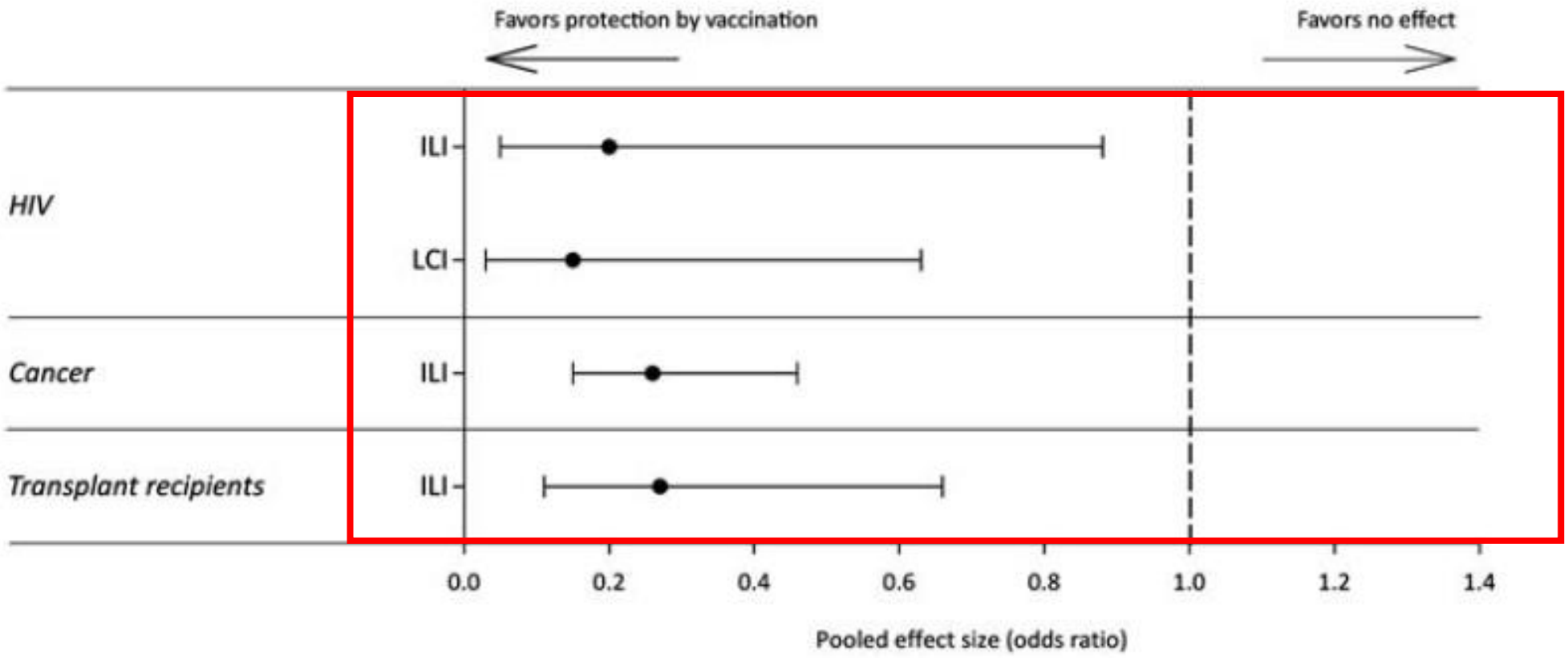


Reponse IS

Influenza Vaccination for Immunocompromised Patients: Systematic Review and Meta-analysis by Etiology

Charles R. Beck,[1] Bruce C. McKenzie,[1] Ahmed B. Hashim,[1] Rebecca C. Harris,[2] University of Nottingham Influenza and the ImmunoCompromised (UNIIC) Study Group,[a] and Jonathan S. Nguyen-Van-Tam[1]

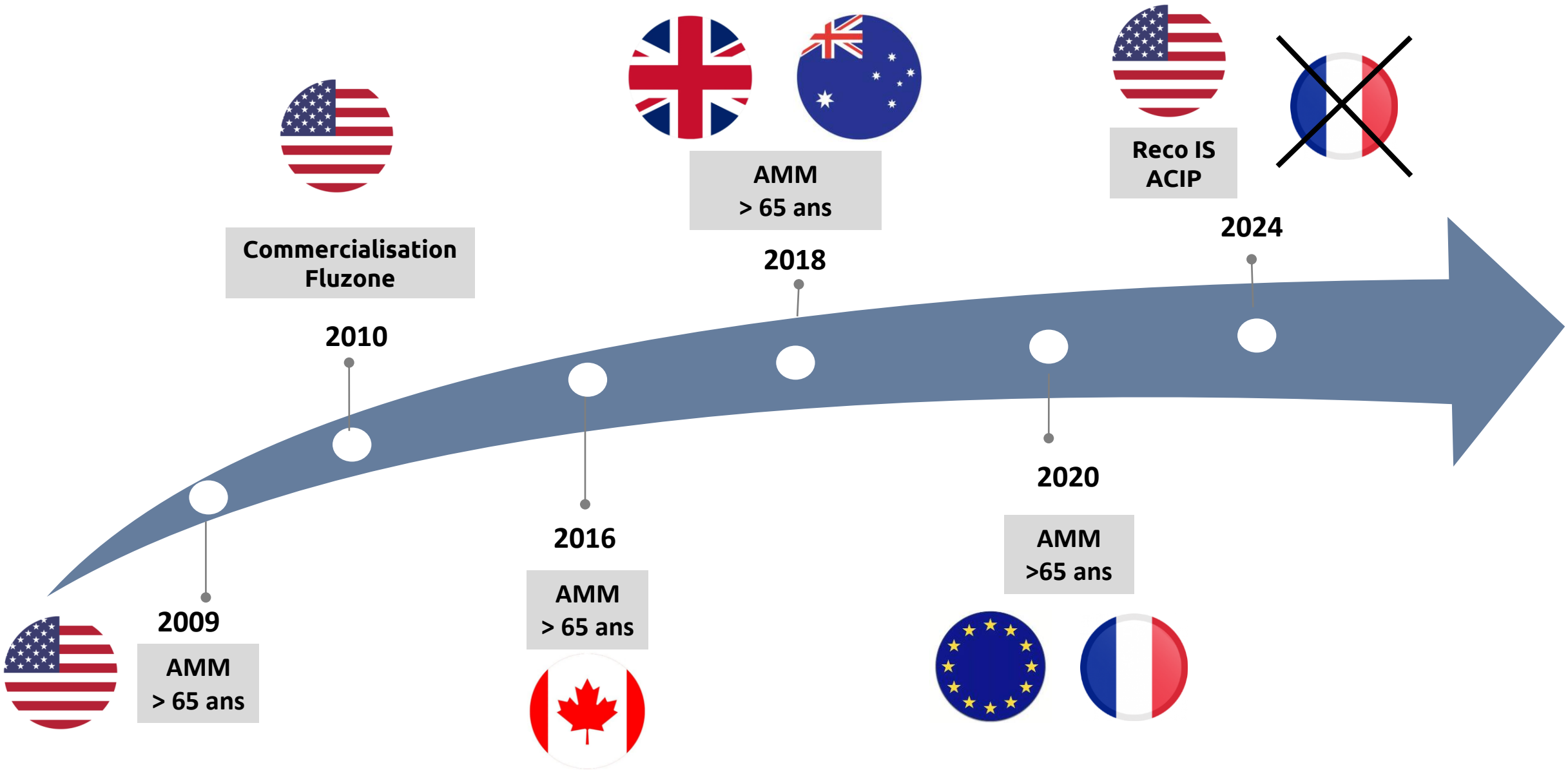
- Efficacité clinique: standard dose vs placebo



Comment améliorer la réponse vaccinale ?

- Vacciner AVANT l'immunodepression
- Renforcer le schéma vaccinal
  - 2 doses standard espacées au cours de la saison grippale
- Améliorer la présentation de l'antigène :
  - nouveaux adjuvants MF59, AS03
  - nouveaux vaccins: ARNm
- <u>Augmenter les doses d'antigène administré: HD</u>

Historique: vaccins HD

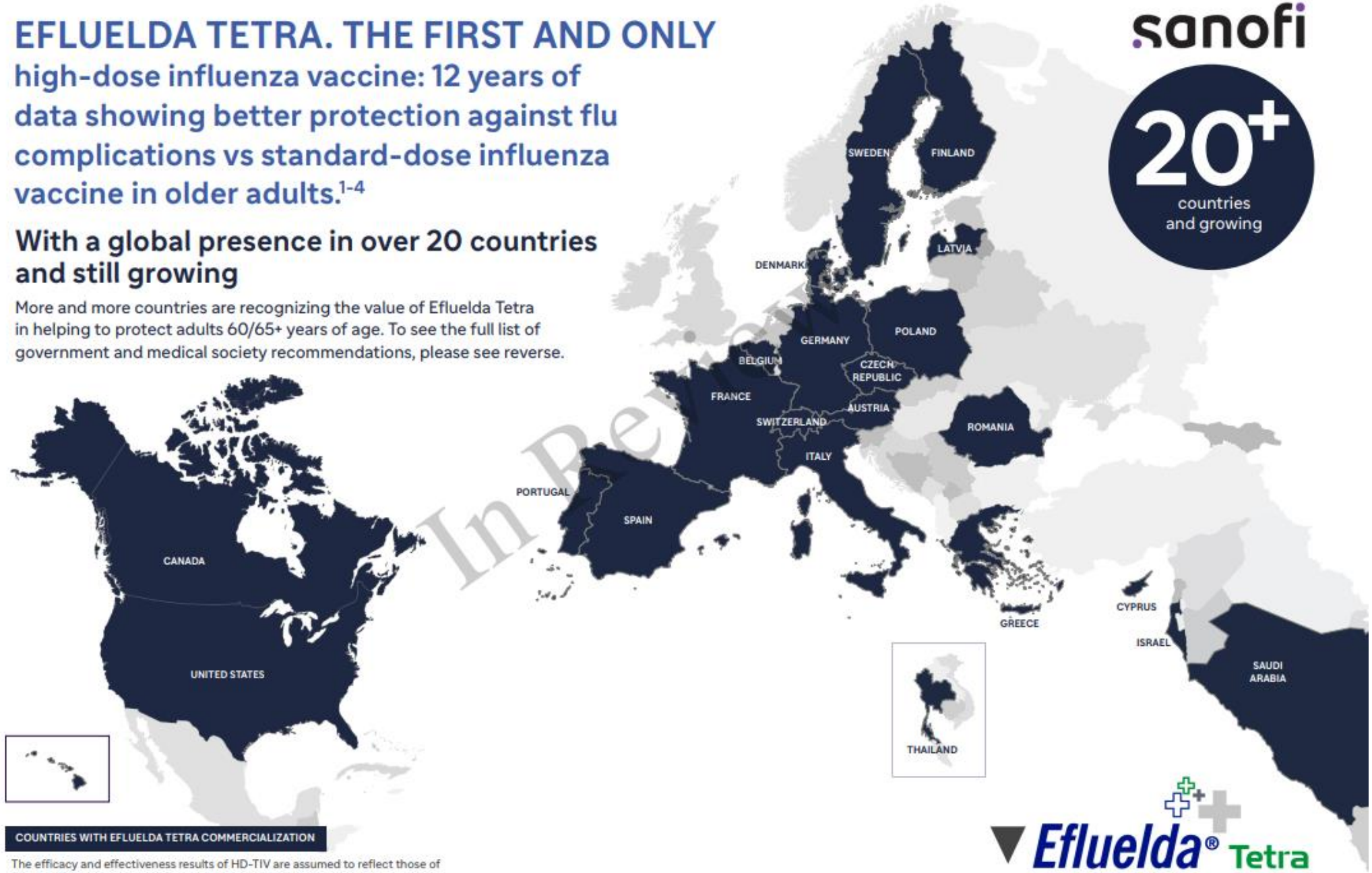


EFLUELDA TETRA. THE FIRST AND ONLY

high-dose influenza vaccine: 12 years of data showing better protection against flu complications vs standard-dose influenza vaccine in older adults.[1-4]

With a global presence in over 20 countries and still growing

More and more countries are recognizing the value of Efluelda Tetra in helping to protect adults 60/65+ years of age. To see the full list of government and medical society recommendations, please see reverse.



sanofi

20+ countries and growing

COUNTRIES WITH EFLUELDA TETRA COMMERCIALIZATION

The efficacy and effectiveness results of HD-TIV are assumed to reflect those of Efluelda Tetra given the demonstration of statistically comparable immunogenicity between both products.

HD-TIV=high-dose trivalent influenza vaccine.

Efluelda® Tetra
Quadrivalent Influenza Vaccine
(Split Virion, Inactivated), 60 mcg HA/strain

Evaluation de l'efficacité vaccinale

Corrélats de protection

L'infection grippale induit à la fois une réponse immunitaire cellulaire et humorale. Il existe probablement plusieurs mécanismes de protection, qui peuvent différer selon le type et la formulation du vaccin, l'âge de la personne vaccinée et les affections sous-jacentes présentes. Il n'existe aucun corrélat établi de la protection. Les titres obtenus lors des épreuves d'inhibition de l'hémagglutination (IH) ne sont pas directement corrélés à la protection conférée contre la grippe confirmée en laboratoire. Cependant, les titres IH ≥40 sont considérés comme un indicateur de la protection par les organismes de réglementation, afin de faciliter l'approbation annuelle des nouvelles souches à inclure dans le vaccin contre la grippe saisonnière. De nouvelles lignes directrices ont été élaborées pour promouvoir l'étude de différents paramètres de la réponse immunitaire afin de déterminer les avantages que présentent les nouveaux vaccins.[40] Ainsi, lors de la mise au point d'un nouveau vaccin contre la grippe saisonnière, il convient désormais de produire des données sur la protection conférée contre la grippe cliniquement manifeste, plutôt que sur les titres d'anticorps générés.

Vaccins antigrippaux: note de synthèse de l'OMS –13 MAY 2022, 97th YEAR / No 19, 2022, 97, 185–208
http://www.who.int/we

Term	Definition
Seroprotection	Defined as a titer ≥ 1:40 in hemagglutination-inhibiting antibody [28,29]. Seroprotection is no longer used by the European Medicines Agency (EMA) as it is considered as a non-accurate correlate of protection [30].
Seroconversion	Defined as a hemagglutination-inhibiting antibody titer < 10 before vaccination and a titer ≥ 40 after vaccination; if titer ≥ 10 before vaccination, defined as a 4-fold increase of titer from pre-immunization levels [29].

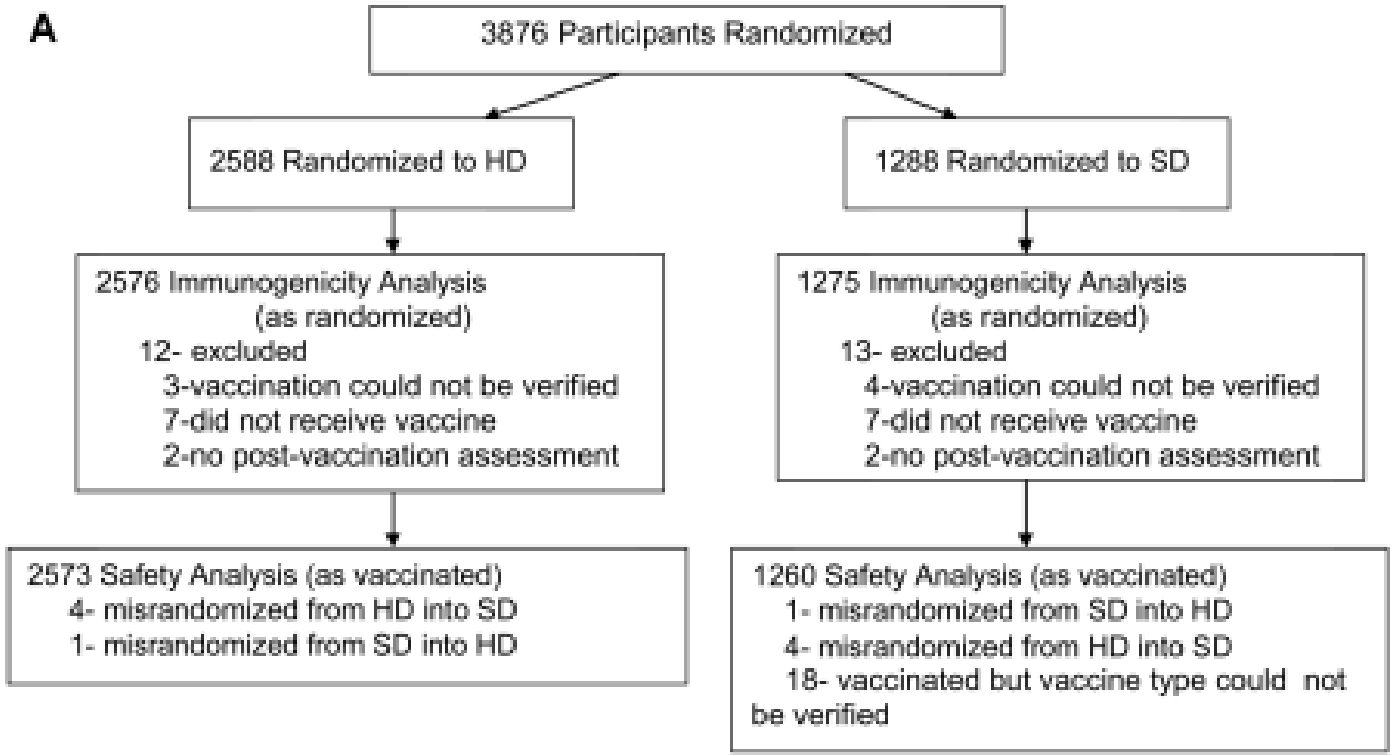
Influenza vaccination in immunocompromised populations: Strategies to improve immunogenicity. F Caldera, Vaccine 2021

Réponse immune personne âgée

- SD vs HD
- Adulte > 65 ans, exclusion IS
- 09/10/06 -> 21/12/06
- 30 centres US
- Objectif principal:
  - Séroconversion à J28
- Age: 73 ans +/-6, 51% ♀

Randomized, Double-Blind Controlled Phase 3 Trial Comparing the Immunogenicity of High-Dose and Standard-Dose Influenza Vaccine in Adults 65 Years of Age and Older

Ann R. Falsey,[1,2] John J. Treanor,[2] Nadia Tornieporth,[3] Jose Capellan,[5] and Geoffrey J. Gorse[4]



Randomized, Double-Blind Controlled Phase 3 Trial Comparing the Immunogenicity of High-Dose and Standard-Dose Influenza Vaccine in Adults 65 Years of Age and Older Ann R. Falsey, JID 2008

Réponse immune

The primary limitation of the current study is the lack of data demonstrating clinical efficacy against influenza infection and illness

AMM FDA 2009

Table 2. Comparison of responses to high-dose (HD) and standard-dose (SD) influenza vaccine.

Response, by antigen	HD vaccine recipients[a] (*n* = 2576)		SD vaccine recipients[a] (*n* = 1275)		HAI GMT ratio for HD and SD vaccine, (95% CI)
	Subjects with valid serologic result, no.	HAI GMT (95% CI)	Subjects with valid serologic result, no.	HAI GMT (95% CI)	
GMT					
A/H1N1					
Day 0	2553	28.5 (27.4– 29.7)	1267	29.4 (27.7– 31.1)	…
Day 28	2543	115.8 (111.4– 120.3)	1252	67.3 (63.7– 71.1)	1.7 (1.6 –1.8)
A/H3N2					
Day 0	2552	74.6 (70.3– 79.2)	1268	74.7 (68.6– 81.4)	…
Day 28	2544	608.9 (583.5– 635.3)	1252	332.5 (310.4– 356.1)	1.8 (1.7– 2.0)
B					
Day 0	2551	19.3 (18.6– 20.1)	1267	19.0 (17.9– 20.0)	…
Day 28	2542	69.1 (66.6– 71.6)	1252	52.3 (49.5– 55.3)	1.3 (1.2– 1.4)
Seroconversion[b]		Subjects, % (95% CI)		Subjects, % (95% CI)	Percentage difference in rate (95% CI)
A/H1N1	2531	48.6 (46.6– 50.5)	1249	23.1 (20.2– 25.6)	25.4 (22.4– 28.5)
A/H3N2	2531	69.1 (67.3– 70.9)	1248	50.7 (47.9– 53.5)	18.4 (15.1– 21.7)
B	2529	41.8 (39.8– 43.7)	1249	29.9 (27.4– 32.6)	11.8 (8.6– 15.0)
Seroprotection[c]					
A/H1N1	2543	89.9 (88.7– 91.0)	1252	76.8 (74.3– 79.1)	13.1 (10.5– 15.8)
A/H3N2	2544	99.3 (98.9– 99.6)	1252	96.5 (95.3– 97.4)	2.8 (1.7– 3.9)
B	2542	79.3 (77.6– 80.3)	1252	67.6 (64.9– 70.2)	11.7 (8.7– 14.7)

NOTE. Superiority was demonstrated if the lower limit of the 95% confidence interval for the difference in seroconversion rates (i.e., HD vaccine minus SD vaccine) was >10%, and noninferiority was shown if the lower limit was >−10 %. The ratios of the hemagglutination inhibition (HAI) geometric mean titers (GMT) for HD vaccine and SD vaccine were assessed for all vaccine strains. Superiority was demonstrated if the lower limit of the 95% confidence interval for the ratio was >1.5, and noninferiority was defined as an HAI GMT ratio value >0.67. For HD vaccine to be considered superior to SD vaccine overall, for each measure it was required to demonstrate superiority for at least 2 of the 3 vaccine strains without demonstrating inferiority for any strain. CI, confidence interval.

Randomized, Double-Blind Controlled Phase 3 Trial Comparing the Immunogenicity of High-Dose and Standard-Dose Influenza Vaccine in Adults 65 Years of Age and Older Ann R. Falsey, JID 2008

The NEW ENGLAND JOURNAL of MEDICINE
2014

Efficacité clinique

Efficacy of High-Dose versus Standard-Dose Influenza Vaccine in Older Adults

Carlos A. DiazGranados, M.D., Andrew J. Dunning, Ph.D., Murray Kimmel, D.O.,

- Randomisé contrôlé double aveugle
- Multicentrique US
- HD vs SD > 65 ans, exclusion IS
- Objectif principal: Sd grippal avec confirmation biologique/PCR
- Population (31989 patients):
  - 2011-12: 14,500 patients
  - 2012-13: 17,489 patients

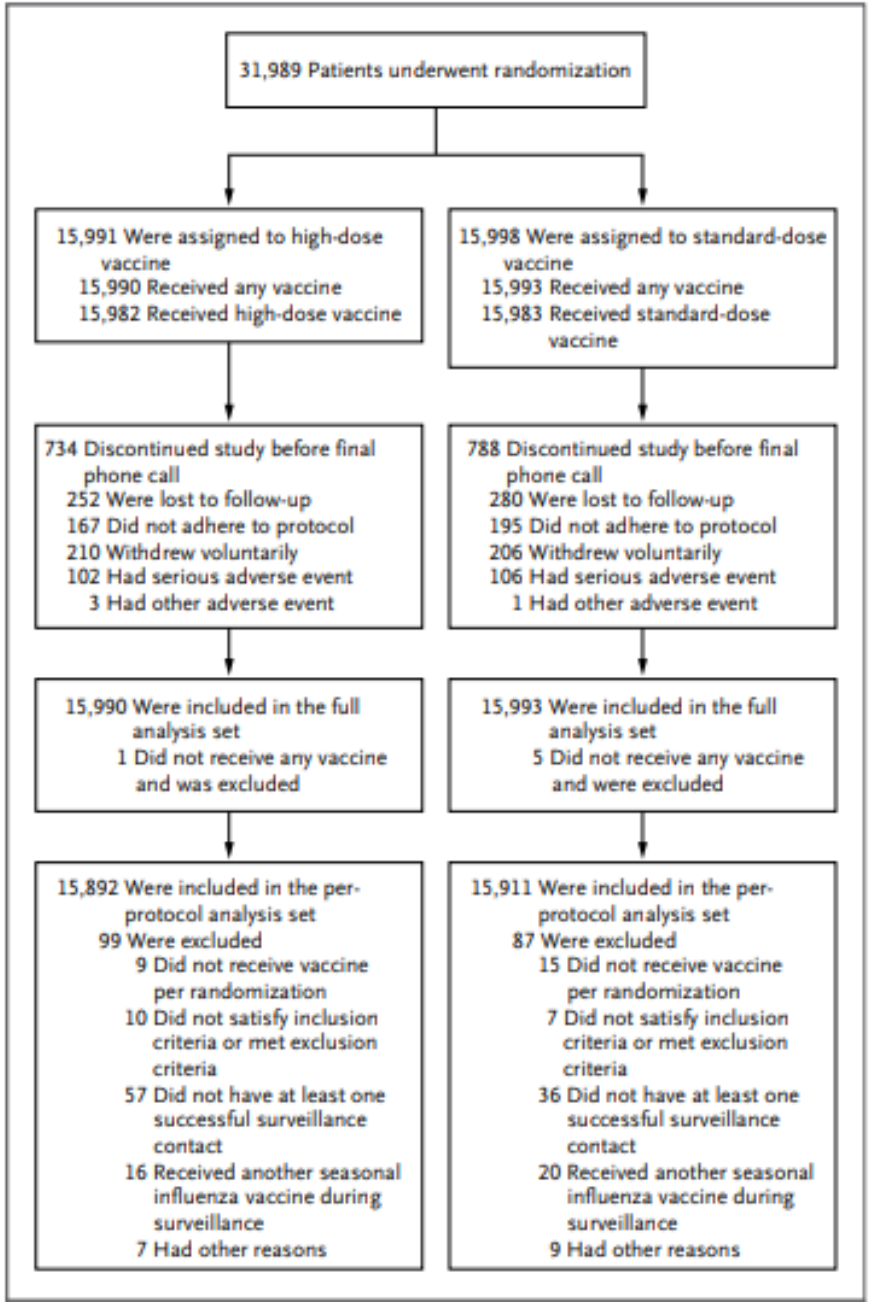


Figure 1. Enrollment and Follow-up of Study Participants.

Three participants in each group who had serious adverse events were institutionalized and unable to speak on the phone at the final call before study termination.

Efficacité relative

Table 2. Efficacy of High-Dose Vaccine Relative to Standard-Dose Vaccine against **Confirmed Influenza Caused by Any Viral Type or Subtype**.

Variable	Laboratory-Confirmed Influenza†		
	IIV3-HD (N=15,990)	IIV3-SD (N=15,993)	Relative Efficacy (95% CI)
	no. (%)		%
Protocol-defined influenza-like illness	228 (1.4)	301 (1.9)	24.2 (9.7 to 36.5)‡
Influenza A	190 (1.2)	250 (1.6)	24.0 (7.8 to 37.4)
A/H1N1	8 (<0.1)	9 (0.1)	11.1 (–159.6 to 70.2)
A/H3N2	171 (1.1)	223 (1.4)	23.3 (6.0 to 37.5)
Influenza B	38 (0.2)	51 (0.3)	25.5 (–15.7 to 52.4)

Table 3. Efficacy of High-Dose Vaccine Relative to Standard-Dose Vaccine against Confirmed Influenza Caused by **Strains Similar to the Vaccine Components.**

Variable	Laboratory-Confirmed Influenza*		
	IIV3-HD (N=15,990)	IIV3-SD (N=15,993)	Relative Efficacy (95% CI)
	no. (%)		%
Protocol-defined influenza-like illness	73 (0.5)	113 (0.7)	35.4 (12.5 to 52.5)
Influenza A	56 (0.4)	82 (0.5)	31.7 (2.9 to 52.3)
A/H1N1	7 (<0.1)	8 (0.1)	12.5 (–176.2 to 73.0)
A/H3N2	49 (0.3)	74 (0.5)	33.8 (3.7 to 54.8)
Influenza B	17 (0.1)	31 (0.2)	45.2 (–2.2 to 71.5)

Efficacy of High-Dose versus Standard-Dose Influenza Vaccine in Older Adults. CA. DiazGranados. NEJM 2014

Quelle immunodépression?

Table 4. Vaccine seroconversion response categories.

Category	General Seroconversion Rates	IC Types	Suggested Management
Good response	About >60% compared to healthy controls	• Chronic kidney disease requiring hemodialysis or peritoneal dialysis • HIV (normal CD4 counts) • Immune-mediated inflammatory diseases (e.g., RA, SLE) • Inflammatory bowel disease • Multiple sclerosis (treated) • Post-splenectomy status • Solid tumors	• Follow usual vaccination regime (including any booster doses), by default • Time vaccination when least immunosuppressed
Intermediate response	About 40–60% compared to healthy controls	• Anti-CTLA-4 therapy • Hematologic cancer • HIV (low CD4 counts)	• Time vaccination when least immunosuppressed • Shielding measures [a] • Consider high-dose vaccine, revaccination when less immunosuppressed
Poor response	About <40% compared to healthy controls	• B-cell-depleting agents (e.g., anti-CD20 therapy) • Hematopoietic stem-cell transplant recipients • Liver cirrhosis • Solid organ transplant recipient	• Time vaccination when least immunosuppressed • Shielding measures [a] • Consider high-dose vaccine, revaccination when less immunosuppressed • Consider checking seroconversion. If nonresponse, consider booster doses or long-acting monoclonal antibodies for pre-exposure prophylaxis [b]

Review Vaccination for the Prevention of Infection among Immunocompromised Patients: A Concise Review of Recent Systematic. Reviews Kay Choong See

Pathologies inflammatoires: RA, SLE, MICI…

Table 1
Influenza vaccination trials to improve immunogenicity in patients with inflammatory disorders.

Study	Type of study	N	Vaccine, regimen	Patients	Conclusions
Caldera et al. 2019 [31]	Randomized study	40	IIV3-HD[b] vs. IIV4-SD[b] (1 dose)	IBD patients treated with anti-TNF vs. healthy controls	Higher post-vaccination titers for A/H1N1 with IIV3-HD, significantly higher for A/H3N2
Colmegna et al. 2019 [35]	Randomized study	279	IIV3-HD[b] vs. IIV4-SD[b] (1 dose)	RA patients (stratified by DMARD, anti-cytokine, anti-B-cell, and small molecule therapy)	Seroprotection and seroconversion rates consistently higher with IIV3-HD. Age and vaccine dose found as predictors of vaccine seroresponse in logistic regression analyses
NCT01436370 [36]	Randomized study	51	IIV3-HD[b] vs. IIV3-SD[b] (1 dose)	RA patients receiving anti-TNF therapy	Trends for higher mean HAI titers and seroconversion rates in IIV3-HD group, but seroconversion rates not statistically superior to IIV3-SD group for any strain

Influenza vaccination in immunocompromised populations: Strategies to improve immunogenicity. F Caldera, Vaccine 2021

VIH

Annals of Internal Medicine | ORIGINAL RESEARCH

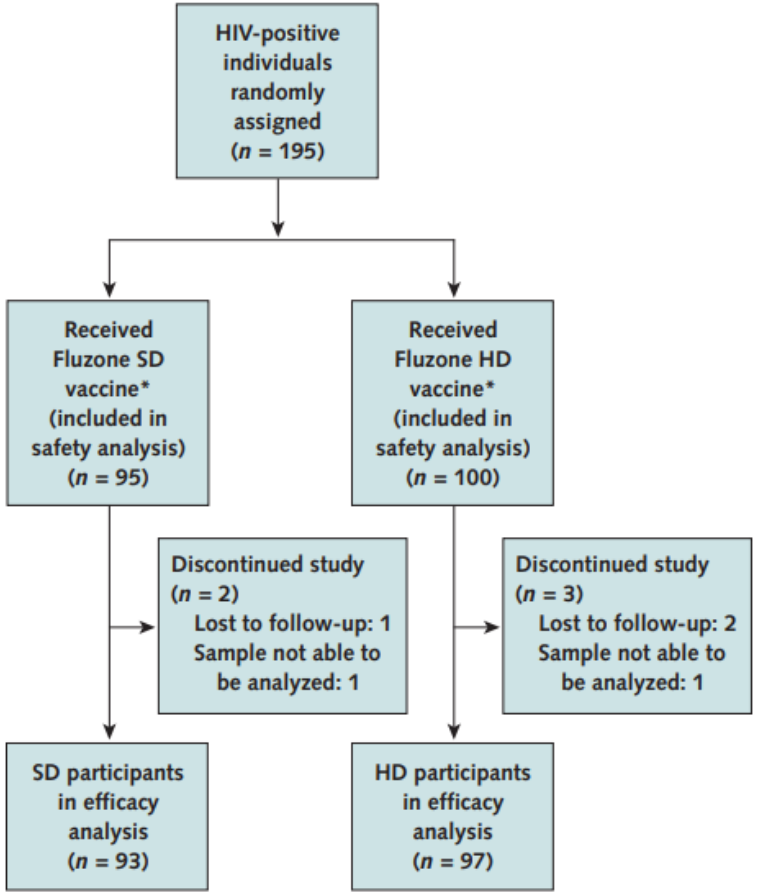
Improved Immunogenicity With High-Dose Seasonal Influenza Vaccine in HIV-Infected Persons

A Single-Center, Parallel, Randomized Trial

Noah McKittrick, MD; Ian Frank, MD; Jeffrey M. Jacobson, MD; C. Jo White, MD; Deborah Kim, RPh; Rosemarie Kappes, RN, MPH; Carol DiGiorgio, RN; Thomas Kenney, BS; Jean Boyer, PhD; and Pablo Tebas, MD, for the Center for AIDS Research

Table 1. **Baseline Characteristics**

Characteristic	SD Recipients (n = 95)	HD Recipients (n = 100)
Median age (IQR), *y*	46 (37 to 53)	44 (35 to 50)
Male, *n (%)*	73 (77)	64 (64)
Race/ethnicity, *n (%)*		
Asian/Pacific	1 (1)	0 (0)
Black	58 (61)	78 (78)
Hispanic	7 (7)	3 (3)
White	36 (38)	22 (22)
Receiving ART, %	88	90
HIV RNA load <400 copies/mL, %	89	88
HIV RNA load less than limit of detection, %	81	74
Median nadir CD4 count (IQR), × 10^9 *cells/L*	0.166 (0.037 to 0.278)	0.174 (0.045 to 0.343)
Median current CD4 count (IQR), × 10^9 *cells/L*	0.453 (0.301 to 0.660)	0.438 (0.275 to 0.625)
Current CD4 count <0.200 × 10^9 cells/L, *n (%)*	8 (8)	14 (14)
Vaccinated in 2009–2010, *n (%)*		
Trivalent	65 (68)	76 (76)
H1N1	37 (39)	47 (47)
Baseline HI antibody titer ≥1:40, *n (%)**		
H1N1	49 (52)	49 (49)
H3N2	49 (52)	44 (44)
Influenza B	49 (52)	48 (48)



VIH

Annals of Internal Medicine | ORIGINAL RESEARCH

Improved Immunogenicity With High-Dose Seasonal Influenza Vaccine in HIV-Infected Persons

A Single-Center, Parallel, Randomized Trial

Noah McKittrick, MD; Ian Frank, MD; Jeffrey M. Jacobson, MD; C. Jo White, MD; Deborah Kim, RPh; Rosemarie Kappes, RN, MPH; Carol DiGiorgio, RN; Thomas Kennev, BS; Jean Bover, PhD; and Pablo Tebas, MD, for the Center for AIDS Research

Table 2. **Prevaccination and Postvaccination GMTs**

Virus Strain	Day	HI GMTs (95% CI)		GMT Ratio (HD–SD) (95% CI)	*P* Value
		SD Recipients (n = 93)	HD Recipients (n = 97)		
H1N1 (A/California/07/2009 X-179A)	0	22 (14 to 37)	25 (15 to 40)	1.1 (0.4 to 1.8)	–
	21	344 (229 to 518)	686 (509 to 926)	2.0 (1.2 to 3.3)	0.008
H3N2 (A/Victoria/210/2009 X-187)	0	25 (16 to 42)	26 (16 to 42)	1.0 (0.5 to 1.8)	–
	21	324 (227 to 464)	739 (529 to 1032)	2.3 (1.4 to 3.7)	0.001
Influenza B (B/Brisbane/60/2008)	0	17 (11 to 25)	20 (14 to 28)	1.2 (0.5 to 1.4)	–
	21	64 (46 to 91)	140 (110 to 178)	2.2 (1.4 to 3.3)	<0.001

Table 3. **Seroconversion and Seroprotection Rates After Vaccination***

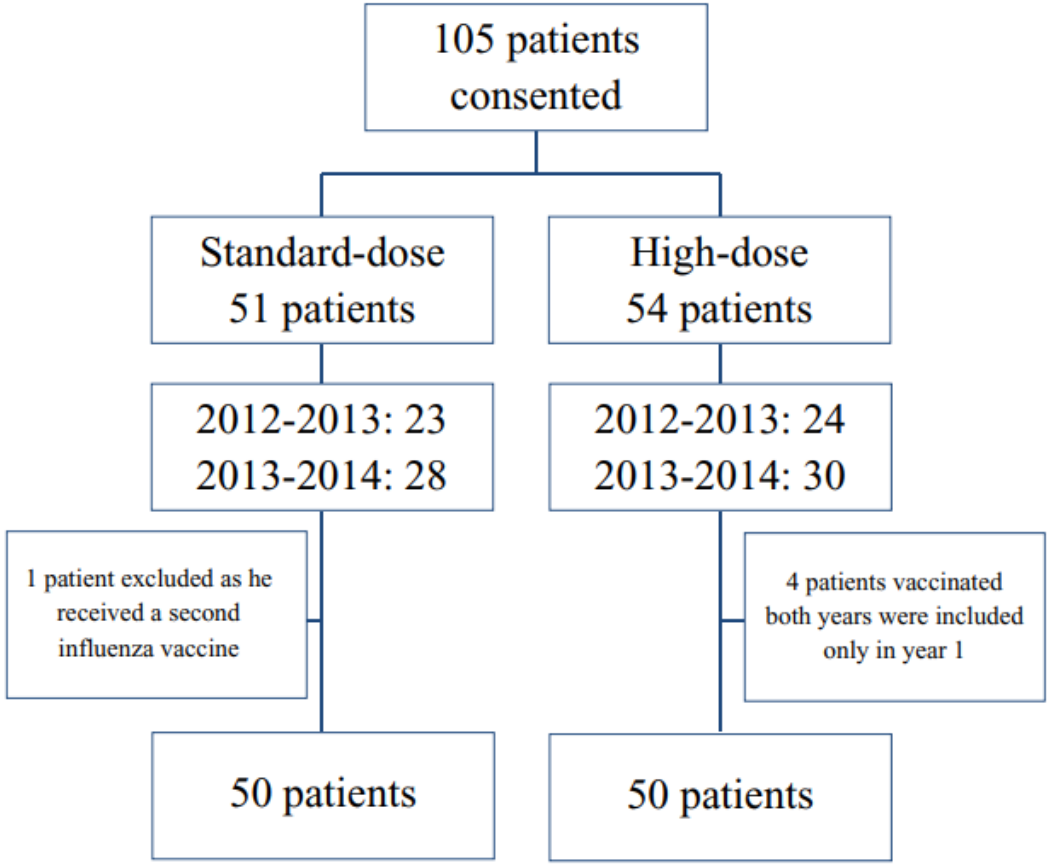
Variable	Type of Vaccine	Proportion (95% CI)		Difference (95% CI), *percentage points*	*P* Value
		SD Recipients (n = 93)	HD Recipients (n = 97)		
Seroconversion	H1N1	59 (49 to 69)	75 (67 to 84)	16 (3 to 29)	0.018
	H3N2	74 (65 to 83)	78 (70 to 87)	4 (−8 to 16)	0.50
	Influenza B	34 (25 to 44)	56 (46 to 66)	21 (7 to 35)	0.003
Seroprotection	H1N1	87 (80 to 94)	96 (92 to 100)	9 (1 to 17)	0.029
	H3N2	92 (87 to 98)	96 (92 to 100)	3 (−3 to 10)	0.32
	Influenza B	80 (71 to 88)	91 (85 to 97)	11 (1 to 21)	0.030

Cancer

Improved immunogenicity of high-dose influenza vaccine compared to standard-dose influenza vaccine in adult oncology patients younger than 65 years receiving chemotherapy: A pilot randomized clinical trial☆

Saad Jamshed[a,*], Edward E. Walsh[b], Lynda J. Dimitroff[c], Jeanine Seguin Santelli[c], Ann R. Falsey[b]

- Double aveugle, randomisé 1-1 SD vs HD
- 2 saisons: 2012-13 et 13-14
- 18-65 ans suivi pour un cancer / chimio
- Critères exclusions:
  - PNN<1G/l
  - Chimio non-myelosuppressive (anti CD20)
- Vaccin administré au J1 de chimiothérapie
- Immunogénicité: Sérum J28 HAI
- Objectif principal: geometric mean titers (GMTs)
- Objectifs 2dr: taux de seroprotection, taux de seroconversion, EI.



Cancer

- Population

Table 1
Demographics.

	Standard-dose (50) Mean (SD) or *n* (%)	High-dose (50) Mean (SD) or *n* (%)
Age	52.9 (7.95)	53.94 (7.16)
Female	26 (52%)	31 (62%)
Caucasian	40 (80%)	44 (88%)
African American	8 (16%)	5 (10%)
Solid tumor	45 (90%)	45 (90%)
Hematologic malignancy	5 (10%)	5 (10%)
Cancer diagnosis		
Breast	16 (32%)	17 (34%)
Lung	8 (16%)	6 (12%)
Gastrointestinal	16 (32%)	15 (30%)
Gynecologic	5 (10%)	7 (14%)
Cancer stage		
I/II/III + limited	32 (64%)	38 (56%)
IV + Extensive	18 (36%)	22 (44%)
Curative chemotherapy	29 (58%)	25 (50%)
Palliative chemotherapy	21 (42%)	25 (50%)
Single agent chemotherapy	14 (28%)	16 (32%)
Combination chemotherapy	36 (72%)	34 (68%)
Cycle number at vaccination		
≤3	27 (54%)	28 (56%)
≥4	23 (46%)	22 (44%)

Improved immunogenicity of high-dose influenza vaccine compared to standard-dose influenza vaccine in adult oncology patients younger than 65 years receiving chemotherapy: A pilot randomized clinical trial. Jamshed S, et al. Vaccine (2015)

Cancer

Table 2
Hemagglutination Inhibition (HAI) immunogenicity of standard-dose (SD) vaccine and high-dose (HD) vaccine.

Antigen	SD ($n=50$)	HD ($n=50$)	P value
Pre vaccination HAI GMT (95% CI)			
H1N1	266.1 (52.1–480.1)	125.2 (74.6–175.8)	0.59
H3N2	143.2 (64.5–221.9)	134.1 (54.9–213.2)	0.94
B	54.7 (31.6–77.8)	31.4 (20.4–42.3)	0.56
Post vaccination HAI GMT (95% CI)			
H1N1	979.1 (609.1–1349.0)	1350.1 (819.8–1880.4)	0.106
H3N2	811.2 (401.2–1221.3)	1143.4 (739.6–1547.3)	0.005
B	228.0 (129.9–326.2)	351.6 (215.6–487.7)	0.02
Seroconversion rate[a] (%)			
H1N1	46.0	72.0	0.014
H3N2	58.0	80.0	0.029
B	44.0	80.0	0.0004
Seroprotection rate[b] (%)			
H1N1	90.0	96.0	0.23
H3N2	96.0	96.0	1.0
B	72.0	88.0	0.17

The absolute difference (HD minus SD) in the percentage of patients with seroconversion was 26% for H1N1, 22% for H3N2, and 36% for B, representing significantly improved seroconversion rates with HD for all three strains

Improved immunogenicity of high-dose influenza vaccine compared to standard-dose influenza vaccine in adult oncology patients younger than 65 years receiving chemotherapy: A pilot randomized clinical trial. Jamshed S, et al. Vaccine (2015)

SOT

Clinical Infectious Diseases

MAJOR ARTICLE

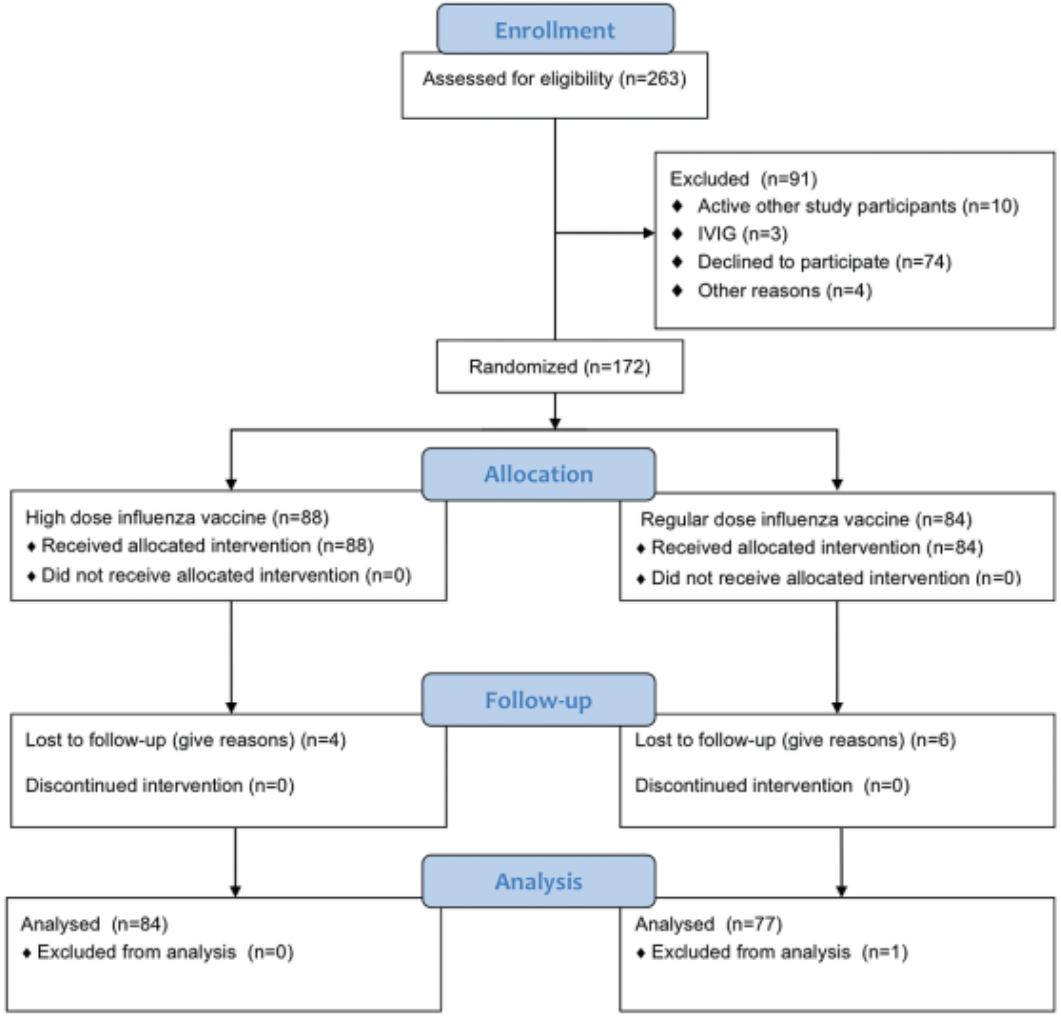
2017

- 10/2016 → 01/2017
- Monocentrique
- SOT > 3 mois
- Objectif principal:
  - Séroconversion contre au moins une souche grippale à J28.
- Suivi 6 mois

A Double-Blind, Randomized Trial of High-Dose vs Standard-Dose Influenza Vaccine in Adult Solid-Organ Transplant Recipients

Yoichiro Natori,[1] Mika Shiotsuka,[1] Jaclyn Slomovic,[1] Katja Hoschler,[2] Victor Ferreira,[1] Peter Ashton,[1] Coleman Rotstein,[1] Les Lilly,[1] Jeffrey Schiff,[1] Lianne Singer,[1] Atul Humar,[1,a] and Deepali Kumar[1,a]

[1]Multi Organ Transplant Program, University Health Network, University of Toronto, Ontario, Canada; and [2]Public Health England, London, United Kingdom



SOT

Table 1. Patient Characteristics at Enrollment

Characteristic	All (n = 172)	Standard Dose (n = 85)	High Dose (n = 87)	*P* Value
Age, median (range)	57 (18–86)	57(19–80)	57 (18–86)	.74
Male sex (%)	121 (70.3)	61 (71.8)	60 (69.0)	.69
Time from transplantation to vaccination (months), median (interquartile range)	38 (12–89.5)	33.5 (11–89.5)	48 (14–95)	.34
Within 1 year of transplantation (%)	40 (23.3)	22 (25.9)	18 (20.7)	.37
Previous year vaccination[a] (%)	116 (67.1)	59 (69.4)	64 (73.6)	.55
History of documented influenza[b] (%)	7 (4.1)	6 (7.1)	1 (1.1)	.06
Antithymocyte globulin within 6 months prior (%)	4 (2.3)	3 (3.5)	1 (1.1)	.37
Previous rejection (%)	4 (2.3)	3 (3.5)	1 (1.1)	.37
Type of transplant (%)				
Kidney	67 (39.0)	30 (35.3)	37 (42.5)	
Liver	38 (22.1)	19 (22.4)	19 (21.8)	
Lung	25 (14.5)	15 (17.6)	10 (11.5)	
Heart	23 (13.3)	12 (14.1)	11 (12.6)	
Combined	19 (11.0)	8 (9.4)	11 (12.6)	.77
Immunosuppression				
Prednisone (%)	131 (76.2)	64 (75.3)	67 (77.0)	.79
Prednisone dose, mg/day, median (range)	5 (2–40)	5 (2.5–40)	5 (2–30)	.60
Tacrolimus (%)	126 (73.3)	60 (70.6)	66 (75.9)	.44
Cyclosporine (%)	35 (20.3)	21 (24.7)	14 (16.1)	.16
Mycophenolate mofetil/mycophenolate sodium (%)	115 (66.9)	59 (69.4)	56 (64.4)	.48
Azathioprine (%)	11 (6.4)	8 (9.4)	3 (3.4)	.13
Sirolimus (%)	12 (7.0)	6 (7.1)	6 (6.9)	.99

A Double-Blind, Randomized Trial of High-Dose vs Standard-Dose Influenza Vaccine in Adult Solid-Organ Transplant Recipients Yoichiro Natori, CID 2018

SOT

Table 2. Seroconversion to High-Dose vs Standard-Dose Influenza Vaccine, per-protocol Population

	Standard Dose (n = 77)	High Dose (n=84)	*P* Value
Seroconversion (%)			
A/H1N1	16 (20.8)	34 (40.5)	.007
A/H3N2	25 (32.5)	48 (57.1)	.002
B/Brisbane	32 (41.6)	49 (58.3)	.033
B/Phuket[a]	11 (14.3)	28 (33.3)	.005
Geometric mean fold rise			
A/H1N1	14.0	20.3	.001
A/H3N2	28.5	31.7	.005
B/Brisbane	5.4	20.4	.002
B/Phuket[a]	3.1	24.7	.011

[a]Influenza B strain not contained in study vaccines.

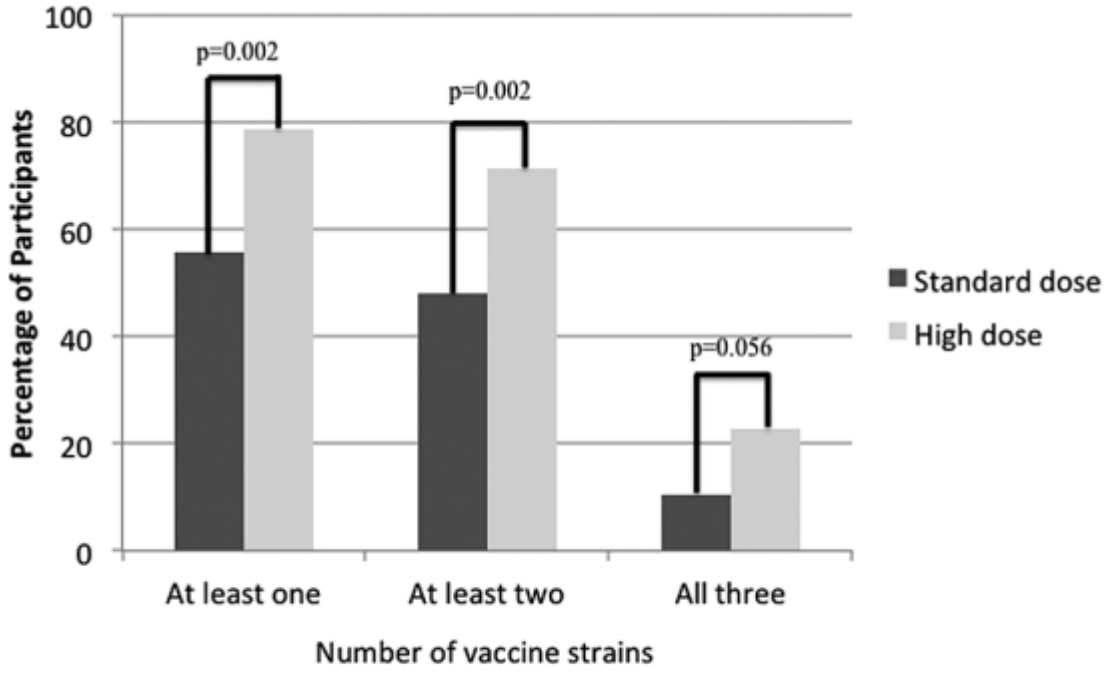


Figure 2. Seroconversion rates to at least 1, at least 2, or all 3 vaccine antigens based on vaccine type.

A Double-Blind, Randomized Trial of High-Dose vs Standard-Dose Influenza Vaccine in Adult Solid-Organ Transplant Recipients Yoichiro Natori, CID 2018

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Clinical Infectious Diseases

MAJOR ARTICLE

2024

- Saisons 2018-19 et 19-20
- Multicentrique (6 puis 9)
- Exclusion si IgIV, antiCD20, anti C5
- Objectif principal:
  - Séroconversion contre au moins une souche grippale à J28.
- Objectif 2dr:
  - % de grippe clinique ou asymptomatique à J180
- Suivi 6 mois

Immunogenicity of High-Dose Versus MF59-Adjuvanted Versus Standard Influenza Vaccine in Solid Organ Transplant Recipients: The Swiss/Spanish Trial in Solid Organ Transplantation on Prevention of Influenza (STOP-FLU Trial)

Matteo Mombelli,[1,2,a] Dionysios Neofytos,[3,©] Uyen Huynh-Do,[4] Javier Sánchez-Céspedes,[5,6,7] Susanne Stampf,[8] Dela Golshayan,[1] Suzan Dahdal,[4] Guido Stirnimann,[9] Aurelia Schnyder,[10] Christian Garzoni,[11] Reto M. Venzin,[12] Lorenzo Magenta,[13] Melanie Schönenberger,[8] Laura Walti,[14] Cédric Hirzel,[14]

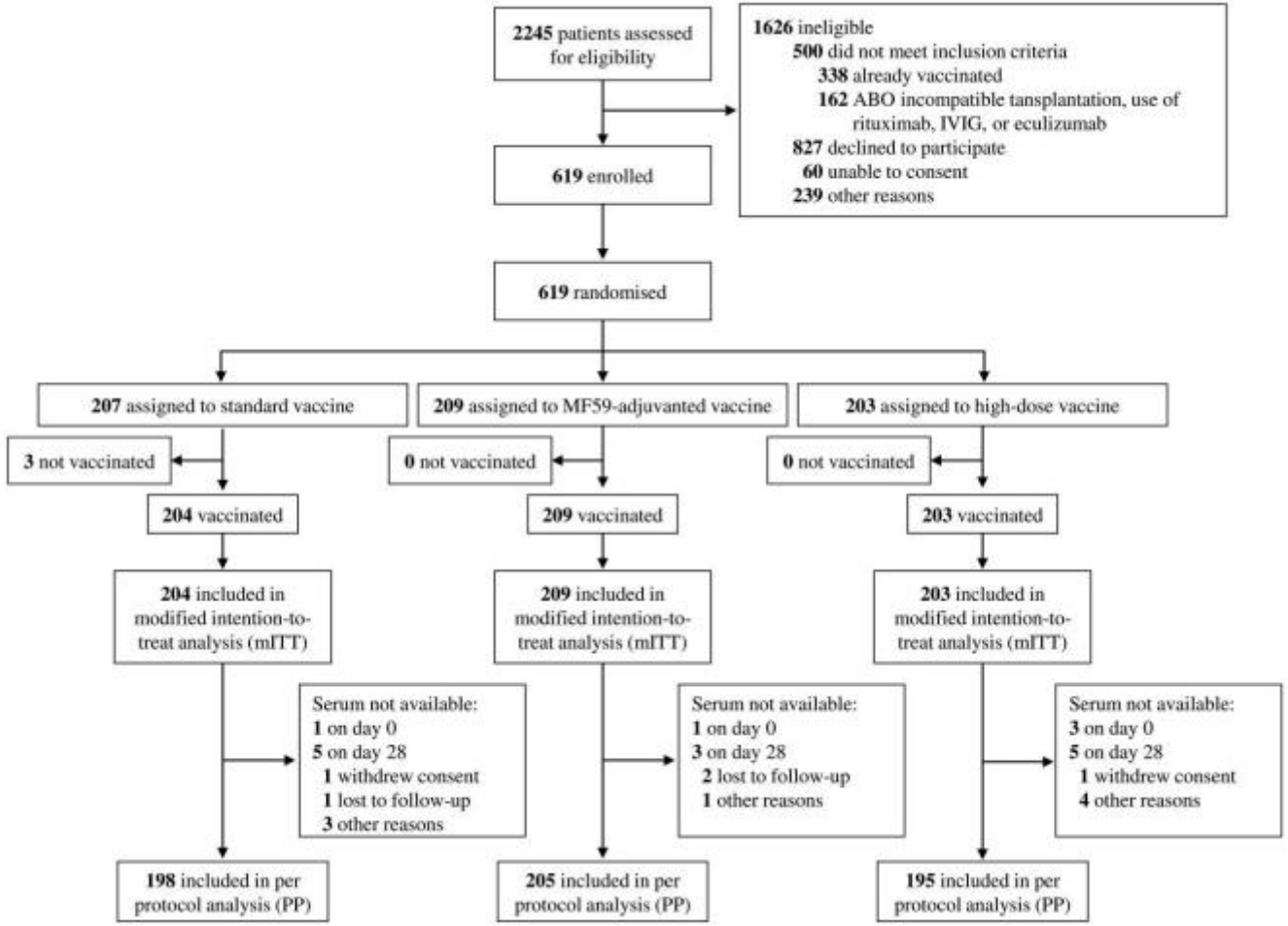

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Table 1. Baseline Characteristics of the Participants Included in the Modified Intention-to-Treat Population

	Standard Vaccine (n = 204)	MF59-Adjuvanted Vaccine (n = 209)	High-Dose Vaccine (n = 203)
Age, median (IQR)	58 (49, 65)	57 (45, 64)	56 (47, 66)
Sex (male), n (%)	150 (74)	148 (71)	139 (69)
Months after transplantation, median (IQR)	30 (11, 108)	49 (11, 109)	57 (12, 120)
Less than 1 year after transplantation, n (%)	57 (28)	56 (27)	52 (26)
Transplanted organ			
Kidney	140 (69)	140 (67)	136 (67)
Liver	44 (22)	43 (21)	29 (14)
Heart	10 (5)	10 (5)	16 (8)
Lung	6 (3)	6 (3)	13 (6)
Pancreas	1 (0.5)	2 (1)	4 (2)
Combined[a]	3 (2)	8 (4)	5 (3)
Previous transplantation	21 (10)	26 (13)	20 (10)
Induction immunosuppression[b], n (%)			
ATG	25 (13)	28 (14)	27 (14)
Basiliximab	116 (59)	96 (47)	90 (47)
Other	34 (17)	36 (17)	22 (11)
Maintenance immunosuppression, n (%)			
Tacrolimus	145 (71)	148 (71)	141 (70)
Cyclosporin	37 (18)	40 (19)	44 (22)
Mycophenolate	165 (81)	161 (77)	150 (74)
Azathioprine	7 (3)	8 (4)	21 (10)
mTOR inhibitor	20 (10)	22 (11)	14 (7)
Prednisone	119 (58)	136 (65)	120 (59)
Other	5 (3)	8 (4)	4 (2)
Influenza vaccine in the previous season[c], n (%)	169 (83)	176 (84)	166 (82)
Previous influenza vaccine[d], n (%)	178 (87)	190 (91)	177 (88)

Immunogenicity of High-Dose Versus MF59-Adjuvanted Versus Standard Influenza Vaccine in Solid Organ Transplant Recipients: The Swiss/Spanish Trial in Solid Organ Transplantation on Prevention of Influenza (STOP-FLU Trial) Matteo Mombelli,CID 2024

SOT

HD: meilleure immunogénicité

Table 2. Primary Outcome for Patients Receiving the High-Dose, MF59-Adjuvanted and Standard Influenza Vaccines in the Per-Protocol Population

	Vaccine Response Rate	Risk Difference	*P* Value
High-dose and MF59-adjuvanted versus standard vaccine[a]	63% (251/400) versus 42% (84/198)	0.20 (97.5% CI, .12–1)	<.001
High-dose versus standard vaccine[a]	66% (129/195) versus 42% (84/198)	0.24 (95% CI, .16–1)	<.001
MF59-adjuvanted versus standard vaccine[b]	60% (122/205) versus 42% (84/198)	0.17 (97.5% CI, .08–1)	<.001
High-dose versus MF59-adjuvanted vaccine[b]	66% (129/195) versus 60% (122/205)	0.07 (95% CI, −.01 to 1)	.085

Absence d'impact clinique

Table 4. Episodes of Microbiologically Confirmed Influenza Included in the Per-Protocol Population

	Standard Vaccine (n = 198)	MF59-Adjuvanted Vaccine (n = 205)	High-Dose Vaccine (n = 195)
Patients with influenza, n (%)	11 (6)	11 (5)	13 (7)
Median days from vaccination to influenza (IQR)	91 (89, 106)	70 (66, 89)	96 (68, 103)
Viral strain			
A H1N1	5 (3)	5 (2)	4 (2)
A nonspecified	4 (2)	5 (2)	5 (3)
B	2 (1)	1 (0.5)	4 (2)
Influenza season			
2018/2019	5 (3)	6 (3)	5 (3)
2019/2020	6 (3)	5 (2)	8 (4)
Symptomatic influenza, (%)	8 (4)	8 (4)	10 (5)
Diagnosed by surveillance PCR[a], n (%)	10 (5)	7 (3)	9 (5)
Clinical outcomes			
Viral pneumonia, n (%)	0 (0)	0 (0)	0 (0)
Bacterial pneumonia, n (%)	0 (0)	1 (0.5)	1 (0.5)
Hospital admission, n (%)	0 (0)	1 (0.5)	1 (0.5)
ICU admission, n (%)	0 (0)	0 (0)	0 (0)

Immunogenicity of High-Dose Versus MF59-Adjuvanted Versus Standard Influenza Vaccine in Solid Organ Transplant Recipients: The Swiss/Spanish Trial in Solid Organ Transplantation on Prevention of Influenza (STOP-FLU Trial) Matteo Mombelli,CID 2024

BMT

Clinical Infectious Diseases

MAJOR ARTICLE

2024

Comparison of Two High-Dose Versus Two Standard-Dose Influenza Vaccines in Adult Allogeneic Hematopoietic Cell Transplant Recipients

Lora D. Thomas,[1,a] Einas Batarseh,[2,a] Lubna Hamdan,[2] Zaid Haddadin,[2] Daniel Dulek,[2] Spyros Kalams,[2] Laura S. Stewart,[3] Anna L. Stahl,[2] Herdi Rahman,[2] Justin Z. Amarin,[2] Haya Hayek,[2] Michael Ison,[4] Edgar T. Overton,[5] Steven A. Pergam,[6] Andrew J. Spieker,[7,a] and Natasha B. Halasa[2,a]; the Adult HCT Flu Study

- 2 SD-QIV vs 2 HD-TIV
  - 28 à 42j entre chaque dose
- M3-M23 post HCT
- 2 saisons: 2017-18 et 18-19
- 4 sites
- Objectif principal:
  - Adjusted geometric mean ratios (aGMR) comparing the GMT between HD-TIV and SD-QIV M1 post 2d dose.

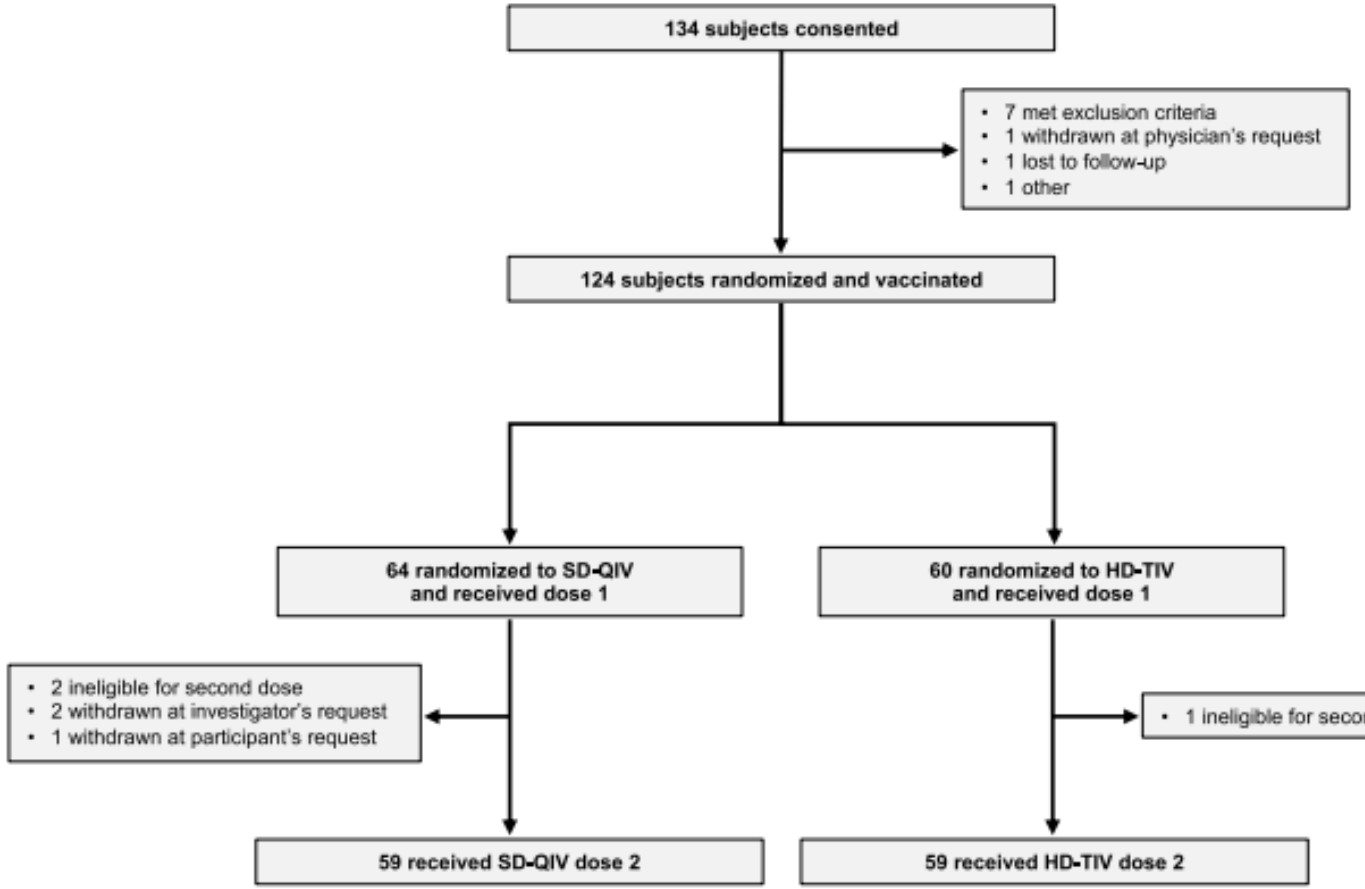

Figure 1. Enrollment, randomization, and vaccine status. A total of 134 participants were consented, among whom 124 were subsequently randomized and vaccinat
Among the 64 participants randomized to receive SD-QIV, 59 (92%) received both doses; among the 60 participants randomized to receive HD-TIV, 59 (98%) received b
doses. Abbreviations: HD-TIV, high-dose trivalent; SD-QIV, standard-dose quadrivalent.

BMT

- Population
  - Jeune (52 ans)
  - Néoplasie (96%)
  - 5,6 mois post Allo G
  - Cytaphérèse (80%)
  - Myeloablation (50%)

Comparison of Two High-Dose Versus Two Standard-Dose Influenza Vaccines in Adult Allogeneic Hematopoietic Cell Transplant Recip

Lora D. Thomas,[1,a,©] Einas Batarseh,[2,a] Lubna Hamdan,[2] Zaid Haddadin,[2] Daniel Dulek,[2] Spyros Kalams,[2] Laura S. Stewart,[3] An
Justin Z. Amarin,[2] Haya Hayek,[2] Michael Ison,[4] Edgar T. Overton,[5] Steven A. Pergam,[6] Andrew J. Spieker,[7,a] and Natasha B.
Study

Table 1. Cohort Demographics and Clinical Characteristics, Further Stratified by Treatment Arm

	All (N = 124)	Control (SD-QIV) (N = 64)	Experimental (HD-TIV) (N = 60)
Demographics			
Age at enrollment, y			
Mean (SD)	52.7 (15.3)	56.8 (14.1)	48.4 (15.3)
Gender, no. (%)			
Male	76 (61.3)	42 (65.6)	34 (56.7)
Transplant characteristics, no. (%)			
Reason for transplant			
Malignant	120 (96.8)	63 (98.4)	57 (95.0)
AML/ANLL	60/120 (50.0)	31/63 (49.2)	29/57 (50.9)
ALL	17/120 (14.2)	7/63 (11.1)	10/57 (17.5)
CML	6/120 (5.0)	4/63 (6.4)	2/57 (3.5)
MDS/MPN	20/120 (16.7)	13/63 (20.6)	7/57 (12.3)
Other	17/120 (14.2)	8/63 (12.7)	9/63 (14.3)
Non-malignant	4 (3.2)	1 (1.6)	3 (5.0)
Severe aplastic anemia	3/4 (75.0)	1/1 (100)	2/3 (66.7)
Other	1/4 (25.0)	0 (0)	1/3 (33.3)
Time from transplant to enrollment, mo			
Median (IQR)	5.6 (3.7, 8.6)	6.0 (3.6, 7.9)	5.2 (4.0, 9.5)
≥3 to <6 mo	71 (57.3)	33 (51.6)	38 (63.3)
≥6 to <12 mo	31 (25.0)	20 (31.3)	11 (18.3)
≥12 to <36 mo	22 (17.7)	11 (17.2)	11 (18.3)
Donor type			
Unrelated	71 (57.3)	35 (54.7)	36 (60.0)
Related	53 (42.7)	29 (45.3)	24 (40.0)
Stem cell source			
Bone marrow	19 (15.3)	8 (12.5)	11 (18.3)
Peripheral blood	98 (79)	54 (84.4)	44 (73.3)
Umbilical cord blood	7 (5.7)	2 (3.1)	5 (8.3)
Condition preparation regimen			
Myeloablative	59 (48.4)	30 (48.4)	29 (48.3)
Reduced-intensity or non-myeloablative	60 (49.2)	30 (48.4)	30 (50)
Total body irradiation	45 (39.1)	21 (36.2)	24 (42.1)
T-cell depletion	17 (14.4)	9 (14.8)	8 (14.0)
GVHD status at vaccine 1			
Acute	7 (5.7)	6 (9.4)	1 (1.7)
Chronic	28 (22.6)	16 (25.0)	12 (20.0)
Rituximab post-transplant	17 (13.7)	5 (7.85)	12 (20.0)

BMT

Clinical Infectious Diseases

MAJOR ARTICLE

2024

Comparison of Two High-Dose Versus Two Standard-Dose Influenza Vaccines in Adult Allogeneic Hematopoietic Cell Transplant Recipients

Lora D. Thomas,[1,a,©] Einas Batarseh,[2,a] Lubna Hamdan,[2] Zaid Haddadin,[2] Daniel Dulek,[2] Spyros Kalams,[2] Laura S. Stewart,[3] Anna L. Stahl,[2] Herdi Rahman,[2] Justin Z. Amarin,[2] Haya Hayek,[2] Michael Ison,[4] Edgar T. Overton,[5] Steven A. Pergam,[6] Andrew J. Spieker,[7,a] and Natasha B. Halasa[2,a]; the Adult HCT Flu Study

Table 3. Point Estimates and 95% CIs for aGMRs Associated With Each Model Covariate for Visit 3 (Post-Dose 2) HAI Titers to Influenza Antigens

	A/H1N1		A/H3N2		B/Victoria	
	aGMR	95% CI	aGMR	95% CI	aGMR	95% CI
HD-TIV	1.24	[0.67, 2.36]	**2.25**	**[1.20, 4.22]**	**1.60**	**[0.96, 2.67]**
log_2-baseline titer	**1.23**	**[1.06, 1.43]**	**1.33**	**[1.16, 1.52]**	**1.25**	**[1.10, 1.41]**
Age (y)	1.00	[0.98, 1.02]	1.00	[0.98, 1.02]	0.99	[0.98, 1.01]
Time post-HCT (mo)	1.06	[0.99, 1.14]	**1.06**	**[1.00, 1.14]**	1.00	[0.95, 1.06]
$CD4^+$ count	**1.21**	**[1.00, 1.47]**	1.14	[0.94, 1.40]	**1.18**	**[1.01, 1.39]**
$CD19^+$ count	1.12	[0.96, 1.29]	**1.24**	**[1.07, 1.44]**	**1.25**	**[1.11, 1.40]**
ALC (100/μL)	0.96	[0.91, 1.02]	0.94	[0.89, 1.00]	**0.94**	**[0.90, 0.99]**
GVHD history	1.28	[0.64, 2.54]	0.83	[0.41, 1.71]	0.95	[0.53, 1.67]

Bolding indicates statistical significance at the 0.05 level (two-sided).

Abbreviations: AGMR, adjusted geometric mean ratio; ALC, absolute leukocyte count; CI, confidence interval; GVHD, graft versus host disease; HD-TIV, high-dose trivalent; SD-QIV, standard-dose quadrivalent.

In a prior phase III study in the elderly comparing a single dose of HD-TIV to a single dose of SD-TIV, a superiority GMR benchmark of 1.5 was needed for licensure [20]. This benchmark (ie, aGMR comparing HD-TIV to SD-QIV) was met for both A/H3N2 (aGMR: 2.03) and B/Victoria (aGMR: 1.63) after 2 doses in our HD-TIV group. The previous studies

Cout efficacité

- Nombreuses études en pop âgée en faveur HD.
- Exceptionnelle études sur pop à risque jeune (50-65 ans)

Cost-effectiveness and public health impact of alternative influenza vaccination strategies in high-risk adults

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Vaccine 35 (2017) 5708–5713

Table 2
Cost-effectiveness analysis results for influenza vaccination strategies in high-risk middle-aged U.S. adults (per-person costs and effectiveness).

Strategy	Cost	Increased cost	Effectiveness (QALY)	Incremental effectiveness (QALY)	Incremental cost-effectiveness ratio
SD-IIV3 only	$99.84	–	−0.001373	–	–
SD-IIV4 only	$100.75	$0.91	−0.001349	0.000024	$37,700
HD-IIV3 in high-risk, SD-IIV3 in others	$101.17	$0.42	−0.001351	−0.000002	Dominated
HD-IIV3 in high-risk, SD-IIV4 in others	$101.81	$1.06	−0.001334	0.000015	$71,500
No vaccine	$104.07	$2.26	−0.001586	−0.000252	Dominated

SD-IIV3 = Standard-dose trivalent inactivated influenza vaccine; SD-IIV4 = standard-dose quadrivalent inactivated influenza vaccine; HD-IIV3 = high-dose trivalent inactivated influenza vaccine; RIV = recombinant hemagglutinin influenza vaccine

Recommandations HD pour IS

- Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2024-25 Summary of Recommendations

IMMUNOCOMPROMISED PERSONS

- Immunocompromised persons should receive IIV3 or RIV3. LAIV3 should not be used.
- Solid organ transplant recipients aged 18 through 64 years who are receiving immunosuppressive medication regimens may receive HD-IIV3 or aIIV3 as acceptable options (without a preference over other age-appropriate IIV3s or RIV3).
- Immune response might be reduced in persons on certain medications, chemotherapy, or transplant regimens.
- The Infectious Diseases Society of America (IDSA) has published guidance concerning the timing of vaccination in relation to such interventions (see ***Further Information***, this page).

Vaccin HD: oui MAIS…

- Vaccin efficace
  - Adapté à la souche circulante → OMS
  - Immunogénicité forte→ HD > SD
  - Peut être pas tous les IS: SOT, cancer, AlloG (renforcé), Path Infl, VIH
- Vaccin accepté → Communication +++
- Vaccin disponible → Autorité de santé/Laboratoire
- Parcours vaccinal clair: spécialiste ou généraliste?
- Vaccination de l’entourage

Merci pour votre attention