RSV *and the* Older Adult

Much Ado About Something

RSV Tweetorial #3

References

1/🔥Hot off the press🗞️
📈Data from #idweek2022 & #rsv2022

#RSV #Vaccine #MedTweetorial🧵
@MichaelGIsonMD & @VargaLab

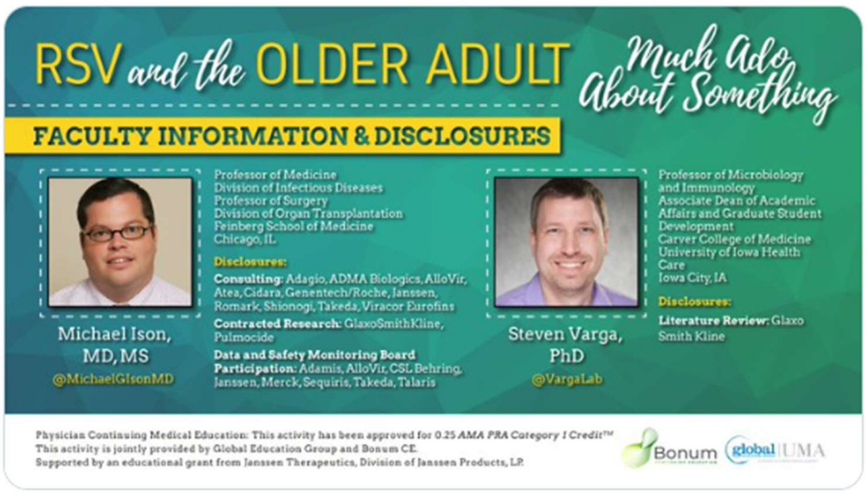
🔎Focus on older adults
1️⃣Protein Subunits

🆓#CME @BonumCE👉bit.ly/3sMYc1e
Supported by educational grant from @JanssenUS

2/ #MedTwitter #IDTwitter #IDMedEd
#respiratorysyncitialvirus

✅ Answer the polls
📜 Read the #MedTweetorial
🏆Claim🆓 #CME👉 bit.ly/3sMYc1e

📸 Faculty disclosures & important info👇



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Ref # 6

#RSV infection in older adults:
🧭Mitigation Strategies🧭
🚫No approved guidelines, BUT goal is to:
👍Improve symptoms
🤒Resolve disease
⬇️ Transmission/viral load through infection control strategies & vaccinations 💉🔮➡️SOON

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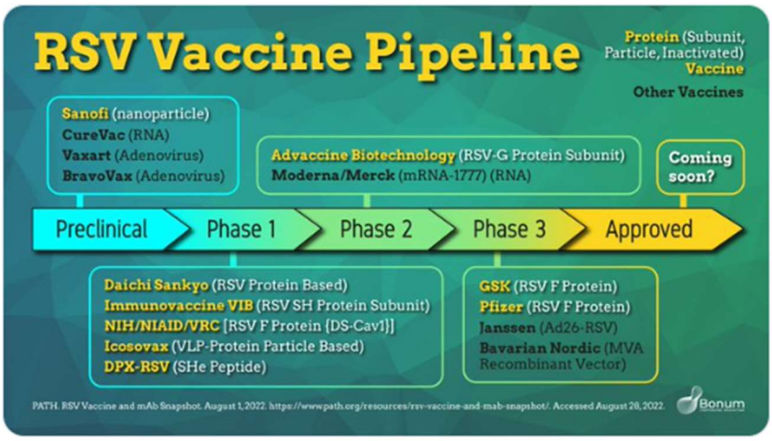
Ref # 15

🔎#RSV #Vaccine pipeline
🔬Many vaccines 💉 for older adults in development

🎯 Protein-based
🎯 Nucleic acid
🎯 Live attenuated/chimeric
🎯 Recombinant vectors

👇Diving into Protein-based🔰



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🧪1️⃣9️⃣6️⃣7️⃣: 1st attempt to develop #RSV #vaccine
⏳Yet, it's 2️⃣0️⃣2️⃣2️⃣ w/ no approved vaccine

🟢 Why aren't there approved #RSV vaccines 💉 for older adults?

- ☐ Few proteins to target 🎯
- ☐ Virus hide obscure resev.
- ☐ ✕ correlate of protection
- ☐ Tech 2 develop is elusive

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Ref # 2 18

#RSV #vaccine development hampered by:
🐭 Lack of optimal animal models
🦠 No correlates of protection
⛑️ Safety concerns
🔬 Lack of long-lasting immunity

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7/ 🎯Vaccine Targets🎯

Ref # 1

Viral proteins 🔸 G 🔸 F 🔸 SH on the surface of #RSV use viral ✉️ glycoproteins as antigens to modify a host response.

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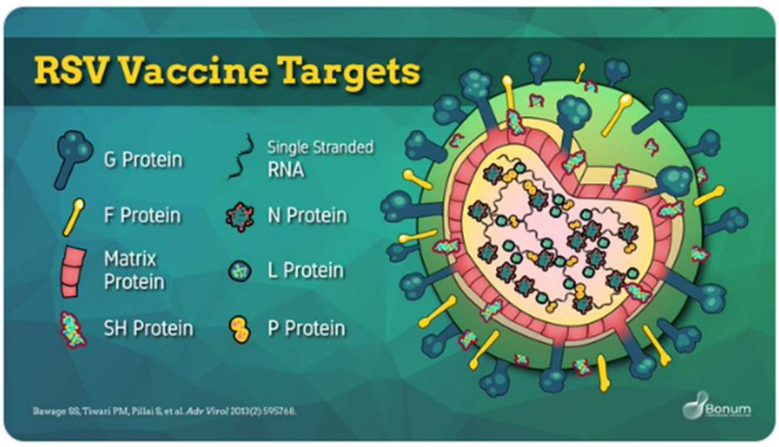

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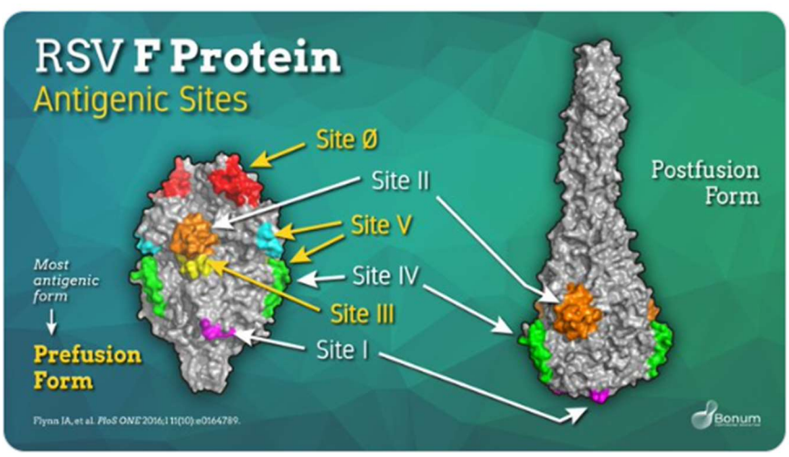
🟢 Which RSV viral surface protein is the primary 🎯 for #RSV protein-based #vaccine development?

- ☐ F protein
- ☐ L protein
- ☐ Matrix protein
- ☐ N protein

9/ 💡 #RSV fusion (F) protein=
🦠req'd for membrane fusion & infection of cells
⛓️ has multiple binding sites
& prime RSV #vaccine target

Ref # 8

2️⃣ conformational forms:
⏪Prefusion (most antigenic; induces potent nAb; 1º 🎯)
⛓️In this shape virus can attach & infect cells
⏩Postfusion



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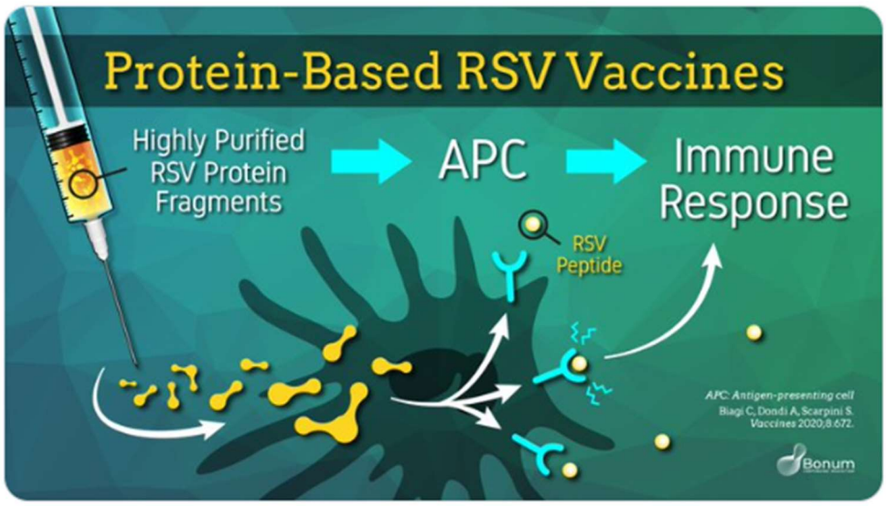
Ref # 3

🤔What are protein-based #RSV vaccines💉?
📌 Use highly purified RSV protein fragments to create
📌 Chosen for ability to elicit immune response
📌 Use limited components
📌 Poorly immunogenic
📌 Req adjuvants to create neutralizing antibodies



11/ 👍PRO's of #RSV protein #vaccine candidates 👍

Ref # 3 5

🧬No live virus = considered safe
⚖️Generally stable @ a broad range of 🌡️
🪙 Well-established tech; relatively inexpensive to produce
👍 Platform history of success for other viral infections

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12/👎CON's of #RSV protein #vaccine candidates👎

Ref # 9

👎Req adjuvants for efficacy/creation of antibodies
👎Antigens may lack pathogen-assoc molecular patterns common to RSV =weaker immune response
🔫Primarily triggers antibody-mediated immune response
⏳ Boosters req'd

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13/ Protein-based vaccines made from protein subunits or sugars of disease-causing organisms
📌 Inactivated (eg, diphtheria, tetanus)
📌 Virus-like particles (eg, HBV, HPV)
📌Polysaccharide molecules joined to proteins (eg, HiB, meningococcal)

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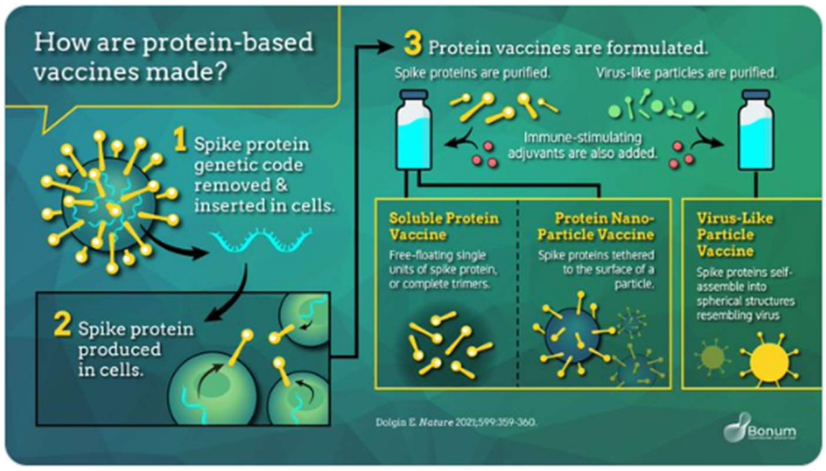

14/ 👱‍♀️How about protein-based strategies?
🐢Slow method for making 💉
🧻Multi-steps to manufacture purified protein at scale; requires optimization
🧫 Uses genetically engineered cells
⏳ Much time req'd to find effective immune response & grow pathogens

Ref #
5
10
16

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15/ 🧬🩹Right now, there are 2 protein subunit-based #RSV vaccines in Phase 3 trials for older adults:
🧪 RSVpreF Protein Subunit (Pfizer)
🧪 RSVPreF3-OA (GSK)

Ref #
11
17

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16/ #BonumCE #MedTwitter #IDMedEd #IDTwitter #RSV #vaccine

🟢 How many preF proteins were used in the RSVpreF vaccine?

- ☐ 1
- ☐ 2
- ☐ 4
- ☐ 5

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17/ Let's look 🔍@ #RSVpreF

Ref #
17
18

📌Uses 2️⃣ preF proteins to optimize vs RSV A&B
📌 Ph 3 RENOIR, 45k 😷 pts: 85.7% in ph3
💉Vaccine efficacy: 86.7% in ph 2a trial @NEJM
⚡FDA Breakthrough status
📌 Effective against sx RSV infect & viral shedding

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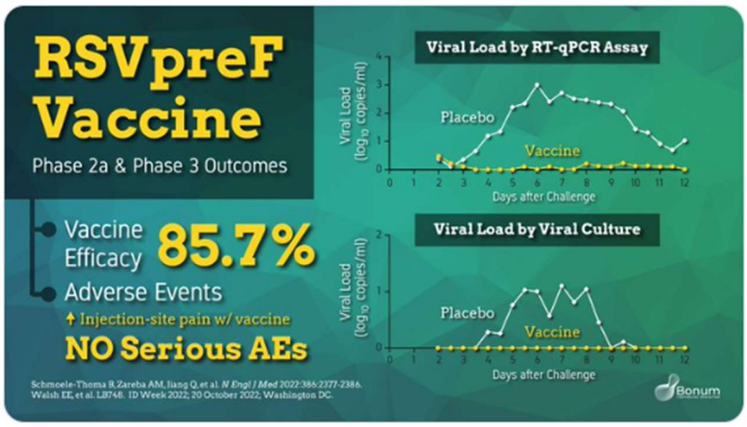

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🟢 The overall vaccine efficacy for RSVPreF3-OA in phase 3 trials was:

- ☐ 62.6%
- ☐ 72.6%
- ☐ 82.6%
- ☐ 92.6%

19/ RSVPreF3-OA Phase 3️⃣ RCT

Ref #
12

🚩 Recomb subunit prefusion RSV antigen(RSVPreF3) w/ AS01 adj
🚩Observer-blinded, AReSVi RCT in 😷pts ≥60 y
🚩82.6% overall efficacy; 94.1% for severe LRTD
🚩Anticipated reg submission in H2 2022
🚩Full results in 2024

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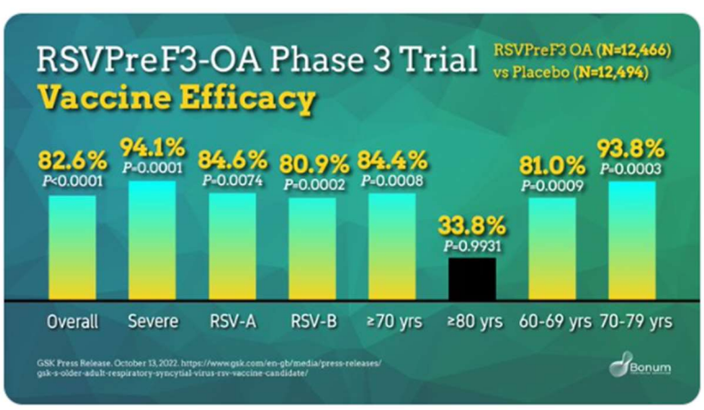

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20/ Summary
🔑New & emerging protein-based vaccines in 🧪 to prevent #RSV infection in older adults
🔑2 protein subunit-based #vaccines set to complete RCTs in 2022
🔑Potential to significantly improve mgmt & mitigation of #RSV infection

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Claim 🆓#CME credit👉🔗 bit.ly/3sMYc1e

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