IAS 2021

Monoclonal Antibodies for Infectious Diseases: Dream or Reality?

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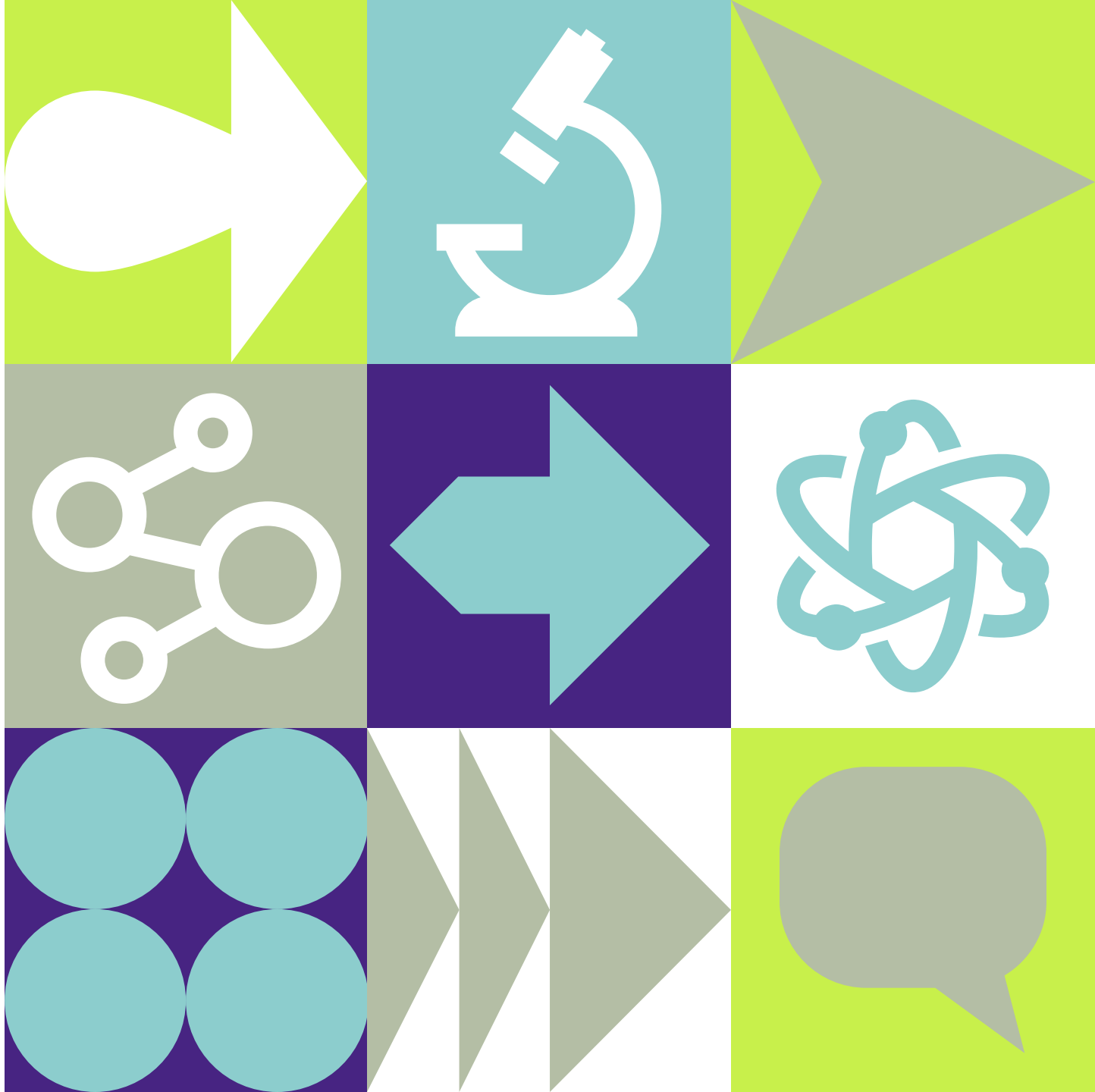

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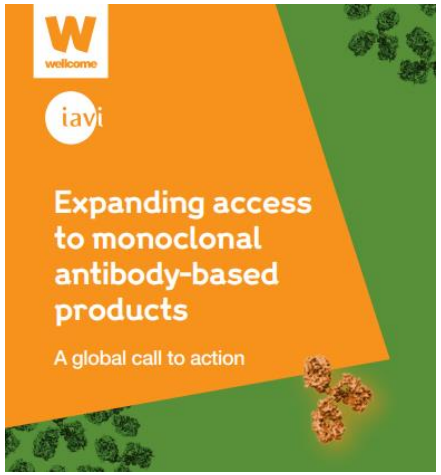
As of March 2021

Monoclonal Antibodies for Infectious Diseases: Dream or Reality?

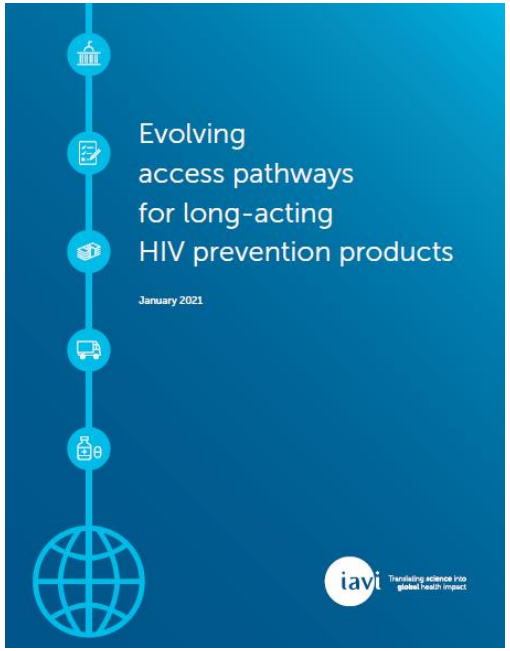
- Today's presentation reflect learnings from ***landscape research reports*** and ***webinars*** led by IAVI, in collaboration with partners

IAVI-Wellcome Call to Action Report on Expanding Access to Monoclonal Antibody-based products, published August 2020:
Case studies, >100 interviews with global stakeholders across > 15 countries



Available at iavi.org and wellcome.org/reports/expanding-access-monoclonal-antibodies

IAVI report on access to future HIV prevention products, published 2021
> 50 interviews from 22 organizations



Webinars on expanding access to Monoclonal Antibodies, co-organized by IAVI, in collaboration with partners

"Making monoclonal antibodies broadly accessible to communities most at risk of HIV/AIDS – What would it take?" *November 23, 2020* IAS iavi

'Global access pathways for monoclonal antibodies: Can COVID-19 pave the way?' *January 19, 2021* Unitaid wellcome iavi

'Innovative bio-therapeutics for COVID-19 — how can monoclonal antibodies for SARS-CoV-2 be made accessible in low- and middle-income countries (LMICs)?' *February 24, 2021* Department of Biotechnology, Government of India wellcome iavi

'Strengthening regulatory and policy frameworks to enable access to monoclonal antibodies in Africa *June 30, 2021* wellcome iavi

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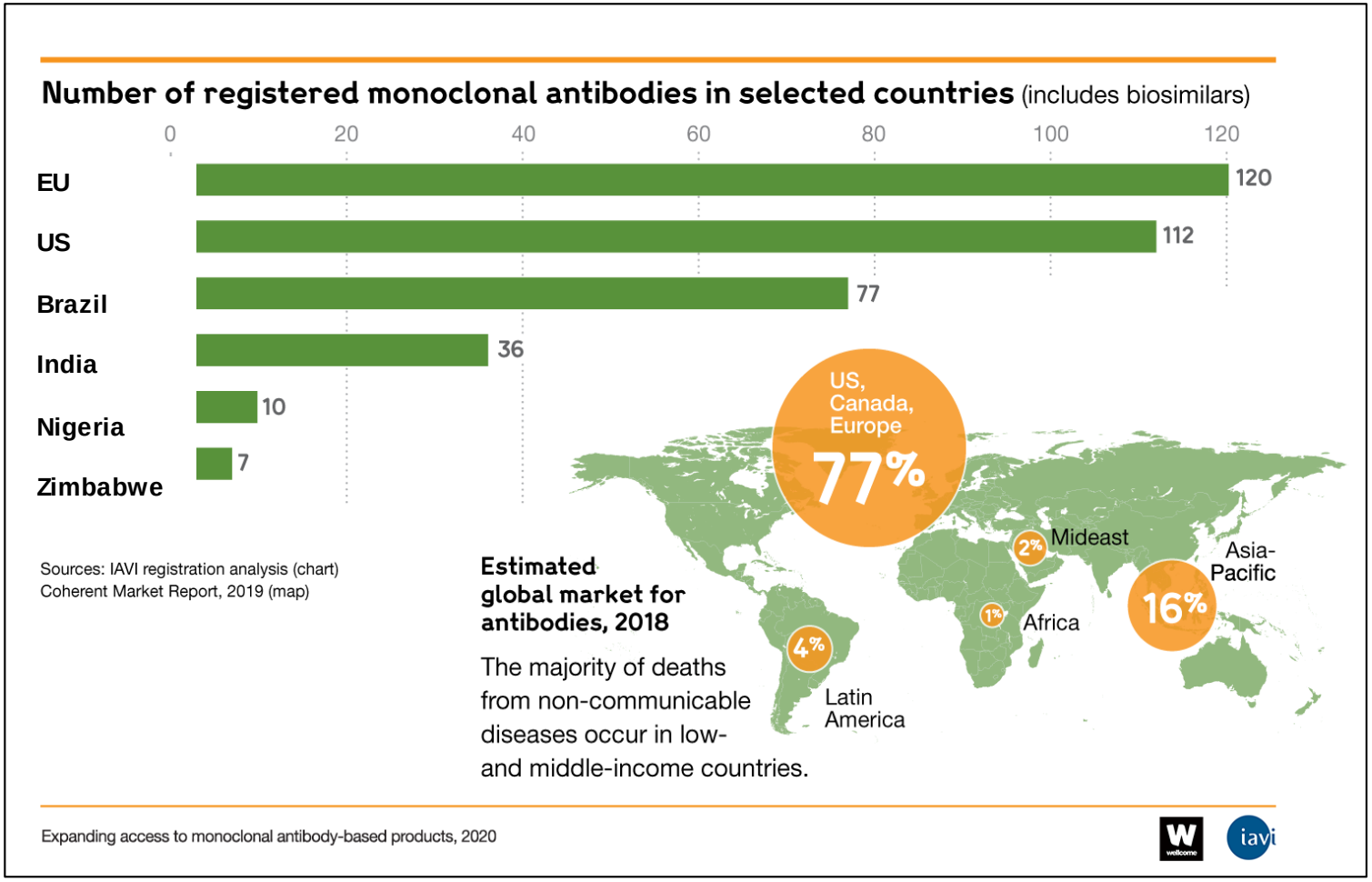
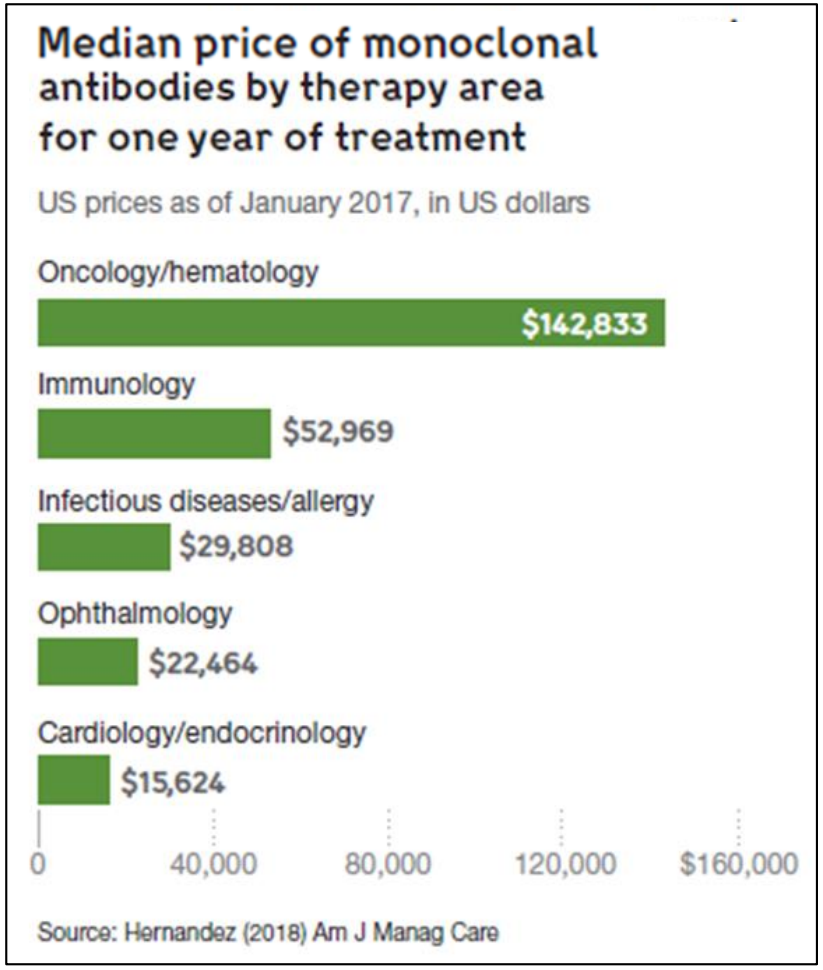
Availability and *Affordability* of mAbs are key barriers to Global Access





Access gap is expected to widen as the proportion of mAbs for non-communicable and infectious diseases in product pipelines continues to increase

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Access to mAbs is *severely limited* in Low- and Middle-income Countries: Impact on Infectious Diseases

Key barriers/opportunities

Advocacy and Awareness

- Limited awareness of the health and economic value of mAbs
- Unclear market size and disease burden

Policy and Regulatory processes

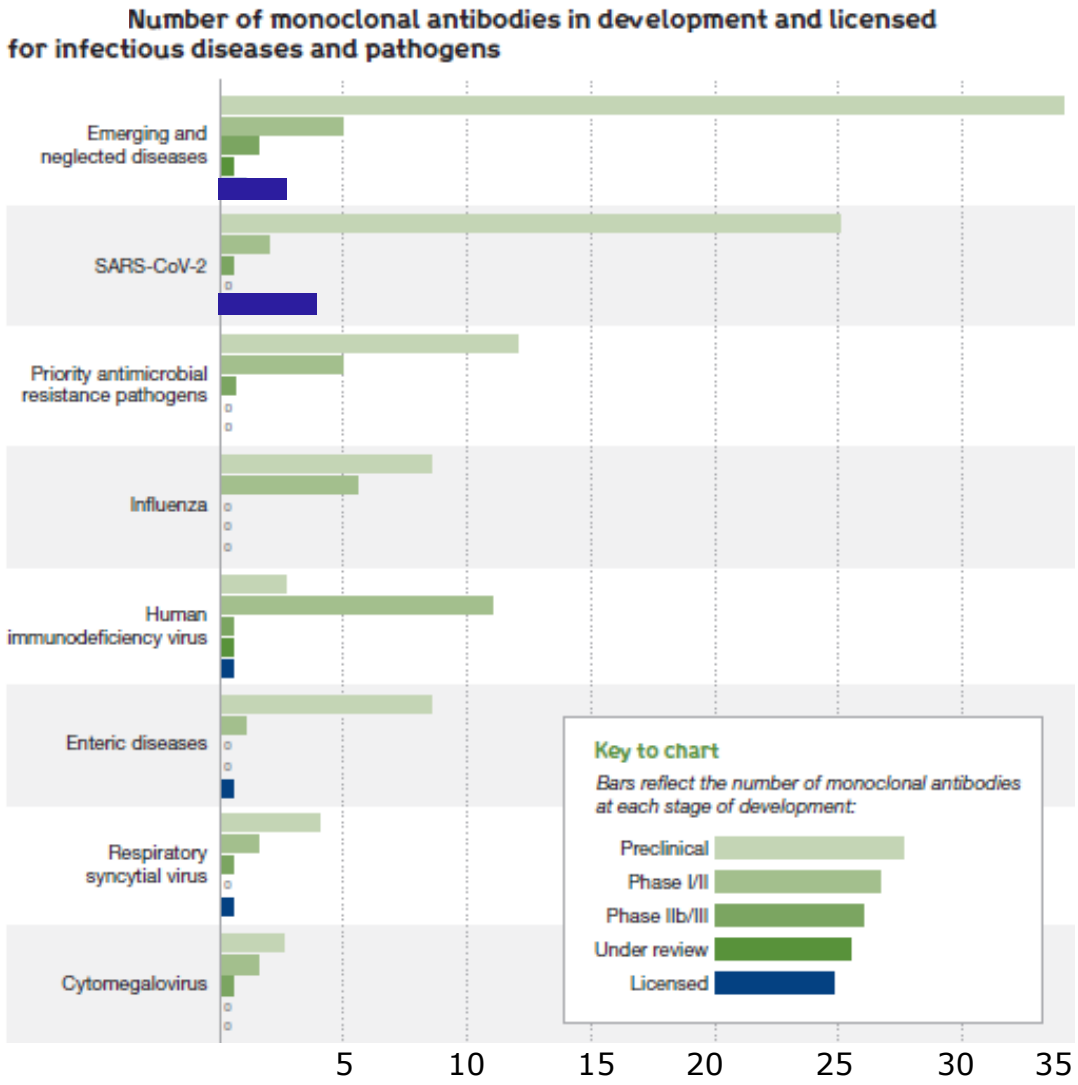
- LMIC regulatory processes complex or undefined
- WHO-guidance, WHO-prequalification and inclusion into WHO-essential and national medicine lists in early stages

Technological innovations

- Product profiles not designed for affordability, and convenient delivery
- Combinations of antibodies or engineered multi-specific antibody formats needed for some viruses and pathogens
- Integration of new technologies for low-cost manufacturing and delivery in early stages

Business and partnership models

- Limited models for global licensing and affordable pricing
- Insufficient global manufacturing capacity for equitable supply
- Lack of donor-funded procurement platforms



Access to mAbs for Infectious Diseases in Low- and Middle-income Countries

Case Study: Anti-RSV mAb Synagis® (palivizumab)

- Only licensed mAb to prevent respiratory syncytial virus (RSV) infections, the second-leading cause of death in children during the first year of life
- First approved in the US in 1998
(license holder: Astra Zeneca)
- Marketed in > 80 countries but limited access in LMIC public health systems
- Not licensed in China or Nigeria, two countries with high RSV incidence
- Prices, depending on country, range from ~ $4-17K per season (five monthly intramuscular doses of 15 mg/kg)
- ***Next generation long-acting anti-RSV mAbs (Nirsevimab, 1 dose per season) with preferred product profile, in late-stage development, expected filing in 2022***

99% of deaths from respiratory syncytial virus occur in low- and middle-income countries.

99% of the sales of Synagis, an antibody-based preventive, are in the US and Europe.

Four mAb products for SARS-CoV-2 developed & authorized in record time… but global access limited

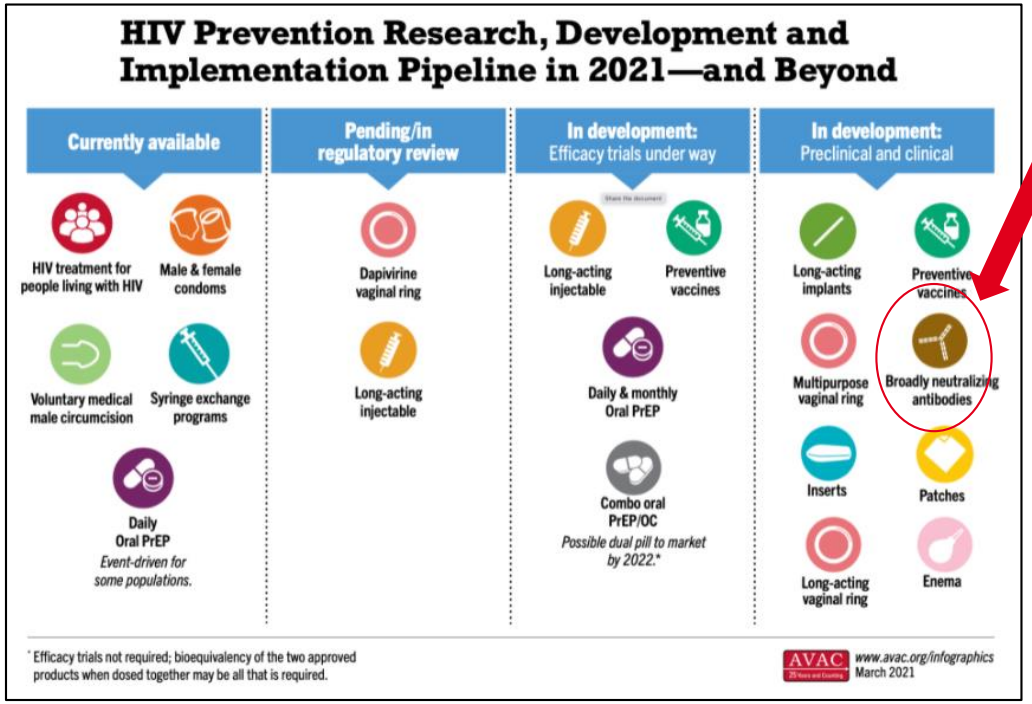
Barriers to Global Access:

- Requires ***high doses delivered by intravenous (IV)*** administration -- increases cost and burden of delivery
  - *Recommendation: identify more potent lower dosage mAbs delivered by IM or SQ injections, responsive to VOCs*
- Requires ***timely diagnosis*** of SARS-CoV-2 infection and rapid linkage to care
  - *Recommendation: Strengthen capacity for early diagnosis and improve linkages to care*
- 4 EU/US/South Korea authorized mAb combination/single products, ***LMIC authorizations currently limited*** to Brazil, India
  - *Recommendation: use collaborative regulatory approaches (eg. used for Ebola) to accelerate broad authorizations, and accelerate WHO prequalification to enable rapid entry into national medicine lists*

Other opportunities for Global Access:

- Optimize formulations to minimize reliance on cold storage
- Optimize antibody function to treat severe COVID-19 and define patient subsets most responsive to mAbs for SARS-CoV-2
- Expand licensing partnerships and market commitments, strengthen manufacturing capacity, and streamline supply chain for raw materials
- Establish platforms for pooled procurement, distribution and allocation

Broadly neutralizing antibodies (bnAbs) for HIV: a future prevention option across multiple other product types and delivery



Opportunities for Global Access

- Improve affordability by optimizing bnAb combinations for enhanced potency, half-life, thermostability, developability – to enable infrequent SQ injections
- Partner with regional low-cost manufacturers to reduce cost of manufacturing and delivery
- Engage with communities to understand acceptability & delivery barriers and integrate into product design
- Integrate early into WHO policy guidance
- Demonstrate relative value proposition, cost-effectiveness of mAbs
- Expand use of joint reviews and collaborative regulatory pathways
- Expand use of pooled procurement platforms to ensure affordability

Global Access to Monoclonal Antibodies is challenging, but realistic

- ***The COVID-19 pandemic has helped raise awareness*** to the challenges and opportunities for global access to mAbs, especially for infectious diseases – however, more advocacy and awareness building needed

- Technological advances can drive rapid discovery and development of mAbs for infectious diseases - early engagement between public and private stakeholders is needed to ***design affordable mAb products that are responsive to global needs***

- There is an urgent need for ***broader registrations in LMICs, new global manufacturing and supply models, and new global pooled procurement and distribution pathways*** for global access to mAbs

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