**Supplemental Table 1.** Definitions and data elements used for determining the variables of interest in the study.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable of interest** | **Definition of the variable** | **Data element(s) from HMIS used for defining the variable,**  | **Multiplying factor** |
| **In numerator**  | **In denominator** |
| Coverage of vitamin K1 prophylaxis in newborns | Percentage of newborn children who were administered the birth dose of vitamin K1  | ‘Child immunisation - Vitamin K1 (Birth Dose)’  | Sum of ‘Live Birth - Male’ & ‘Live Birth - Female’ | 100 |
| Coverage of HBV immunization in newborns | Percentage of newborn children who were administered the birth dose of HBV | ‘Child immunisation - Hepatitis-B0 (Birth Dose)’ | Sum of ‘Live Birth - Male’ & ‘Live Birth - Female’ | 100 |
| Coverage of OPV immunization in newborns | Percentage of newborn children who were administered the birth dose of OPV | ‘Child immunisation - OPV 0 (Birth Dose)’ | Sum of ‘Live Birth - Male’ & ‘Live Birth - Female’ | 100 |
| Institutional birth rate | Percentage of deliveries in health facilities | ‘Number of Institutional Deliveries conducted Including C-sections’ | Sum of ‘Live Birth - Male’, ‘Live Birth - Female’ & ‘Still Birth’ | 100 |

HMIS, health management information system; HBV, hepatitis B vaccine; OPV, oral polio vaccine.

**Supplemental Table 2.** Administrative units in India and the different groupings to which they belong.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Administrative units in India (states and UTs)** | **State/****UT** | **Geographical regions/ Zones** | **SDI****grouping** | **Developmental grouping** | **IBR-wise grouping** |
| Andaman & Nicobar Islands | UT | Southern | High | ‘Other’ | Medium |
| Andhra Pradesh | State | Southern | Middle | ‘Other’ | High |
| Arunachal Pradesh | State | Northeastern | Middle | NE state | Low |
| Assam | State | Northeastern | Low | NE state | Low |
| Bihar | State | Eastern | Low | EAG state | Low |
| Chandigarh | UT | Northern | High | ‘Other’ | High |
| Chhattisgarh | State | Central | Low | EAG state | Medium |
| Dadra & Nagar Haveli † | UT | Western | High | ‘Other’ | High |
| Daman & Diu † | UT | Western | High | ‘Other’ | High |
| Delhi | UT | Northern | High | ‘Other’ | Medium |
| Goa † | State | Western | High | ‘Other’ | High |
| Gujarat † | State | Western | Middle | ‘Other’ | High |
| Haryana | State | Northern | Middle | ‘Other’ | Medium |
| Himachal Pradesh | State | Northern | High | ‘Other’ | Low |
| Jammu & Kashmir ‡ | State | Northern | Middle | ‘Other’ | Medium |
| Jharkhand | State | Eastern | Low | EAG state | Medium |
| Karnataka | State | Southern | Middle | ‘Other’ | High |
| Kerala | State | Southern | High | ‘Other’ | High |
| Lakshadweep † | UT | Southern | High | ‘Other’ | High |
| Madhya Pradesh | State | Central | Low | EAG state | Medium |
| Maharashtra | State | Western | High | ‘Other’ | High |
| Manipur | State | Northeastern | Middle | NE state | Low |
| Meghalaya | State | Northeastern | Middle | NE state | Low |
| Mizoram | State | Northeastern | High | NE state | Low |
| Nagaland | State | Northeastern | High | NE state | Low |
| Odisha | State | Eastern | Low | EAG state | Medium |
| Puducherry | UT | Southern | High | ‘Other’ | High |
| Punjab | State | Northern | High | ‘Other’ | Medium |
| Rajasthan | State | Northern | Low | EAG state | Medium |
| Sikkim | State | Northeastern | High | NE state | Medium |
| Tamil Nadu | State | Southern | High | ‘Other’ | High |
| Telangana | State | Southern | Middle | ‘Other’ | Medium |
| Tripura | State | Northeastern | Middle | NE state | Low |
| Uttar Pradesh | State | Central | Low | EAG state | Low |
| Uttarakhand | State | Central | High | EAG state | Low |
| West Bengal | State | Eastern | Middle | ‘Other’  | High |

UT, union territory; SDI, socio-demographic index; EAG state, empowered action group state; NE state, northeast state; ‘Other’, states and UTs other than EAG and NE states; IBR, institutional birth rate.

† Data from Dadra & Nagar Haveli (in entirety), Daman & Diu (in Diu district), Goa (in North Goa district), Gujarat (in 26 districts *viz.*, Ahmedabad, Amreli, Anand, Aravalli, Banas Kantha, Bharuch, Bhavnagar, Botad, Devbhumi Dwarka, Gandhinagar, Gir Somnath, Jamnagar, Junagadh, Kachchh, Kheda, Mahesana, Mahisagar, Morbi, Navsari, Panch Mahals, Patan, Rajkot, Surat, Surendranagar, Vadodara, and Valsad), and Lakshadweep (in entirety) were not included during analysis (explanations provided in methodology).

‡ The state of Jammu & Kashmir was reorganized into two administrative units, namely the UT of Jammu & Kashmir, and the UT of Ladakh in August 2019. The findings reported against Jammu & Kashmir in the paper are for both the UTs combined.

**Supplemental Table 3.** Comparison of coverage of vitamin K1, hepatitis B vaccine (HBV) and oral polio vaccine (OPV) prophylaxes at birth in India, by states & union territories, 2019–20.

|  |  |  |
| --- | --- | --- |
| **State / UT** | **Total Livebirths, No.** | **Coverage at birth, % (95% CI)**  |
| **Vitamin K1** | **HBV** | **OPV** |
| India (overall) | 20208804 | 62.36 (62.34 , 62.38)\* | 71.41 (71.39 , 71.43) | 86.70 (86.68 , 86.71) |
| A&N Islands | 3618 | 23.24 (21.90 , 24.65)\* | 86.21 (85.05 , 87.29) | 89.75 (88.71 , 90.69) |
| Andhra Pradesh | 736774 | 77.24 (77.15 , 77.34)\* | 92.16 (92.10 , 92.22) | 98.14 (98.11 , 98.17) |
| Arunachal Pradesh | 20668 | 35.01 (34.36 , 35.66)\* | 74.68 (74.08 , 75.27) | 83.08 (82.56 , 83.59) |
| Assam | 600797 | 71.25 (71.13 , 71.36) | 61.19 (61.06 , 61.31)\* | 67.81 (67.69 , 67.93) |
| Bihar | 2114235 | 50.56 (50.50 , 50.63)\* | 75.03 (74.97 , 75.09) | 89.95 (89.91 , 89.99) |
| Chandigarh | 27957 | 99.37 (99.27 , 99.46) | 86.28 (85.87 , 86.68)\* | 93.35 (93.06 , 93.64) |
| Chhattisgarh | 479404 | 56.79 (56.65 , 56.93)\* | 66.24 (66.11 , 66.38) | 93.21 (93.14 , 93.28) |
| Daman & Diu † | 3445 | 82.29 (80.98 , 83.53)\* | 82.38 (81.07 , 83.62) | 85.57 (84.36 , 86.71) |
| Delhi | 283719 | 72.53 (72.37 , 72.70)\* | 85.68 (85.56 , 85.81) | 90.31 (90.20 , 90.42) |
| Goa † | 9004 | 96.32 (95.92 , 96.69) | 92.93 (92.38 , 93.44)\* | 94.24 (93.74 , 94.70) |
| Gujarat † | 143872 | 92.22 (92.08 , 92.36) | 85.97 (85.79 , 86.14)\* | 98.98 (98.93 , 99.03) |
| Haryana | 511004 | 59.98 (59.84 , 60.11)\* | 70.77 (70.64 , 70.89) | 88.55 (88.46 , 88.64) |
| Himachal Pradesh | 88410 | 85.42 (85.19 , 85.65) | 84.36 (84.12 , 84.60)\* | 90.59 (90.40 , 90.78) |
| Jammu & Kashmir‡ | 191384 | 78.64 (78.45 , 78.82)\* | 89.11 (88.97 , 89.25) | 99.70 (99.68 , 99.73) |
| Jharkhand | 731400 | 64.46 (64.35 , 64.57) | 57.81 (57.70 , 57.92)\* | 74.38 (74.28 , 74.48) |
| Karnataka | 898459 | 75.92 (75.83 , 76.01)\* | 85.37 (85.30 , 85.44) | 94.93 (94.88 , 94.97) |
| Kerala | 464530 | 72.46 (72.33 , 72.59)\* | 75.85 (75.73 , 75.97) | 93.83 (93.76 , 93.90) |
| Madhya Pradesh | 1403115 | 81.90 (81.83 , 81.96)\* | 84.37 (84.31 , 84.43) | 90.47 (90.42 , 90.52) |
| Maharashtra | 1796217 | 70.86 (70.79 , 70.93) | 61.88 (61.81 , 61.95)\* | 92.97 (92.93 , 93.0) |
| Manipur | 39462 | 49.81 (49.32 , 50.30)\* | 66.75 (66.28 , 67.21) | 68.69 (68.23 , 69.14) |
| Meghalaya | 89449 | 53.13 (52.81 , 53.46) | 52.05 (51.72 , 52.37)\* | 64.22 (63.90 , 64.53) |
| Mizoram | 20577 | 70.07 (69.44 , 70.69) | 62.87 (62.20 , 63.52) | 62.11 (61.45 , 62.77)\* |
| Nagaland | 20582 | 23.32 (22.75 , 23.90)\* | 67.31 (66.66 , 67.94) | 78.35 (77.78 , 78.90) |
| Odisha | 632591 | 81.13 (81.03 , 81.22) | 79.96 (79.87 , 80.06)\* | 88.96 (88.88 , 89.04) |
| Puducherry | 43023 | 99.38 (99.30 , 99.45) | 99.20 (99.19 , 99.28) | 99.18 (99.09 , 99.26)\* |
| Punjab | 377525 | 50.68 (50.52 , 50.84)\* | 75.36 (75.22 , 75.50) | 89.29 (89.19 , 89.38) |
| Rajasthan | 1362923 | 58.07 (57.99 , 58.16)\* | 69.05 (68.97 , 69.12) | 78.49 (78.42 , 78.56) |
| Sikkim | 7188 | 62.49 (61.37 , 63.61)\* | 92.01 (91.37 , 92.62) | 94.21 (93.65 , 94.73) |
| Tamil Nadu | 942471 | 98.45 (98.42 , 98.47)\* | 99.63 (99.62 , 99.64) | 99.79 (99.78 , 99.79) |
| Telangana | 633667 | 46.44 (46.32 , 46.57)\* | 88.76 (88.68 , 88.84) | 96.25 (96.20 , 96.30) |
| Tripura | 51339 | 22.18 (21.82 , 22.54)\* | 72.92 (72.54 , 73.31) | 77.80 (77.44 , 78.16) |
| Uttar Pradesh | 4071547 | 36.92 (36.88 , 36.97)\* | 51.45 (51.40 , 51.49) | 75.54 (75.50 , 75.59) |
| Uttarakhand | 152300 | 44.29 (44.04 , 44.54)\* | 64.95 (64.71 , 65.19) | 89.27 (89.11 , 89.42) |
| West Bengal | 1256148 | 79.50 (79.43 , 79.58)\* | 79.86 (79.79 , 79.93) | 91.95 (91.90 , 92.0) |

UT, union territory; A&N Islands, Andaman & Nicobar Islands; CI, confidence interval.

† Coverage in the UT of Daman & Diu, and the states of Goa and Gujarat were estimated in selected districts only. Further, estimates were not derived for the UTs of Dadra & Nagar Haveli, and Lakshadweep (details provided in methodology).

‡ The state of Jammu & Kashmir was reorganized into two administrative units, namely the UT of Jammu & Kashmir, and the UT of Ladakh in August 2019. The findings reported against Jammu & Kashmir in the paper are for both the UTs combined.

\* Indicates the vaccine/prophylaxis having the lowest coverage% at birth (among Vitamin K1, HBV, and OPV) in a given state/ UT.