

# L'année en 3 papiers - Infections virales-

## Le virus respiratoire syncytial: virus de l'année !

29<sup>ème</sup> Journée Régionale de Pathologie Infectieuse (JRPI)

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MCU-PH Virologie



Lille, le 10 Octobre 2023

# IMPORTANCE DE L'INFECTION PAR LE VRS



## Dans le monde (enfants de 0 à 60 mois)

- 33 millions d'infection à VRS
- 3,6 millions d'hospitalisations
- Plus de 100 mille décès par an

Li Y, Lancet 2022; 399:2047-64

## En Europe

50% des hospitalisations chez les moins d'1 an  
60% des cas sont chez des moins de 3 mois

Wildenbeest JG, Lancet Respir Med 2023; 11: 341–53



## Sujets de plus de 60 ans

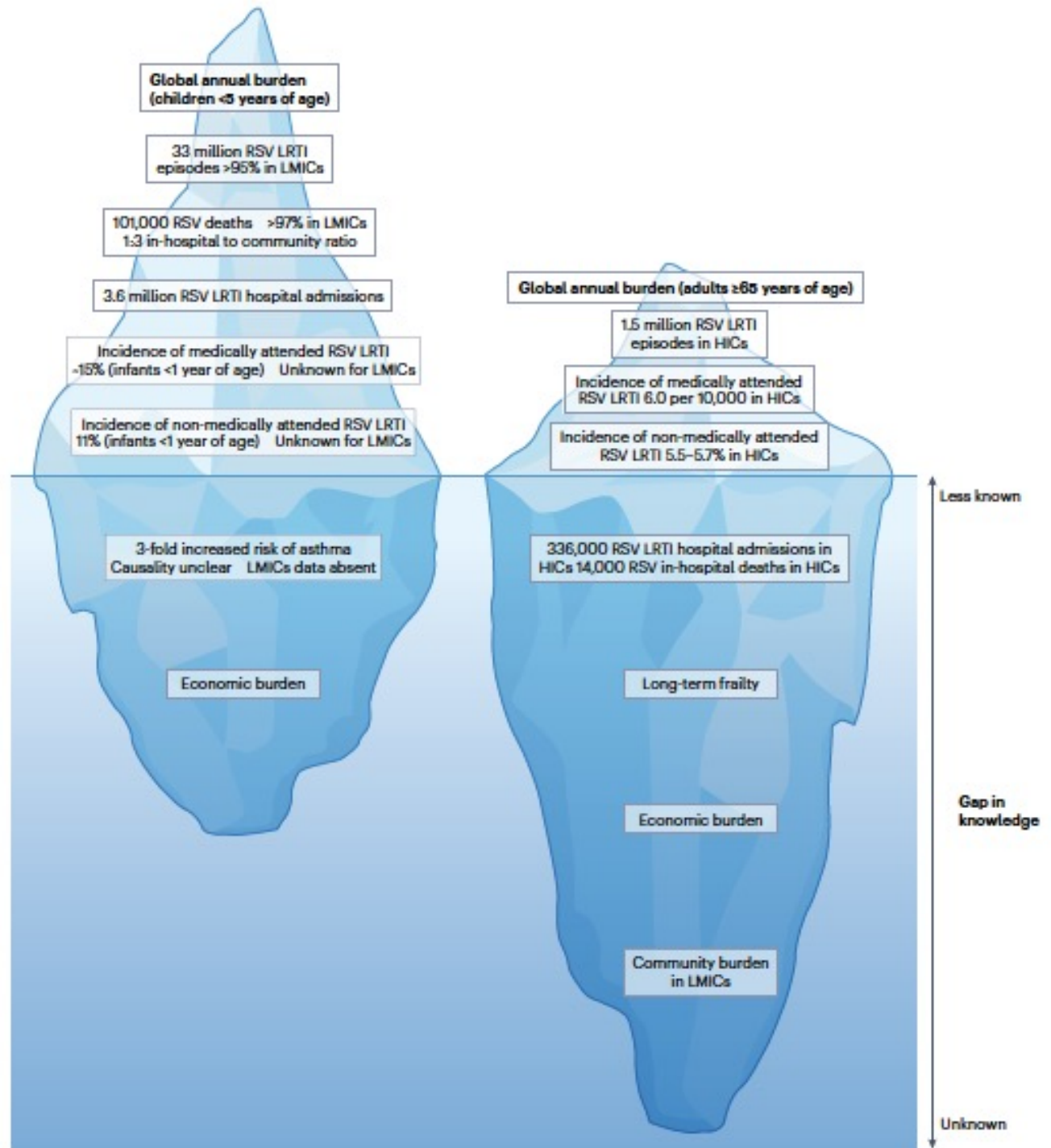
- 3 à 7% des personnes «non malades »
- USA: 177 mille hospitalisations;  
14 mille décès

Falsey AR, N Engl J Med 2005; Korsten K, Eur Respir J 2021.

## Morbi-mortalité > grippe ?

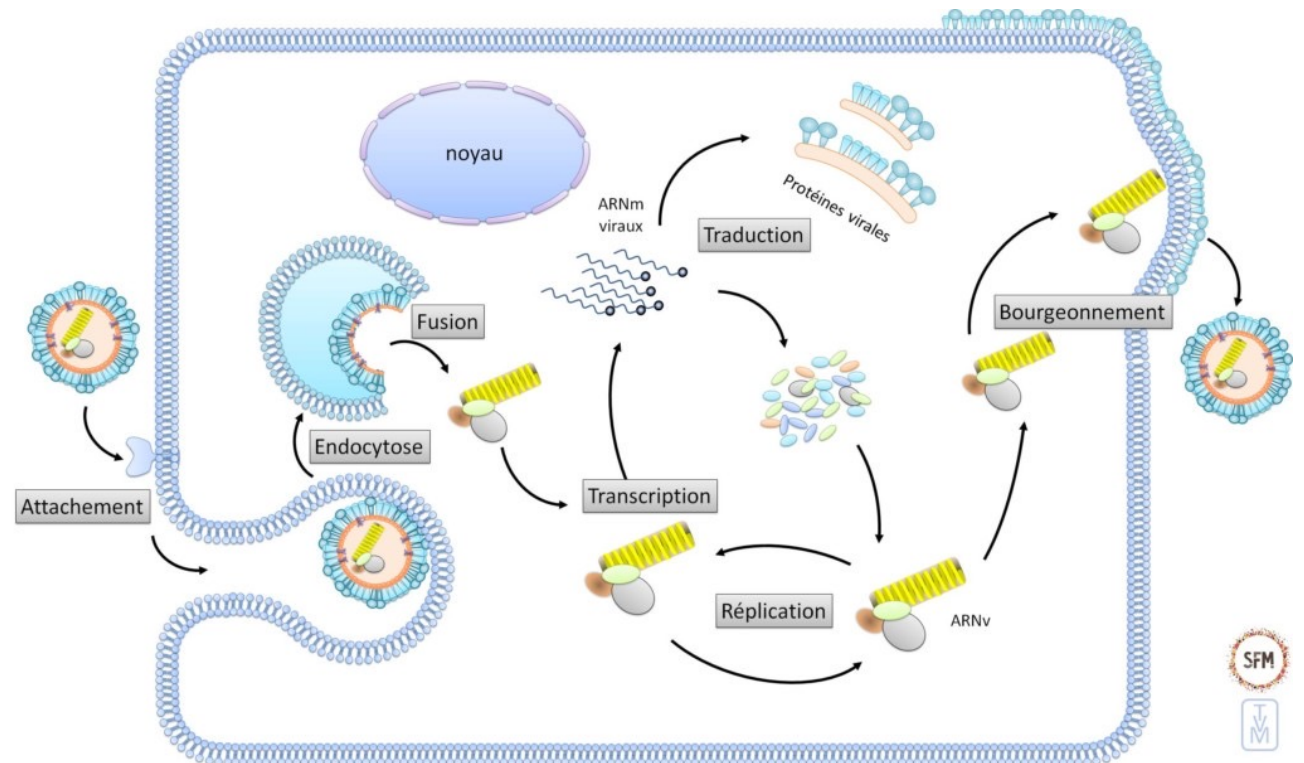
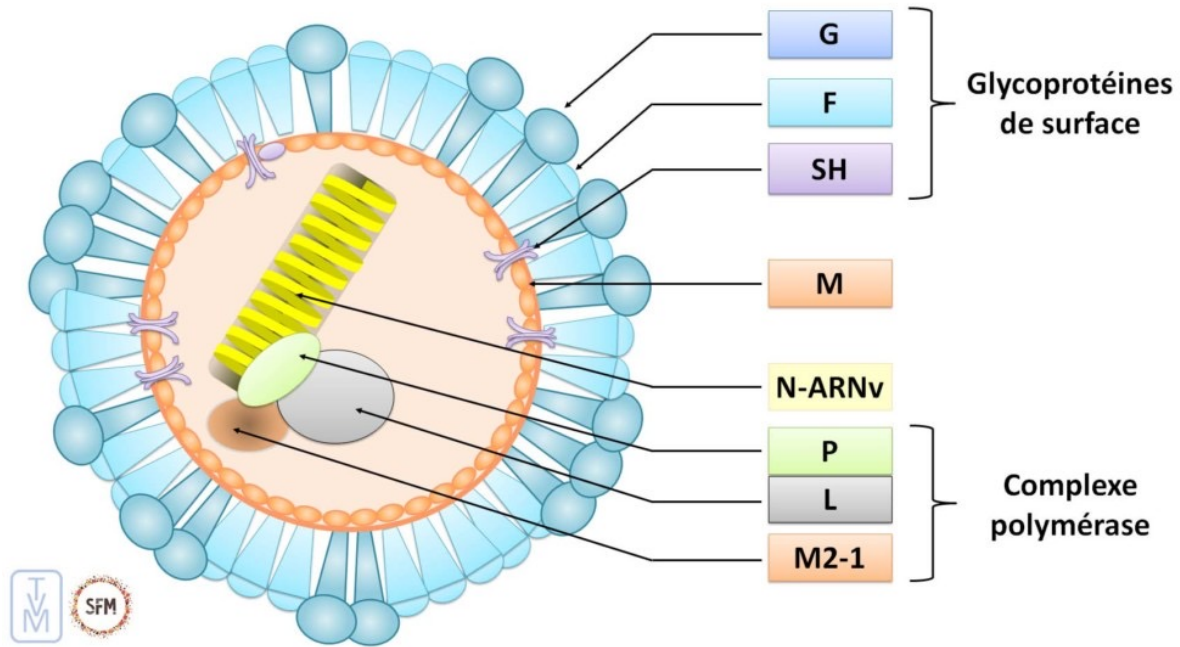
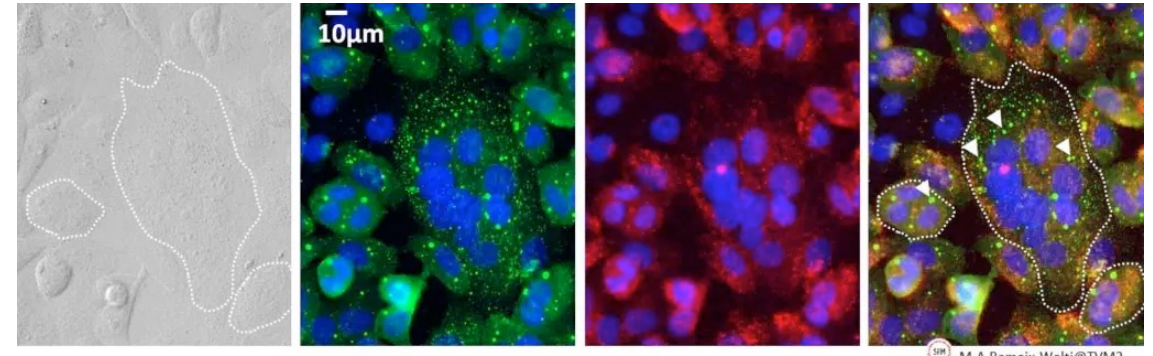
Ackerson B, Clin Infect Dis 2019; 69: 197-203.

# IMPORTANCE DE L'INFECTION PAR LE VRS



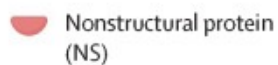
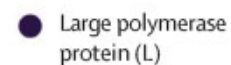
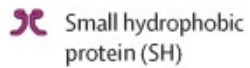
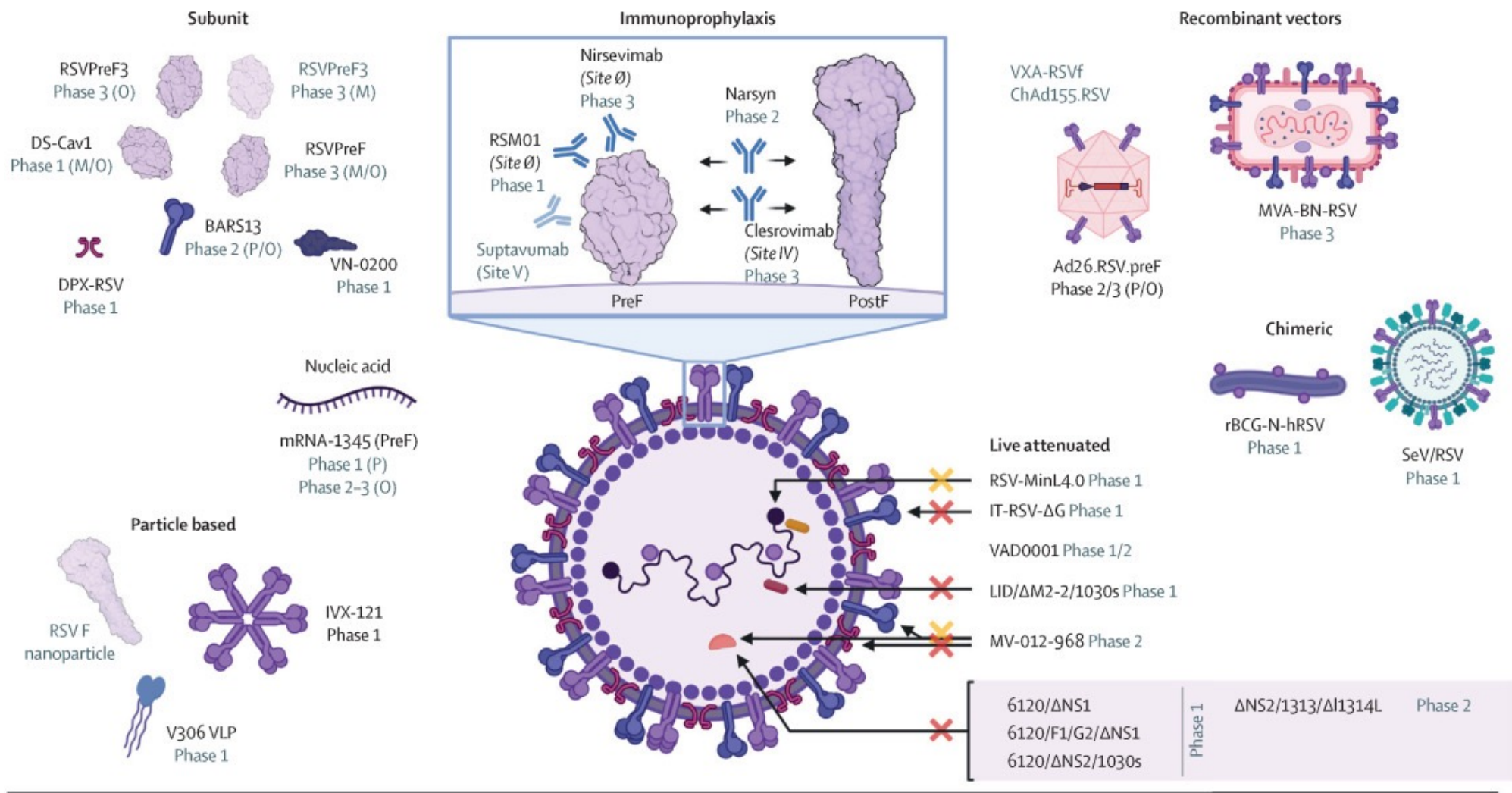
Langedijk et Bont, Nat Rev Microbiol . 2023 Jul

# LE VIRUS RESPIRATOIRE SYNCYTIAL

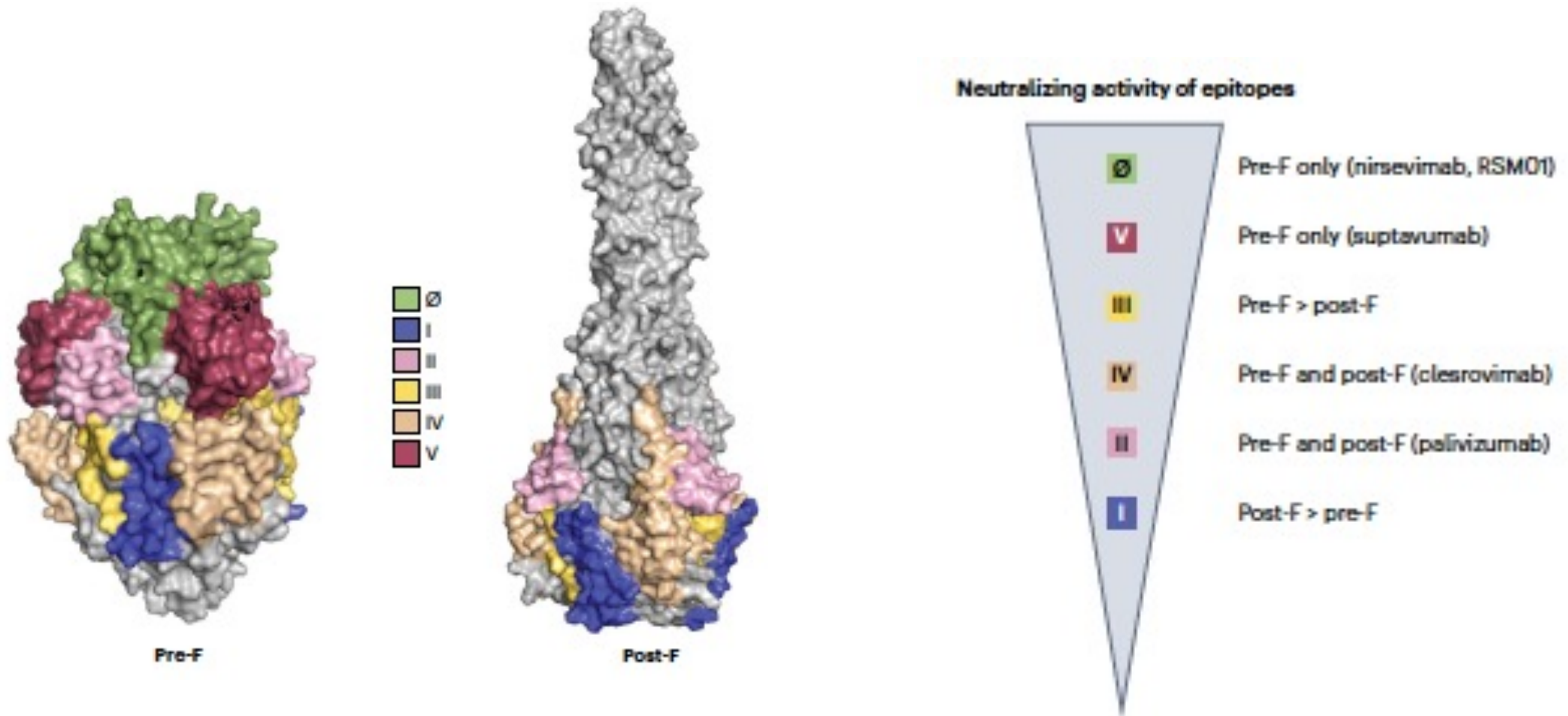




# Respiratory syncytial virus prevention within reach: the vaccine and monoclonal antibody landscape

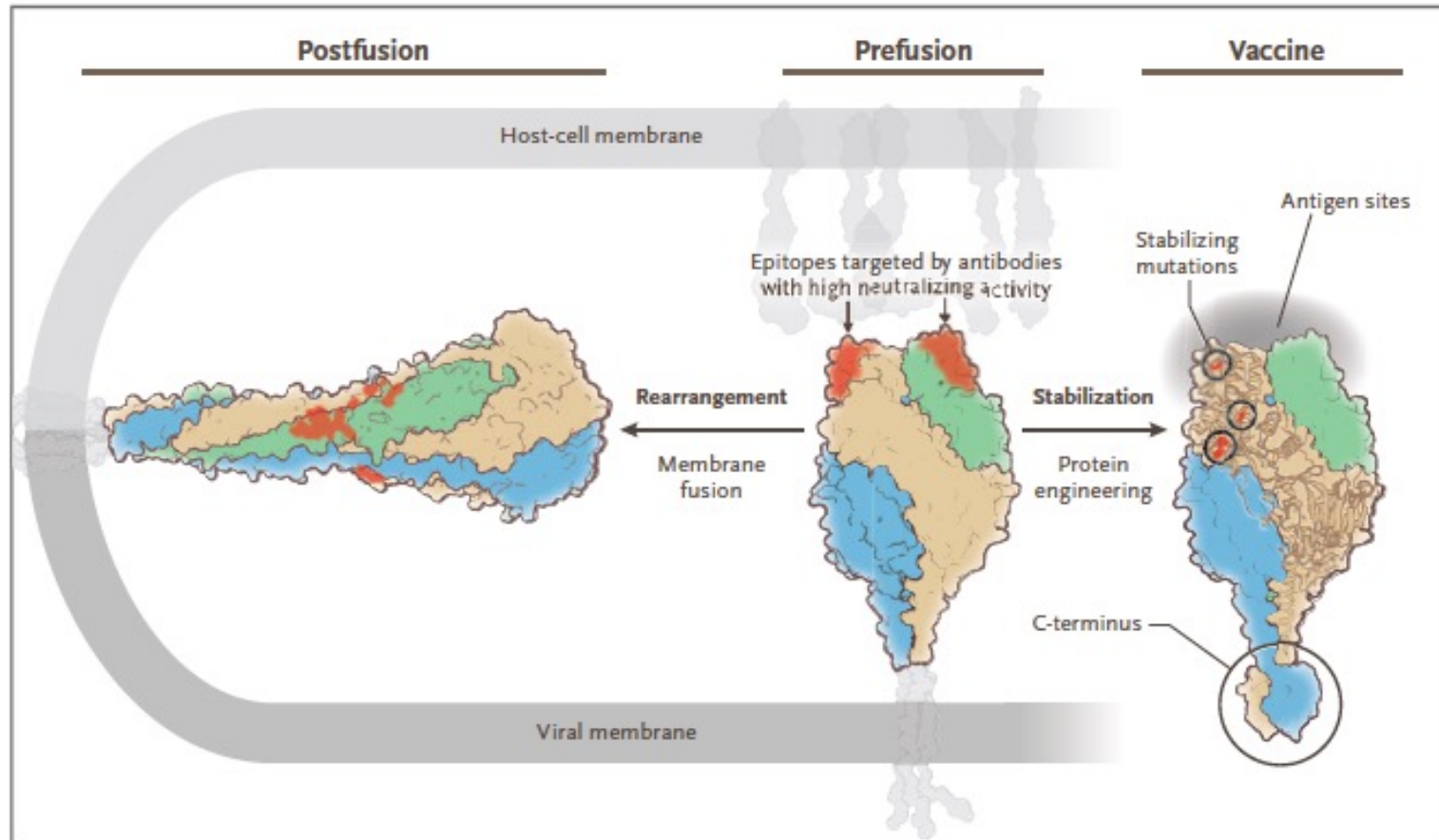


# La conformation Pre-F de la protéine Fusion: sites majeurs pour les anticorps fortement neutralisants



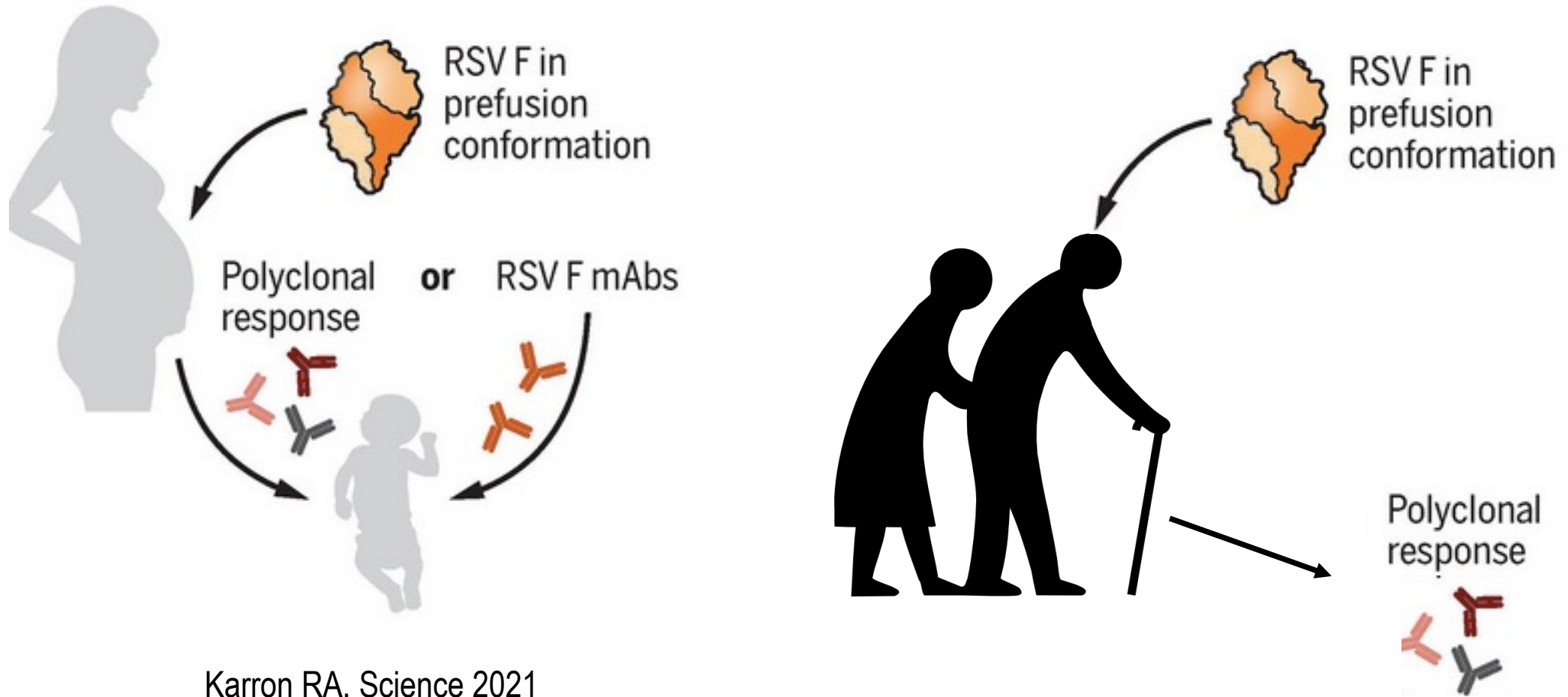
# The Journey to RSV Vaccines — Heralding an Era of Structure-Based Design

Barney S. Graham, M.D., Ph.D.



The Effect of Respiratory Syncytial Virus (RSV) Fusion Glycoprotein (F) Structure on Antigenicity.

# LES STRATEGIES DE PREVENTION



Karron RA, Science 2021

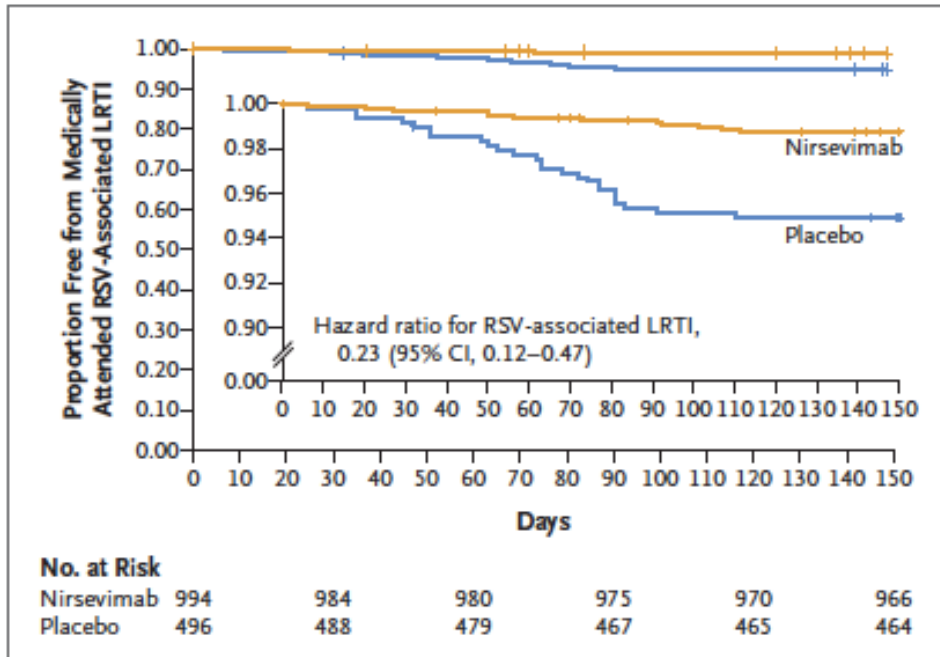


ORIGINAL ARTICLE

## Nirsevimab for Prevention of RSV in Healthy Late-Preterm and Term Infants

Laura L. Hammitt, M.D., Ron Dagan, M.D., Yuan Yuan, Ph.D., Manuel Baca Cots, M.D., Miroslava Bosheva, M.D., Shabir A. Madhi, Ph.D., William J. Muller, Ph.D., Heather J. Zar, Ph.D., Dennis Brooks, M.D., Amy Grenham, M.Sc., Ulrika Wählby Hamrén, Ph.D., Vaishali S. Mankad, M.D., Pin Ren, Ph.D., Therese Takas, B.Sc., Michael E. Abram, Ph.D., Amanda Leach, M.R.C.P.C.H., M. Pamela Griffin, M.D., and Tonya Villafana, Ph.D., for the MELODY Study Group\*

74.5% efficacy



**Figure 1.** Lower Respiratory Tract Infections (LRTIs) Associated with Respiratory Syncytial Virus (RSV).

# Nirsevimab: Ac monoclonal à longue demi-vie

CORRESPONDENCE



## Nirsevimab for Prevention of RSV in Term and Late-Preterm Infants

End Point	Placebo (N=1003) no. of participants with event (%)	Nirsevimab (N=2009) no. of participants with event (%)	Efficacy (95% CI)
Medically attended RSV-associated LRTI	54 (5.4)	24 (1.2)	76.4 (62.3–85.2)
Hospitalization for RSV-associated LRTI	20 (2.0)	9 (0.4)	76.8 (49.4–89.4)
Very severe medically attended RSV-associated LRTI	17 (1.7)	7 (0.3)	78.6 (48.8–91.0)

← -50      0      50      100 →  
Placebo Better      Nirsevimab Better

**Figure 1.** Incidence of Medically Attended Respiratory Syncytial Virus (RSV)-Associated Lower Respiratory Tract Infection (LRTI) through 150 Days after Injection and Efficacy of Nirsevimab as Compared with Placebo.

# Vaccination maternelle

## The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

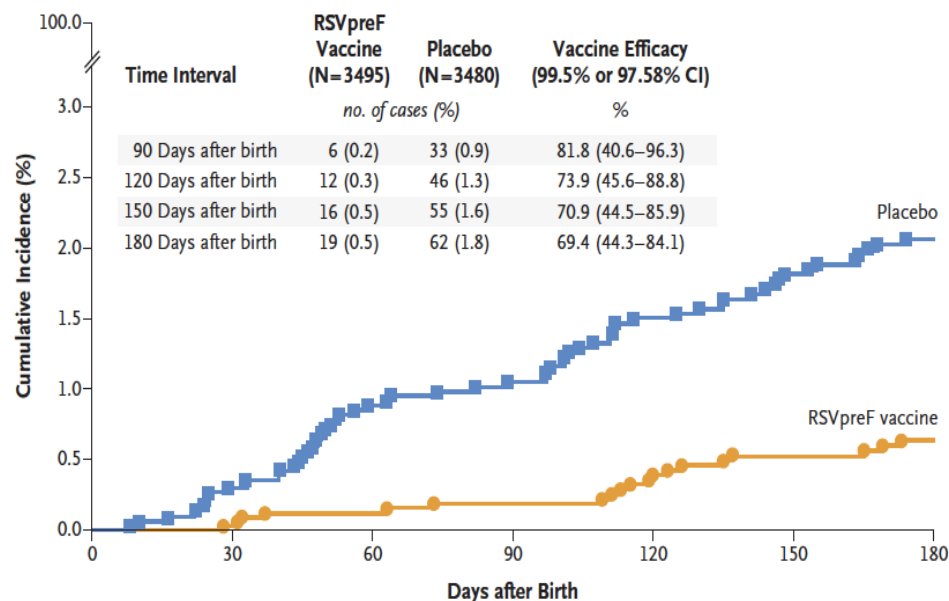
APRIL 20, 2023

VOL. 388 NO. 16

### Bivalent Prefusion F Vaccine in Pregnancy to Prevent RSV Illness in Infants

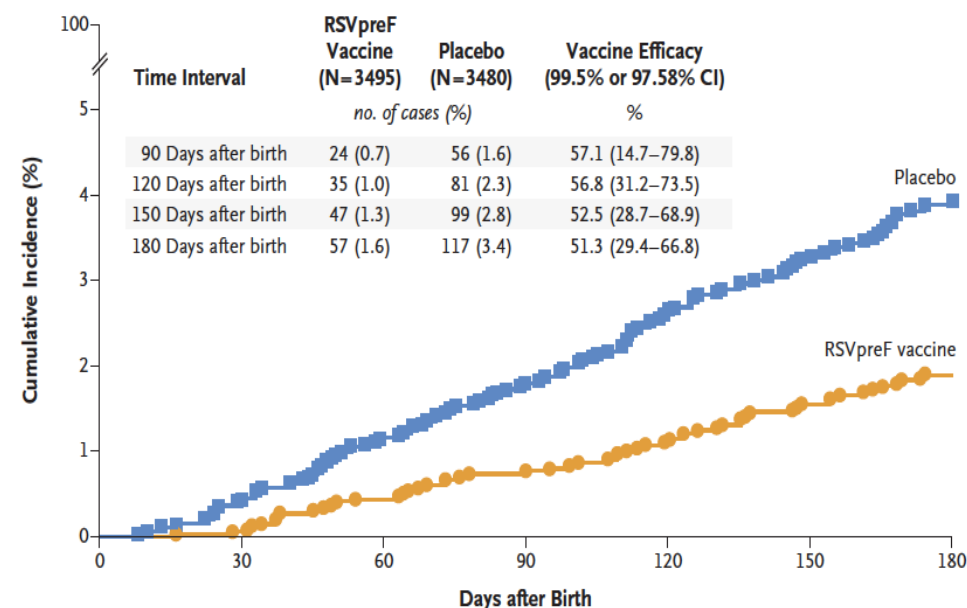
B. Kampmann, S.A. Madhi, I. Munjal, E.A.F. Simões, B.A. Pahud, C. Llapur, J. Baker, G. Pérez Marc, D. Radley, E. Shittu, J. Glanternik, H. Snaggs, J. Baber, P. Zachariah, S.L. Barnabas, M. Fausett, T. Adam, N. Perreras, M.A. Van Houten, A. Kantele, L.-M. Huang, L.J. Bont, T. Otsuki, S.L. Vargas, J. Gullam, B. Tapiero, R.T. Stein, F.P. Polack, H.J. Zar, N.B. Staerke, M. Duron Padilla, P.C. Richmond, K. Koury, K. Schneider, E.V. Kalinina, D. Cooper, K.U. Jansen, A.S. Anderson, K.A. Swanson, W.C. Gruber, and A. Gurtman, for the MATISSE Study Group\*

**A Medically Attended Severe RSV-Associated Lower Respiratory Tract Illness**



No. at Risk	0	30	60	90	120	150	180
Placebo	3480	3292	2973	2899	2833	2776	2749
RSVpreF vaccine	3495	3349	3042	2981	2916	2867	2820

**B Medically Attended RSV-Associated Lower Respiratory Tract Illness**



No. at Risk	0	30	60	90	120	150	180
Placebo	3480	3288	2964	2879	2804	2738	2700
RSVpreF vaccine	3495	3348	3035	2968	2898	2845	2792

# Vaccination du sujet âgé

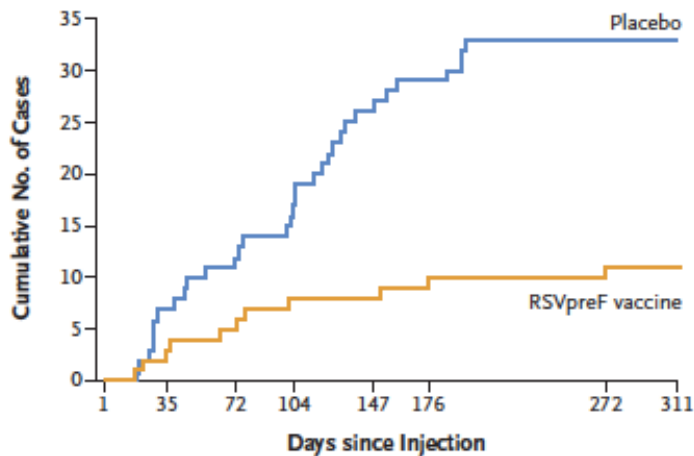
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

## Efficacy and Safety of a Bivalent RSV Prefusion F Vaccine in Older Adults

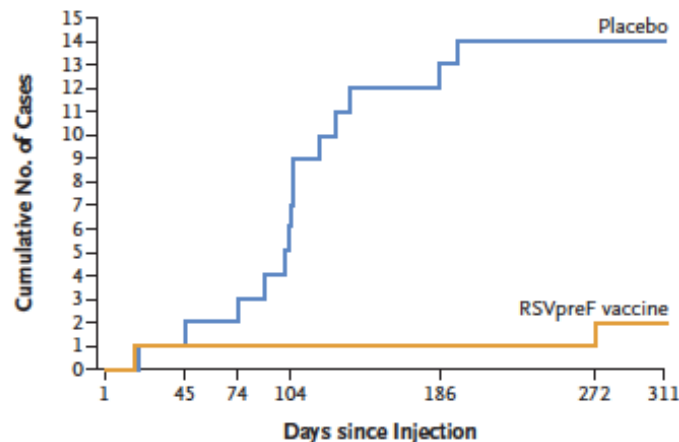
E.E. Walsh, G. Pérez Marc, A.M. Zareba, A.R. Falsey, Q. Jiang, M. Patton, F.P. Polack, C. Llapur, P.A. Doreski, K. Ilangovan, M. Rämets, Y. Fukushima, N. Hussien, L.J. Bont, J. Cardona, E. DeHaan, G. Castillo Villa, M. Ingilizova, D. Eiras, T. Mikati, R.N. Shah, K. Schneider, D. Cooper, K. Koury, M.-M. Lino, A.S. Anderson, K.U. Jansen, K.A. Swanson, A. Gurtman, W.C. Gruber, and B. Schmoele-Thoma, for the RENOIR Clinical Trial Group\*

**A RSV-Associated Lower Respiratory Tract Illness with  $\geq 2$  Signs or Symptoms**



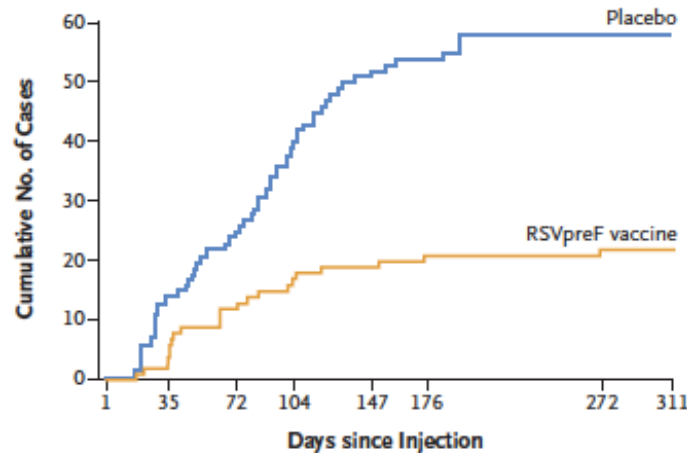
Vaccine Efficacy (96.66% CI)  
percent  
66.7 (28.8–85.8)

**B RSV-Associated Lower Respiratory Tract Illness with  $\geq 3$  Signs or Symptoms**



Vaccine Efficacy (96.66% CI)  
percent  
85.7 (32.0–98.7)

**C RSV-Associated Acute Respiratory Illness**



Vaccine Efficacy (95% CI)  
percent  
62.1 (37.1–77.9)

17000

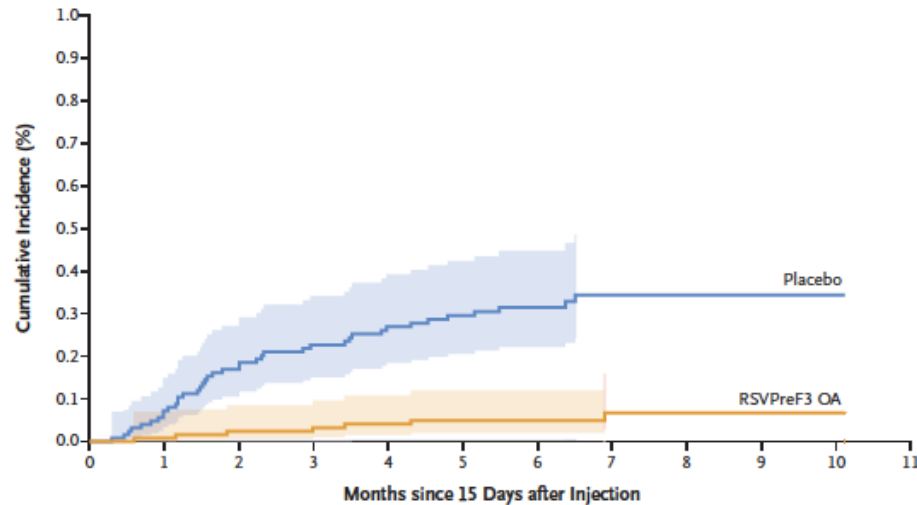
Cumulative No. of Cases

ORIGINAL ARTICLE

## Respiratory Syncytial Virus Prefusion F Protein Vaccine in Older Adults

A. Papi, M.G. Ison, J.M. Langley, D.-G. Lee, I. Leroux-Roels, F. Martinon-Torres, T.F. Schwarz, R.N. van Zyl-Smit, L. Campora, N. Dezutter, N. de Schrevel, L. Fissette, M.-P. David, M. Van der Wielen, L. Kostanyan, and V. Hulstrøm, for the AReSVi-006 Study Group\*

A RSV-Related Lower Respiratory Tract Disease

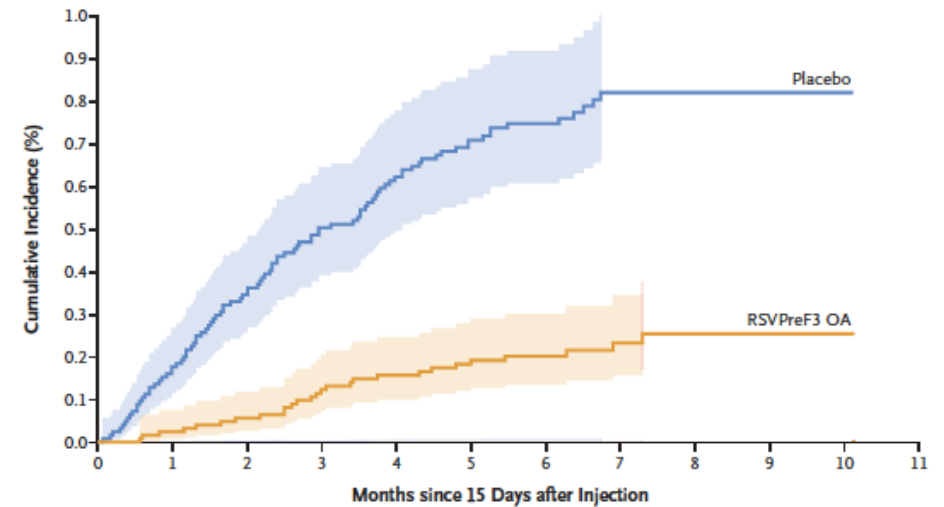


No. at Risk												
Placebo	12,494	12,403	12,290	11,887	11,640	11,022	8291	5464	2709	559	2	0
RSVPreF3 OA	12,466	12,392	12,286	11,892	11,655	11,046	8320	5495	2727	571	2	0

Cumulative No. of Cases												
Placebo	0	9	21	28	33	36	38	40	40	40	40	40
RSVPreF3 OA	0	1	3	4	5	6	6	7	7	7	7	7

B RSV-Related Acute Respiratory Infection



No. at Risk												
Placebo	12,494	12,390	12,268	11,853	11,597	10,973	8255	5441	2697	554	2	0
RSVPreF3 OA	12,466	12,390	12,282	11,881	11,641	11,029	8305	5481	2717	570	2	0

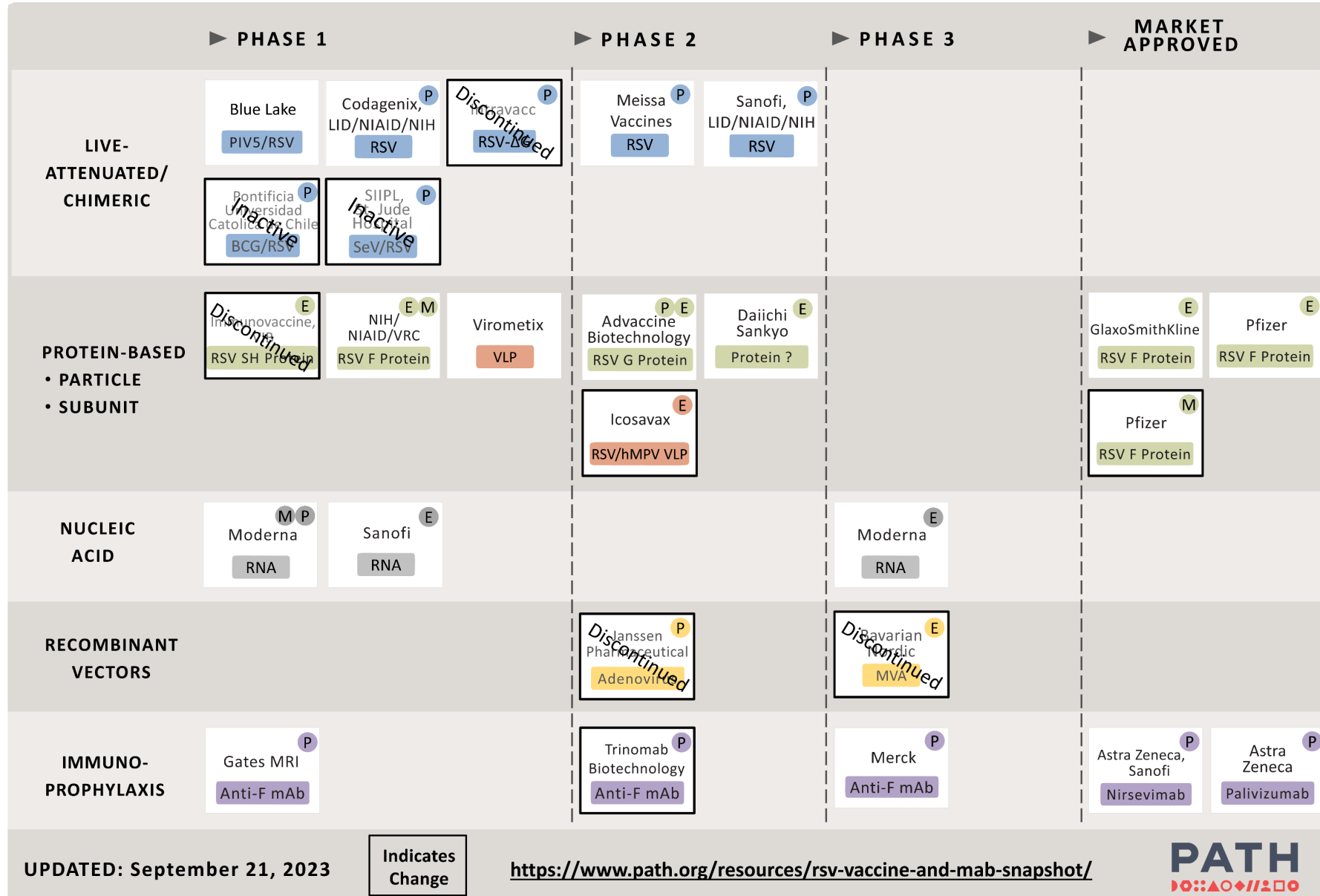
Cumulative No. of Cases												
Placebo	0	22	43	62	76	86	90	95	95	95	95	95
RSVPreF3 OA	0	3	7	15	19	23	24	26	27	27	27	27

12500



# RSV Vaccine and mAb Snapshot

TARGET INDICATION: **P** = PEDIATRIC **M** = MATERNAL **E** = ELDERLY



UPDATED: September 21, 2023

Indicates Change

<https://www.path.org/resources/rsv-vaccine-and-mab-snapshot/>



**Merci pour votre aimable attention**

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