

Science Diplomacy and COVID-19 vaccine diplomacy of India

Dr Bhaskar Balakrishnan
Science Diplomacy Fellow,
Research and Information Systems (RIS)
Former Ambassador of India
30 October 2021, 1100 hrs.

Science Diplomacy

- Practised for long time, but not formally defined. Diplomacy in political, economic, cultural and military domains better known.
- Diplomacy for Science, Science for Diplomacy, and Science in Diplomacy (AAAS, RS 2010)
- Science, Technology and Innovation actions at national, cross border, and global levels (Gluckmann, et al 2017)
- Full integration of Science, Technology, and Innovation into Foreign policy and diplomacy

Science Diplomacy roles

- STI advice into policy making, including foreign policy. (Science in Diplomacy)
- Combining capacity in STI and Diplomacy for negotiation outcomes on global issues. (Science for Diplomacy)
- Leveraging STI for strengthening relations with countries. (Science for Diplomacy)
- Leverage diplomatic capacity for strengthening national STI ecosystem and engaging in mega STI projects. (Diplomacy for Science)
- STI and diplomacy for engaging with Diaspora STEM workers

Vaccine diplomacy

- A form of health diplomacy
- Use of vaccines to improve a country's diplomatic relationship and influence
- Diplomacy to ensure access to the best practices in the development of vaccines,
- Enhance bilateral and/or multilateral cooperation for joint R&D,
- Facilitate early access to vaccines
- Was practiced during anti small pox effort.

Vaccine diplomacy

- Limited availability of vaccines globally.
- Urgency in administering vaccines during a pandemic.
- Existence of large manufacturing capacity.
- Coordinate roll out of domestic vaccine uptake and exports (on grant as well as commercial basis).
- Get approvals for vaccines from NRAs, and international agencies for future market access.
- Expectations of future market opportunities for vaccines.

A Global Pandemic emerges

- Covid-19 Spread from China in Nov 2019 to across the world. Now 226 million cases and 4.9 mn deaths. 34 mn cases and 453000 deaths in India
- Uneven responses by countries, varying from no restrictions to extreme lockdowns and restrictions.
- Delays in adopting control measures allowed spread beyond country of origin.

Stresses on health systems

- Patient overload on hospitals, clinics
- Vulnerable groups – elderly, co-morbidities, lung disorders, heart conditions, etc.
- Post recovery health problems, heart, neurological, etc.
- Need for prolonged treatment in ICUs
- Shortages of test kits, ventilators, medical oxygen, and possible therapeutic agents.
- Shortages of PPE kits, sanitation products and equipments
- Extreme pressures on healthcare and related workers.
- Many unknown factors in disease progression and sequels, much misinformation.

International cooperation

- Despite slow start, WHO speeded up action in Feb 2020
- Adverse impact of geopolitics – US/China tensions
- Uncoordinated responses in Europe, despite the EU
- Failure to agree on national vaccination certificate validity for travel.
- India reached out to South Asia and other countries
- WHO coordinated Covax and other initiatives
- Good sharing of research through open sources

India's strengths

- Vaccine and drugs production capacity
- PPE and sanitation materials and equipment
- Medical devices
- Diagnostic devices
- ICT enabled applications
- Telemedicine

Indian response

- Ramping up of research, especially in diagnostics and protection, vaccines
- Step up production of protection materials and equipment, repurposed drugs (HCQ)
- Strong international cooperation. Sent drugs and equipment to many countries.
- Build up of vaccine production – especially two vaccines approved for Emergency use
Covishield (imported technology) and Covaxin (indigenous technology)

NAME	TYPE OF VACCINE	DEVELOPMENT & MANUFACTURING	STATUS
COVAXIN	Inactivated Whole Virion	Bharat Biotech / ICMR	EUA
COVISHIELD	Non-replicating Simian Adenoviral Vector	Oxford-AstraZeneca / Serum Institute of India	EUA
SPUTNIK-V	Non-replicating Human Adenoviral Vector	Gamaleya Institute, Russia / Dr. Reddy's Lab	EUA
NVX-CoV2373	Protein Subunit (Recombinant Nanoparticle)	Novavax / Serum Institute of India	EUA (Phase 2/3 Bridging Trials ongoing)
BNT162b2	mRNA	Pfizer/BioNTech	EUA
mRNA-1273	mRNA	Moderna/NIAID	EUA
Ad26.CoV2.S	Non-replicating Human Adenoviral Vector	Johnson & Johnson / Biological E	EUA
ZyCoV-D	Plasmid DNA	Zydus Cadila	Phase 3
BECOV	Protein Subunit	Baylor College of Medicine / Biological E	Phase 3
HDT-301 (HGCO19)	mRNA	HDT Bio Corp, USA / Gemnova Biopharmaceuticals	Phase 1/2
BBV154	Non-replicating Simian Adenoviral Vector (Intranasal)	Bharat Biotech	Phase 1
COVI-VAC	Live Attenuated (Intranasal)	Codagenix / Serum Institute of India	Phase 1
VesiculoVax Platform	VesiculoVax™ VSV Vector	Aurovaccine, USA / Aurobindo Pharma Ltd	Pre-clinical
UB-612	Multitope Peptide Based Vaccine	Covaxx, USA / Aurobindo Pharma	Pre-clinical
-	Live Attenuated	Griffith University, Australia / Indian Immunologicals	Pre-clinical
-	Protein Subunit	Mynvax / Indian Institute of Science	Pre-clinical

Vaccines in India

- Covishield, manufactured by SII Pune, technology from Oxford group. Largest vaccine producer in the world by doses (1.5 bn)
- Covaxin, manuf Bharat Biotech, technology from ICMR.
- Monthly production raise to 120 mn (Covishield) and 58 mn (Covaxin) by Dec 2021
- Sputnik V (Russian technology) to be manufactured at 850 mn doses/yr
- Several other vaccines to be rolled out, including intranasal one by Bharat Biotech.

India's vaccination drive

- In phases –Group I. Health workers, II. Front line workers, III. over 60 years, IV. 45-59 yrs, and V. 18-44 yrs.
- Latest data 28 Oct 21 (in mn doses) - I.19.6 II. 34.3 III. 174.7 IV. 268.2 V. 550.7
- Total doses – 1047.4 mn; fully vaccinated with 2 doses – 31%; Covaxin -12% of doses; Day 286 of drive, starting on 15 Jan 2021.
- Vaccination planned for children age groups 2-12yrs (Covaxin) and 12-18 yrs (ZyCov-D), approx. 520 mn population.

Other factors

- Sputnik V – about 1 mn doses administered - low offtake due to prices, storage requirement (-18 deg C).
- Price of vaccines important factor; public distribution is more effective.
- Stringent storage requirements for some vaccines also a problem.
- Compliance with multiple dosing regimen.
- Covishield and Covaxin – storage less critical.
- Ramp up of testing, treatment infrastructure, control measures
- Challenges ahead – expand 2 nd dose coverage, cover children.
- Coping with variants, Efficacy and Mix and Match dosing.
- Need for booster doses, after how long and for whom?

Vaccines and health diplomacy

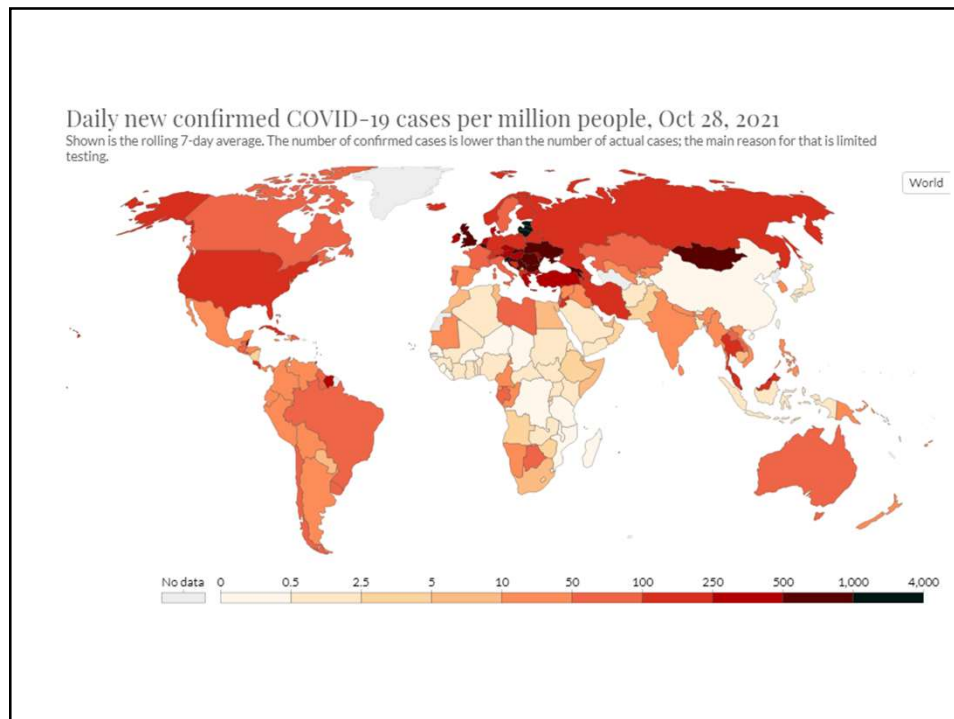
- Vaccines exported, on grant (16%), commercial (54%) basis and via Covax (30%).
- Total supply to 94 countries and UN - 66 mn doses by end May 2021.
- Regional initiative for vaccine supply to South Asian countries
- Exports suspended in April 2021 due to outbreak in India and increased domestic uptake. Exports resumed in October 2021
- Increased availability of vaccines of various types – enables more aggressive vaccine exports in next months.

Other areas of Indian health diplomacy

- Offer of Cowin digital platform to other countries.
- Online training workshops for health workers under ITEC
- Supply of drugs for treatment like HCQ
- Supply of PPE kits, PCR machines, etc
- Indian medical team sent to Italy in March 2020 to test stranded Indian nationals
- India received assistance from many countries during medical oxygen crisis situation.
- India-S Africa initiative for temporary waiver of TRIPs for Covid related vaccines and equipment.

Covid evolution India

- New cases/day – peak of 403,000 on 8 May 2021, now down to 14,300 on 28 October
- No of deaths/day – 4,500 on 18 May 2021, now down to 805 on 28 October.
- New cases per day per million population – peak of 297 in May 2021, down to 11.6; World average is 40-65.
- Deaths per day per million population – peak of 5.29 on 10 June 2021, now down to 0.4-0.58; World average is 0.57-1.22



Global situation

- New cases per day per million population – remains high in North America, Europe
- Winter conditions, partly vaccinated populations favour emergence of new variants.
- New variant AY4.2 of Delta reported spreading in UK and Europe a cause of concern – mutations in spike protein structure.

Thank you

Email: b.balakrishnan@ris.org.in

<http://fisd.in>