PROJECT STATUS REPORT

Project Name: Planning Grant for Vaccine Effectiveness and Safety in Nigeria & Indonesia

Project Number: 1144

Partner: Universitas Gadjah Mada (UGM)

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Faculty of Medicine, Public Health, and Nursing
Universitas Gadjah Mada

TABLE OF CONTENTS

I. INTRODUCTION

This rotavirus surveillance study is part of a national effort to strengthen the monitoring of childhood diarrheal diseases, particularly those caused by rotavirus infection, and to evaluate the impact of the rotavirus vaccination program in Indonesia. Since the previous reporting period, the surveillance network has been expanded, resulting in a total of 18 sentinel sites at the time of this report. These sites comprise selected hospitals and District Health Offices, strategically distributed across multiple provinces to capture geographic and epidemiological diversity.

The study was initiated in July 2023 and has been implemented over three consecutive years. The first year covers the period from July 2023 to June 2024, the second year from July 2024 to June 2025 and the mid–third-year reporting period from July 2025 to November 2025. This report presents the mid–third-year progress update of the study. Although the focus of this document is the mid–third-year period, the data and findings presented herein are cumulative, encompassing data collected from the initiation of the study through November 2025. Data collection is ongoing, and some components reflect evolving datasets.

The study comprises four sub-studies. The active hospital-based surveillance sub-study prospectively identifies children under five years of age hospitalized with acute gastroenteritis (AGE) and collects clinical data, stool specimens for laboratory confirmation and genotype information. The passive surveillance sub-study compiles outpatient diarrhea visits from Primary Health Care (PHC) facilities, rotavirus vaccination coverage and inpatient diarrheal visits in study hospitals. The intussusception surveillance sub-study monitors cases of intussusception among infants in selected referral hospitals as part of vaccine safety monitoring. In parallel, the qualitative sub-study examines vaccine acceptability, knowledge, and implementation challenges among caregivers, healthcare providers and policy makers.

During the mid–third-year period, overall enrolment increased, alongside targeted efforts to address recruitment challenges at sites with previously low enrolment. Newly activated sites demonstrated sustained increases in enrolment, while consistently high-performing sites maintained stable recruitment. Stool specimen collection and laboratory processing remained consistent, with high concordance observed between total enrolment. Laboratory activities advanced during this period, with the completion of ELISA testing for additional sites and the identification of newly detected rotavirus genotypes.

Progress was also noted in the passive surveillance component, with improved availability of routine diarrhea data from District Health Offices, particularly for the most recent reporting year, although challenges related to older datasets and variability in site-level focal person (PIC) reporting persist. The intussusception surveillance sub-study continued at designated referral hospitals, supported by additional engagement activities with referral hospitals across multiple provinces to facilitate potential site expansion. In parallel, the qualitative study component expanded to additional regions, generating further insights into rotavirus vaccine acceptability and implementation challenges.

Collectively, this report provides an updated overview of surveillance implementation and key developments observed during the mid–third-year period and serves as a foundation for continued monitoring and future analyses as the study progresses.

II. ACTIVITIES

During the reporting period, a range of monitoring and coordination activities were conducted to support study implementation, ensure adherence to study procedures and maintain data quality across all participating sites.

A. Site Initiation Visits (SIV)

Conducted to assess site readiness, introduce study procedures, and ensure alignment with the study protocol prior to or during implementation.

Site Initiation Visit

SIV Maluku – 8 February 2025

SIV West Lombok – 13 December 2024

B. Sponsor Visits

Performed to review study progress, implementation quality, and adherence to protocol requirements.

CDC Foundation Visit

CDC Visit 10-12 October 2023

CDC Visit 3-7 June 2024

C. Source Data Verification (SDV)

Verification of study variables was conducted using both paper-based and electronic medical records. These activities were primarily carried out through online platforms, with trained research assistants and enumerators reviewing database entries and correcting discrepancies as needed.

D. Study Monitoring Visits (SMV)

On-site and remote monitoring to assess protocol adherence, enrollment procedures, specimen handling, and data management practices.

Site Monitoring Visit

SMV Bob Bazar Hospital – 19 July 2024

SMV Kabelota Hospital – 05 July 2024

SMV Selong Hospital – 28 July 2024

E. Internal Coordination Meetings

Regular meetings involving the central study team, site investigators, coordinating nurses, enumerators, laboratory staff, and data managers to review progress and address operational issues.

Internal Coordination Meeting

Coordination Meeting – 03 August 2024

Coordination Meeting – 25 March 2025

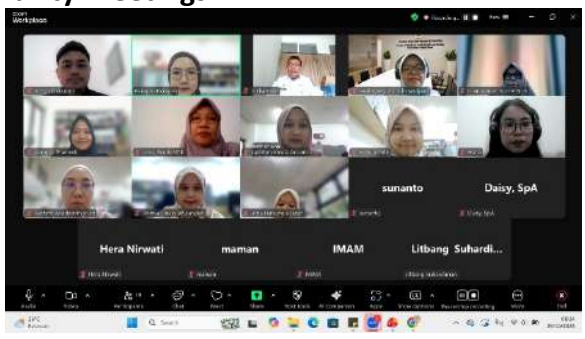
Coordination Meeting - 29 April 2025

F. Feasibility Meeting for New Sites: Aceh and South Kalimantan

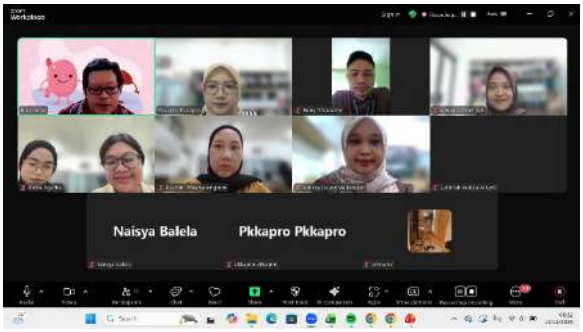
Conducted with referral hospitals to support engagement, coordination, and potential expansion of surveillance site.

Intususeption Feasibility Meetings

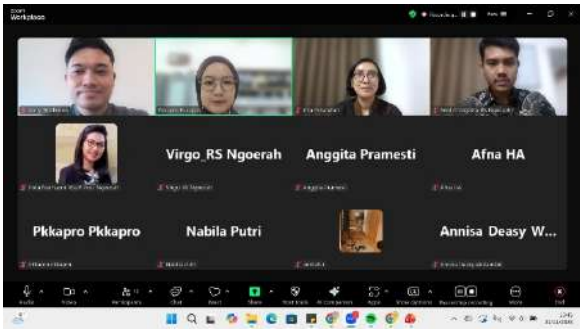
Prof. Dr. W.Z. Johannes Kupang – 23 October 2025



NTB Province Hospital - 29 October 2025

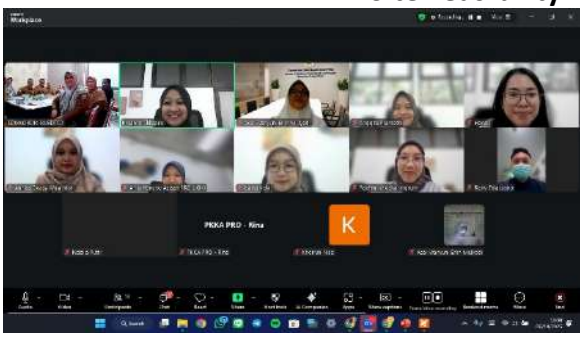


Ulin Hospital - 14 November 2025

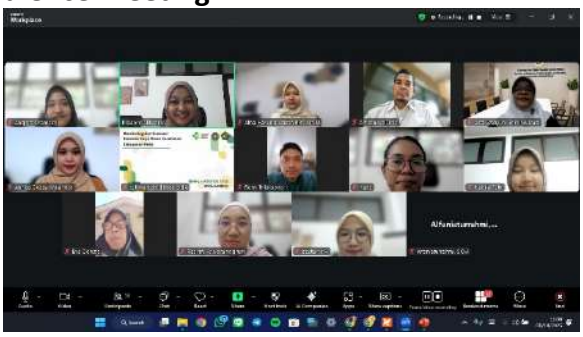


Prof. dr. Ngoerah Hospital - 21 November 2025

Site Feasibility Audience Meeting



Tgk Chik Ditiro Hospital - 06 October 2025


Pidie Health Office - 08 October 2025


Banda Aceh Health Office - 10 October

G. Trainings and Workshops

Organized for laboratory staff, enumerators, and site teams to strengthen capacity, standardize data collection, specimen handling, and laboratory procedures.


Annual Workshop – 8 November 2025

Regional Lab Training Udayana Hospital – 20 October 2025

H. Study Dissemination

Interim study findings were presented at the 15th International Rotavirus Symposium, held in South Africa, to support knowledge sharing and international collaboration.

Oral Presentation on the 15th IRS 2025

Poster Presentation on the 15th IRS 2025

III. PROGRESS SUMMARY

A. Active Surveillance

The active surveillance component of the study focuses on the prospective identification and enrollment of children under five years of age hospitalized with acute gastroenteritis (AGE) across 18 sentinel hospitals. This component captures recruitment progress, demographic data, clinical presentation, treatment, hospitalization outcomes of AGE, alongside vaccination history and stool specimens for laboratory confirmation of rotavirus infection and genotype analysis. The mid–third-year data are not fully complete, as extraction occurred while data collection and laboratory processing were ongoing. Therefore, several sites may show partially completed values due to pending data entry. The resulting data are presented in the tables below.

1. Progress of Participants Enrollment

Table 1 shows the number of participants recruited and samples collected at each study site during the First Year (August 2023 – July 2024), Second Year (August 2024 – 2025) and Mid of Third Year (July 2025 – November 2025).

Table 1 shows recruitment progress across the 18 sentinel sites and presents four categories: 1) screened participants, reflecting all individual entered into the database prior to eligibility assessment, 2) enrolled participants, representing participants who met all the inclusion criteria, 3) stool specimens and 4) aliquots processed, which denote successfully collected and processed specimens.

A total of 4641 screened participants were documented with 4619 meeting eligibility and enrolled, yielding a screening-to-enrollment rate of 99.53%. A total of 4,156 stool samples were collected, accounting for 89.98% of sample collection with aliquot totals closely matching the sample counts.

Furthermore, site performances varied. Kulon Progo, Palu, Bandar Lampung and South Lampung achieved consistent high recruitment across reporting periods. Almost all sites have high concordances between enrolled participants and collected sample, with Bandar Lampung and South Lampung demonstrating highest proportion. Newer sites, such as West Lombok and Central Maluku show substantial increase in recruitment from its initial site opening towards the mid-third-year period. This upward trend demonstrates improved and stable site capacity. There were 16 ineligible participants identified throughout the study period, located in Klaten, Boyolali, Kulon Progo, Bandar Lampung, Banjabaru and Buleleng, although these exclusions were minimal. Taken together, these observations provide an overview of recruitment activity and specimen completion across sites during the reporting periods.

Table 1. Recruitment All Site

District/City	Screened Participants			Total (a)	Enrolment Data			Total (b)	Collected Stool Sample			Total (c)	Aliquot			Total (d)
	1st Year	2nd Year	Mid-3rd Year		1st Year	2nd Year	Mid-3rd Year		1st Year	2nd Year	Mid-3rd Year		1st Year	2nd Year	Mid-3rd Year	
Central Java: n (%)																
1. Klaten	119 (53.60)	83 (37.39)	20 (9.01)	222 (100.00)	115 (52.75)	83 (38.07)	20 (9.17)	218 (98.20)	100 (50.51)	78 (39.39)	20 (10.10)	198 (90.83)	100 (50.51)	78 (39.39)	20 (10.10)	198 (100.00)
2. Boyolali	102 (60.36)	50 (29.59)	17 (10.06)	169 (100.00)	101 (60.12)	50 (29.76)	17 (10.12)	168 (99.41)	89 (58.55)	48 (31.58)	15 (9.87)	152 (90.48)	89 (58.55)	48 (31.58)	15 (9.87)	152 (100.00)
Yogyakarta: n (%)																
3. Sleman	66 (41.51)	65 (40.88)	28 (17.61)	159 (100.00)	66 (41.51)	65 (40.88)	28 (17.61)	159 (100.00)	61 (42.07)	61 (42.07)	23 (15.86)	145 (91.19)	61 (42.07)	61 (42.07)	23 (15.86)	145 (100.00)
4. Kulonprogo	143 (29.18)	270 (55.10)	77 (15.71)	490 (100.00)	140 (28.75)	270 (55.44)	77 (15.81)	487 (99.39)	124 (28.97)	242 (56.54)	62 (14.49)	428 (87.89)	124 (28.97)	242 (56.54)	62 (14.49)	428 (100.00)
Lampung: n (%)																
5. Bandar Lampung	236 (57.42)	111 (27.01)	64 (15.57)	411 (100.00)	234 (57.21)	111 (27.14)	64 (15.65)	409 (99.51)	229 (57.83)	110 (27.78)	57 (14.39)	396 (96.82)	229 (57.83)	110 (27.78)	57 (14.39)	396 (100.00)
6. South Lampung	200 (45.77)	159 (36.38)	78 (17.85)	437 (100.00)	200 (45.77)	159 (36.38)	78 (17.85)	437 (100.00)	200 (46.73)	158 (36.92)	70 (16.36)	428 (97.94)	200 (46.73)	158 (36.92)	70 (16.36)	428 (100.00)
Central Sulawesi: n (%)																
7. Palu	141 (41.23)	138 (40.35)	63 (18.42)	342 (100.00)	141 (41.23)	138 (40.35)	63 (18.42)	342 (100.00)	130 (42.90)	117 (38.61)	56 (18.48)	303 (88.60)	130 (42.90)	117 (38.61)	56 (18.48)	303 (100.00)
8. Donggala	81 (36.49)	80 (36.04)	61 (27.48)	222 (100.00)	81 (36.49)	80 (36.04)	61 (27.48)	222 (100.00)	71 (36.60)	66 (34.02)	57 (29.38)	194 (87.39)	71 (36.60)	66 (34.02)	57 (29.38)	194 (100.00)
South Kalimantan: n (%)																
9. Banjarmasin	217 (45.59)	181 (38.03)	78 (16.39)	476 (100.00)	217 (45.59)	181 (38.03)	78 (16.39)	476 (100.00)	183 (44.96)	150 (36.86)	74 (18.18)	407 (85.50)	183 (44.96)	150 (36.86)	74 (18.18)	407 (100.00)
10. Banjarbaru	103 (35.40)	133 (45.70)	55 (18.90)	291 (100.00)	101 (34.95)	133 (46.02)	55 (19.03)	289 (99.31)	82 (33.33)	119 (48.37)	45 (18.29)	246 (85.12)	82 (33.33)	119 (48.37)	45 (18.29)	246 (100.00)
11. Tapin	83 (28.62)	109 (37.59)	98 (33.79)	290 (100.00)	83 (28.62)	109 (37.59)	98 (33.79)	290 (100.00)	79 (30.86)	100 (39.06)	77 (30.08)	256 (88.28)	79 (30.86)	100 (39.06)	77 (30.08)	256 (100.00)
Bali: n (%)																
12. Buleleng	91 (32.62)	161 (57.71)	27 (9.68)	279 (100.00)	90 (32.73)	158 (57.45)	27 (9.82)	275 (98.57)	85 (33.46)	145 (57.09)	24 (9.45)	254 (92.36)	85 (33.46)	145 (57.09)	24 (9.45)	254 (100.00)
13. Badung	77 (40.53)	85 (44.74)	28 (14.74)	190 (100.00)	77 (40.53)	85 (44.74)	28 (14.74)	190 (100.00)	67 (43.23)	64 (41.29)	24 (15.48)	155 (81.58)	67 (43.23)	64 (41.29)	24 (15.48)	155 (100.00)
West Nusa Tenggara: n (%)																
14. East Lombok	48 (32.21)	61 (40.94)	40 (26.85)	149 (100.00)	48 (32.21)	61 (40.94)	40 (26.85)	149 (100.00)	46 (33.33)	54 (39.13)	38 (27.54)	138 (92.62)	46 (33.33)	54 (39.13)	38 (27.54)	138 (100.00)
15. Mataram	31 (42.47)	34 (46.58)	8 (10.96)	73 (100.00)	31 (42.47)	34 (46.58)	8 (10.96)	73 (100.00)	29 (40.85)	34 (47.89)	8 (11.27)	71 (97.26)	29 (40.85)	34 (47.89)	8 (11.27)	71 (100.00)
16. West Lombok	0 (0.00)	89 (76.07)	28 (23.93)	117 (100.00)	0 (0.00)	89 (76.07)	28 (23.93)	117 (100.00)	0 (0.00)	84 (75.00)	28 (25.00)	112 (95.73)	0 (0.00)	84 (75.00)	28 (25.00)	112 (100.00)
East Nusa Tenggara: n (%)																
17. Kupang	86 (39.45)	47 (21.56)	85 (38.99)	218 (100.00)	86 (39.45)	47 (21.56)	85 (38.99)	218 (100.00)	77 (41.18)	39 (20.86)	71 (37.97)	187 (85.78)	77 (41.18)	39 (20.86)	71 (37.97)	187 (100.00)
Maluku: n (%)																
18. Central Maluku	0 (0.00)	28 (26.42)	78 (73.58)	106 (100.00)	0 (0.00)	28 (28.00)	72 (72.00)	100 (94.34)	0 (0.00)	25 (29.07)	61 (70.93)	86 (86.00)	0 (0.00)	25 (29.07)	61 (70.93)	86 (100.00)
Total	**1824 (39.30)**	**1884 (40.59)**	**933 (20.10)**	**4641 (100.00)**	**1811 (39.21)**	**1881 (40.72)**	**927 (20.07)**	**4619 (99.53)**	**1652 (39.75)**	**1694 (40.76)**	**810 (19.49)**	**4156 (89.98)**	**1652 (39.75)**	**1694 (40.76)**	**810 (19.49)**	**4156 (100.00)**

%b = b/a %c = c/b %d = d/c

2. Number of Hospitalized AGE Enrolled and Sample Collected

Table 2. Number of Hospitalized AGE Enrolled and Sample Collected All Site

Month-Year	*Hospitalized AGE <5 years old collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)
n (%)			
August 2023	315	131 (41.59)	122 (93.13)
September 2023	296	149 (50.34)	134 (89.93)
October 2023	286	153 (53.50)	132 (86.27)
November 2023	244	150 (61.48)	138 (92.00)
December 2023	274	159 (58.03)	145 (91.19)
January 2024	299	180 (60.20)	164 (91.11)
February 2024	332	201 (60.54)	182 (90.55)
March 2024	284	136 (47.89)	128 (94.12)
April 2024	245	123 (50.20)	112 (91.06)
May 2024	277	163 (58.84)	153 (93.87)
June 2024	236	137 (58.05)	128 (93.43)
July 2024	233	129 (55.36)	114 (88.37)
August 2024	232	120 (51.72)	109 (90.83)
September 2024	264	153 (57.95)	131 (85.62)
October 2024	270	159 (58.89)	142 (89.31)
November 2024	219	134 (61.19)	125 (93.28)
December 2024	240	155 (64.58)	138 (89.03)
January 2025	275	192 (69.82)	180 (93.75)
February 2025	263	160 (60.84)	148 (92.50)
March 2025	262	144 (54.96)	134 (93.06)
April 2025	262	170 (64.89)	152 (89.41)
May 2025	237	166 (70.04)	146 (87.95)
June 2025	207	131 (63.29)	112 (85.50)
July 2025	248	197 (79.44)	177 (89.85)
August 2025	263	218 (82.89)	191 (87.61)
September 2025	290	232 (80.00)	214 (92.24)
October 2025	141	267 (189.36)	229 (85.77)
November 2025**		210 (0.00)	176 (83.81)
Total	**6994**	**4619 (66.04)**	**4156 (89.98)**

n (%) %b = b/a %c = c/b

*There are incomplete values for Hospitalized AGE collected from medical records at certain sites

** As of November 2025, medical record data provided at differing time points, thus precise counts were not available at extraction

Table 2 shows the number of hospitalized acute gastroenteritis (AGE) cases identified from the sentinel site medical records, along with the number of AGE cases enrolled and the number of stool specimens collected. A total of 6994 hospitalized AGE cases were identified in all the sentinel site's medical records, with 4619 meeting eligibility and enrolled, resulting in an overall enrollment rate of 66.04%. Stool collection remained high, with 4156 collected samples, corresponding to 89.98% successful sample collection among enrolled cases, demonstrating strong procedural compliance.

Enrollment patterns varied across reporting month, with proportions ranging between 50-70%. Higher proportions are observed in following the mid-third-year period, starting from July 2025 (79.44%), August 2025 (82.89%) and September 2025 (80.00%). The gap in enrollment patterns between periods will be individually discussed for each site below. It is also to be considered that the mid-third-year period includes incomplete entries due to ongoing data collection.

The primary limitation in this surveillance occurs at the enrollment stage. Continued strengthening of coordination mechanisms, such as timely notification from clinical staff, sufficient sentinel site staff coverage and routine ward registry checks may improve consistency and optimize surveillance performance.

3. Number of Hospitalized AGE Based on Hospitalized AGE from Hospital Data, Enrollment Data, Sample Collection in Each Site

a. Central Java and Yogyakarta

Table 3. Number of Hospitalized AGE based on Hospitalized AGE from Hospital Data, Enrollment Data, Sample Collection in Central Java & Yogyakarta

Site and Provinces	Yogyakarta						Central Java					
	Sleman			Kulonprogo			Klaten			Boyolali		
Month-Year	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)
n (%)												
August 2023	23	6 (26.09)	5 (83.33)	12	11 (91.67)	9 (81.82)	10	10 (100.00)	10 (100.00)	11	6 (54.55)	6 (100.00)
September 2023	24	7 (29.17)	7 (100.00)	5	4 (80.00)	3 (75.00)	8	6 (75.00)	6 (100.00)	18	17 (94.44)	14 (82.35)
October 2023	12	4 (33.33)	4 (100.00)	10	10 (100.00)	9 (90.00)	5	4 (80.00)	4 (100.00)	24	15 (62.50)	15 (100.00)
November 2023	11	7 (63.64)	7 (100.00)	4	4 (100.00)	4 (100.00)	9	8 (88.89)	8 (100.00)	8	6 (75.00)	5 (83.33)
December 2023	17	7 (41.18)	6 (85.71)	12	12 (100.00)	11 (91.67)	14	13 (92.86)	10 (76.92)	23	2 (8.70)	2 (100.00)
January 2024	22	4 (18.18)	3 (75.00)	16	19 (118.75)	18 (94.74)	14	14 (100.00)	14 (100.00)	24	17 (70.83)	13 (76.47)
February 2024	25	7 (28.00)	7 (100.00)	18	18 (100.00)	13 (72.22)	19	11 (57.89)	7 (63.64)	19	14 (73.68)	12 (85.71)
March 2024	15	3 (20.00)	2 (66.67)	17	16 (94.12)	15 (93.75)	23	13 (56.52)	11 (84.62)	14	9 (64.29)	8 (88.89)
April 2024	11	5 (45.45)	4 (80.00)	17	11 (64.71)	10 (90.91)	9	8 (88.89)	6 (75.00)	9	4 (44.44)	4 (100.00)
May 2024	8	7 (87.50)	7 (100.00)	19	7 (36.84)	6 (85.71)	22	20 (90.91)	18 (90.00)	10	7 (70.00)	6 (85.71)
June 2024	6	4 (66.67)	4 (100.00)	13	14 (107.69)	13 (92.86)	6	5 (83.33)	3 (60.00)	10	0 (0.00)	0 (0.00)
July 2024	10	5 (50.00)	5 (100.00)	17	14 (82.35)	13 (92.86)	3	3 (100.00)	3 (100.00)	16	4 (25.00)	4 (100.00)
August 2024	12	3 (25.00)	2 (66.67)	12	11 (91.67)	10 (90.91)	6	6 (100.00)	4 (66.67)	19	5 (26.32)	5 (100.00)
September 2024	11	5 (45.45)	4 (80.00)	20	21 (105.00)	21 (100.00)	4	4 (100.00)	3 (75.00)	17	2 (11.76)	2 (100.00)
October 2024	15	6 (40.00)	6 (100.00)	16	17 (106.25)	15 (88.24)	6	6 (100.00)	5 (83.33)	16	1 (6.25)	1 (100.00)
November 2024	7	4 (57.14)	4 (100.00)	15	14 (93.33)	13 (92.86)	12	12 (100.00)	12 (100.00)	11	7 (63.64)	6 (85.71)

December 2024	15	7 (46.67)	7 (100.00)	21	21 (100.00)	16 (76.19)	5	5 (100.00)	5 (100.00)	7	5 (71.43)	5 (100.00)
January 2025	16	7 (43.75)	6 (85.71)	36	35 (97.22)	31 (88.57)	6	5 (83.33)	5 (100.00)	4	1 (25.00)	1 (100.00)
February 2025	13	6 (46.15)	6 (100.00)	50	36 (72.00)	33 (91.67)	6	5 (83.33)	5 (100.00)	11	7 (63.64)	7 (100.00)
March 2025	47	5 (10.64)	5 (100.00)	30	28 (93.33)	25 (89.29)	3	2 (66.67)	2 (100.00)	6	1 (16.67)	1 (100.00)
April 2025	19	4 (21.05)	4 (100.00)	41	30 (73.17)	27 (90.00)	13	13 (100.00)	13 (100.00)	5	1 (20.00)	1 (100.00)
May 2025	19	11 (57.89)	10 (90.91)	18	21 (116.67)	18 (85.71)	7	6 (85.71)	5 (83.33)	4	1 (25.00)	1 (100.00)
June 2025	20	4 (20.00)	4 (100.00)	15	15 (100.00)	15 (100.00)	10	10 (100.00)	10 (100.00)	8	5 (62.50)	4 (80.00)
July 2025	9	3 (33.33)	3 (100.00)	21	21 (100.00)	18 (85.71)	10	9 (90.00)	9 (100.00)	20	14 (70.00)	14 (100.00)
August 2025	11	2 (18.18)	2 (100.00)	22	21 (95.45)	17 (80.95)	4	2 (50.00)	2 (100.00)	15	7 (46.67)	5 (71.43)
September 2025	15	7 (46.67)	6 (85.71)	24	24 (100.00)	19 (79.17)	9	7 (77.78)	7 (100.00)	8	4 (50.00)	4 (100.00)
October 2025	11	11 (100.00)	9 (81.82)	12	13 (108.33)	8 (61.54)	7	4 (57.14)	4 (100.00)	11	3 (27.27)	3 (100.00)
November 2025*			6 (75.00)			18 (94.74)			7 (100.00)			3 (100.00)
Total	**424**	**159 (37.50)**	**145 (91.19)**	**513**	**487 (94.93)**	**428 (87.89)**	**250**	**218 (87.20)**	**198 (90.83)**	**348**	**168 (48.28)**	**152 (100.00)**

n (%) %b = b/a %c = c/b
* As of November 2025, data collection remains ongoing, and the final dataset is not yet available

Table 3 presents hospitalized AGE case identification from medical records, enrollment and stool sample collection by months across sentinel sites in Central Java (Klaten and Boyolali) and Yogyakarta Province (Sleman and Kulon Progo).

The four site performance is summarized as follows:

- Sleman enrolled 159 of 426 hospitalized AGE cases (37.32%), with 91.19% sample completion.
- Kulon Progo enrolled 487 of 513 hospitalized AGE cases (94.93%), with 87.89% sample completion.
- Klaten enrolled 218 of 250 hospitalized AGE cases (87.20%), with 90.83% sample completion.
- Boyolali enrolled 168 of 348 hospitalized AGE cases (48.28%), with 100.00% sample completion.

Overall, Kulon Progo demonstrated the highest enrollment proportion across the reporting period. In contrast, Sleman and Boyolali showed a lower enrollment proportion compared to the other sites. For Sleman, the issue was attributed to limited study team availability to support participant recruitment and inconsistent notification from fellow pediatricians regarding eligible AGE admissions. A coordination meeting was conducted to initiate corrective measures, including routine registry checks and recruitment of additional coordinating nurses to improve enrollment coverage.

In Boyolali, the low enrollment was primarily due to differences in ward locations. Recruitment was focused in the main pediatric ward, which accommodates BPJS Class 2 and Class 3 patients, while Class 1 patients were admitted to a separate building approximately 7–10 minutes away, leading to missed eligible cases. A staff member previously assigned to cover the Class 1 ward resigned due to the distance required to transport samples to the only available refrigerator. To address this, the site plans to assign an additional study team to Class 1 ward while also procuring an additional refrigerator to support sample storage in that location and daily registry reviews in both wards to ensure that no eligible cases are overlooked.

b. Lampung and Central Sulawesi

Table 4. Number of Hospitalized AGE based on Hospitalized AGE from Hospital Data, Enrollment Data, Sample Collection in Lampung and Central Sulawesi

Site and Provinces	Lampung						Central Sulawesi					
	Bandar Lampung			South Lampung			Palu			Donggala		
Month-Year	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)
n (%)												
August 2023	28	7 (25.00)	7 (100.00)	25	10 (40.00)	10 (100.00)	33	13 (39.39)	13 (100.00)	21	14 (66.67)	14 (100.00)
September 2023	27	13 (48.15)	13 (100.00)	24	21 (87.50)	21 (100.00)	21	11 (52.38)	9 (81.82)	6	3 (50.00)	3 (100.00)
October 2023	38	21 (55.26)	18 (85.71)	22	17 (77.27)	17 (100.00)	8	6 (75.00)	5 (83.33)	5	4 (80.00)	3 (75.00)
November 2023	25	21 (84.00)	20 (95.24)	14	10 (71.43)	10 (100.00)	9	5 (55.56)	5 (100.00)	8	7 (87.50)	6 (85.71)
December 2023	52	28 (53.85)	28 (100.00)	21	18 (85.71)	18 (100.00)	17	12 (70.59)	12 (100.00)	9	4 (44.44)	3 (75.00)
January 2024	54	39 (72.22)	38 (97.44)	21	16 (76.19)	16 (100.00)	6	5 (83.33)	5 (100.00)	9	9 (100.00)	7 (77.78)
February 2024	99	59 (59.60)	59 (100.00)	21	15 (71.43)	15 (100.00)	18	16 (88.89)	15 (93.75)	3	3 (100.00)	3 (100.00)
March 2024	54	14 (25.93)	14 (100.00)	19	15 (78.95)	15 (100.00)	7	7 (100.00)	7 (100.00)	7	5 (71.43)	4 (80.00)
April 2024	28	4 (14.29)	4 (100.00)	17	16 (94.12)	16 (100.00)	16	16 (100.00)	15 (93.75)	8	5 (62.50)	4 (80.00)
May 2024	29	9 (31.03)	9 (100.00)	30	25 (83.33)	25 (100.00)	14	14 (100.00)	14 (100.00)	12	11 (91.67)	11 (100.00)
June 2024	32	12 (37.50)	12 (100.00)	27	26 (96.30)	26 (100.00)	20	21 (105.00)	18 (85.71)	9	9 (100.00)	9 (100.00)
July 2024	26	7 (26.92)	7 (100.00)	15	11 (73.33)	11 (100.00)	17	15 (88.24)	12 (80.00)	11	7 (63.64)	4 (57.14)
August 2024	28	9 (32.14)	9 (100.00)	16	10 (62.50)	10 (100.00)	12	12 (100.00)	11 (91.67)	16	13 (81.25)	10 (76.92)

September 2024	14	6 (42.86)	6 (100.00)	17	14 (82.35)	14 (100.00)	16	15 (93.75)	13 (86.67)	14	8 (57.14)	6 (75.00)
October 2024	20	9 (45.00)	9 (100.00)	27	21 (77.78)	21 (100.00)	11	11 (100.00)	9 (81.82)	8	6 (75.00)	5 (83.33)
November 2024	24	9 (37.50)	9 (100.00)	22	17 (77.27)	17 (100.00)	8	9 (112.50)	7 (77.78)	7	4 (57.14)	4 (100.00)
December 2024	36	11 (30.56)	11 (100.00)	25	23 (92.00)	23 (100.00)	9	7 (77.78)	6 (85.71)	7	7 (100.00)	6 (85.71)
January 2025	28	14 (50.00)	14 (100.00)	20	20 (100.00)	20 (100.00)	15	15 (100.00)	14 (93.33)	7	6 (85.71)	5 (83.33)
February 2025	22	12 (54.55)	12 (100.00)	13	7 (53.85)	7 (100.00)	9	9 (100.00)	7 (77.78)	8	4 (50.00)	4 (100.00)
March 2025	23	5 (21.74)	5 (100.00)	9	8 (88.89)	8 (100.00)	12	9 (75.00)	8 (88.89)	3	1 (33.33)	1 (100.00)
April 2025	22	3 (13.64)	3 (100.00)	20	17 (85.00)	17 (100.00)	10	9 (90.00)	7 (77.78)	5	4 (80.00)	3 (75.00)
May 2025	33	17 (51.52)	17 (100.00)	22	15 (68.18)	14 (93.33)	13	12 (92.31)	9 (75.00)	7	3 (42.86)	1 (33.33)
June 2025	14	5 (35.71)	5 (100.00)	8	2 (25.00)	2 (100.00)	12	12 (100.00)	11 (91.67)	7	7 (100.00)	5 (71.43)
July 2025	14	11 (78.57)	10 (90.91)	8	5 (62.50)	5 (100.00)	17	18 (105.88)	15 (83.33)	22	17 (77.27)	16 (94.12)
August 2025	18	16 (88.89)	16 (100.00)	9	8 (88.89)	8 (100.00)	16	15 (93.75)	12 (80.00)	24	22 (91.67)	20 (90.91)
September 2025	17	7 (41.18)	7 (100.00)	31	25 (80.65)	25 (100.00)	19	19 (100.00)	19 (100.00)	26	26 (100.00)	25 (96.15)
October 2025*	28	26 (92.86)	21 (80.77)		21 (0.00)	20 (95.24)	21	19 (90.48)	18 (94.74)	10	9 (90.00)	9 (100.00)
November 2025*		15 (0.00)	13 (86.67)		24 (0.00)	17 (70.83)		10 (0.00)	7 (70.00)		4 (0.00)	3 (75.00)
Total	**833**	**409 (49.10)**	**396 (96.82)**	**503**	**437 (86.88)**	**428 (97.94)**	**386**	**342 (88.60)**	**303 (88.60)**	**279**	**222 (79.57)**	**194 (87.39)**

n (%) %b = b/a %c = c/b

* As of October and November 2025, data collection remains ongoing, and the final dataset is not yet available.

Table 4 presents hospitalized AGE case identification from medical records, enrollment and stool sample collection by months across sentinel sites in Lampung (Bandar Lampung and South Lampung) and Central Sulawesi (Palu and Donggala).

The four site performance is summarized as follows:

1. Bandar Lampung enrolled 409 of 833 hospitalized AGE cases (49.10%), with 96.82% stool sample collection.
2. South Lampung enrolled 437 of 503 hospitalized AGE cases (86.66%), with 99.72% stool sample collection.
3. Palu enrolled 342 of 386 hospitalized AGE cases (88.60%), with 88.60% stool sample collection.
4. Donggala enrolled 222 of 279 hospitalized AGE cases (79.57%), with 87.39% stool sample collection.

Across the reporting period, Palu demonstrated the strongest recruitment patterns. Bandar Lampung demonstrated lowest enrollment proportion, despite near-perfect stool sample collection. Discussions with the site revealed that the primary challenge was because the pediatric ward has limited bed capacity, resulting in many pediatric patients, especially the eligible AGE cases, being temporarily placed in a transit room or other wards. Since recruitment solely

focused on the main pediatric ward, eligible cases in the transit area were frequently missed. To address this, the site investigator, coordinating nurse and enumerator initiated an active approach in the transit rooms starting July 2025, after which recruitment began to improve.

c. South Kalimantan and Bali

Table 5. Number of Hospitalized AGE based on Hospitalized AGE from Hospital Data, Enrollment Data, Sample Collection in South Kalimantan and Bali

Site and Provinces	South Kalimantan									Bali					
	Banjarmasin			Banjarbaru			Tapin			Buleleng			Badung		
Month-Year	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)	Hospitalized AGE collected from medical record (a)	Hospitalized AGE enrolled (b)	Number of sample collection (c)
n (%)															
August 2023	27	4 (14.81)	3 (75.00)	35	18 (51.43)	14 (77.78)	23	0 (0.00)	0 (0.00)	15	11 (73.33)	11 (100.00)	11	7 (63.64)	7 (100.00)
September 2023	35	12 (34.29)	10 (83.33)	48	21 (43.75)	16 (76.19)	23	7 (30.43)	7 (100.00)	16	9 (56.25)	8 (88.89)	7	6 (85.71)	6 (100.00)
October 2023	38	19 (50.00)	14 (73.68)	35	9 (25.71)	6 (66.67)	22	17 (77.27)	14 (82.35)	25	9 (36.00)	9 (100.00)	8	5 (62.50)	4 (80.00)
November 2023	31	18 (58.06)	14 (77.78)	33	17 (51.52)	14 (82.35)	23	16 (69.57)	15 (93.75)	11	3 (27.27)	3 (100.00)	16	11 (68.75)	11 (100.00)
December 2023	21	15 (71.43)	9 (60.00)	9	6 (66.67)	5 (83.33)	9	4 (44.44)	4 (100.00)	9	9 (100.00)	9 (100.00)	10	7 (70.00)	6 (85.71)
January 2024	40	21 (52.50)	20 (95.24)	13	1 (7.69)	1 (100.00)	14	5 (35.71)	5 (100.00)	14	7 (50.00)	6 (85.71)	16	9 (56.25)	5 (55.56)
February 2024	26	20 (76.92)	18 (90.00)	17	4 (23.53)	3 (75.00)	6	1 (16.67)	1 (100.00)	12	10 (83.33)	10 (100.00)	9	6 (66.67)	5 (83.33)
March 2024	39	23 (58.97)	21 (91.30)	20	3 (15.00)	3 (100.00)	10	5 (50.00)	5 (100.00)	13	3 (23.08)	3 (100.00)	7	6 (85.71)	6 (100.00)
April 2024	27	18 (66.67)	16 (88.89)	27	4 (14.81)	4 (100.00)	11	5 (45.45)	5 (100.00)	16	9 (56.25)	8 (88.89)	9	6 (66.67)	6 (100.00)
May 2024	35	28 (80.00)	23 (82.14)	27	6 (22.22)	6 (100.00)	19	8 (42.11)	8 (100.00)	13	10 (76.92)	10 (100.00)	6	3 (50.00)	2 (66.67)
June 2024	27	28 (103.70)	16 (57.14)	13	3 (23.08)	3 (100.00)	18	7 (38.89)	7 (100.00)	21	3 (14.29)	3 (100.00)	6	6 (100.00)	5 (83.33)
July 2024	22	21 (95.45)	19 (90.48)	25	9 (36.00)	7 (77.78)	12	8 (66.67)	8 (100.00)	19	7 (36.84)	5 (71.43)	6	5 (83.33)	4 (80.00)
August 2024	19	15 (78.95)	13 (86.67)	14	2 (14.29)	2 (100.00)	12	11 (91.67)	11 (100.00)	17	2 (11.76)	2 (100.00)	8	5 (62.50)	5 (100.00)
September 2024	33	27 (81.82)	22 (81.48)	32	15 (46.88)	10 (66.67)	17	12 (70.59)	12 (100.00)	22	8 (36.36)	6 (75.00)	7	4 (57.14)	2 (50.00)
October 2024	31	16 (51.61)	14 (87.50)	40	26 (65.00)	23 (88.46)	19	11 (57.89)	11 (100.00)	16	7 (43.75)	5 (71.43)	7	6 (85.71)	4 (66.67)
November 2024	26	13 (50.00)	10 (76.92)	20	10 (50.00)	9 (90.00)	20	17 (85.00)	17 (100.00)	11	6 (54.55)	6 (100.00)	6	4 (66.67)	3 (75.00)

December 2024	33	17 (51.52)	14 (82.35)	15	7 (46.67)	7 (100.00)	15	7 (46.67)	7 (100.00)	17	12 (70.59)	11 (91.67)	4	4 (100.00)	3 (75.00)
January 2025	29	20 (68.97)	17 (85.00)	20	11 (55.00)	10 (90.91)	15	7 (46.67)	7 (100.00)	11	11 (100.00)	11 (100.00)	11	7 (63.64)	6 (85.71)
February 2025	19	16 (84.21)	14 (87.50)	33	13 (39.39)	13 (100.00)	5	2 (40.00)	2 (100.00)	16	14 (87.50)	11 (78.57)	14	10 (71.43)	10 (100.00)
March 2025	18	11 (61.11)	10 (90.91)	14	9 (64.29)	8 (88.89)	9	4 (44.44)	4 (100.00)	27	26 (96.30)	25 (96.15)	14	8 (57.14)	7 (87.50)
April 2025	22	13 (59.09)	11 (84.62)	13	5 (38.46)	5 (100.00)	12	10 (83.33)	8 (80.00)	33	28 (84.85)	26 (92.86)	10	10 (100.00)	7 (70.00)
May 2025	16	13 (81.25)	10 (76.92)	21	11 (52.38)	10 (90.91)	9	6 (66.67)	5 (83.33)	23	17 (73.91)	17 (100.00)	11	8 (72.73)	5 (62.50)
June 2025	14	8 (57.14)	6 (75.00)	14	12 (85.71)	11 (91.67)	11	8 (72.73)	5 (62.50)	17	9 (52.94)	7 (77.78)	11	9 (81.82)	6 (66.67)
July 2025	16	12 (75.00)	9 (75.00)	18	12 (66.67)	11 (91.67)	19	14 (73.68)	11 (78.57)	18	18 (100.00)	18 (100.00)	11	10 (90.91)	6 (60.00)
August 2025	18	14 (77.78)	14 (100.00)	16	13 (81.25)	11 (84.62)	19	15 (78.95)	12 (80.00)	9	9 (100.00)	7 (77.78)	11	11 (100.00)	9 (81.82)
September 2025	15	13 (86.67)	12 (92.31)	18	11 (61.11)	9 (81.82)	21	16 (76.19)	16 (100.00)	11	9 (81.82)	8 (88.89)	4	3 (75.00)	3 (100.00)
October 2025*	23	21 (91.30)	20 (95.24)	16	14 (87.50)	12 (85.71)		43 (0.00)	28 (65.12)		5 (0.00)	5 (100.00)		8 (0.00)	6 (75.00)
November 2025*		30 (0.00)	28 (93.33)		17 (0.00)	13 (76.47)		24 (0.00)	21 (87.50)		4 (0.00)	4 (100.00)		6 (0.00)	6 (100.00)
Total	**700**	**486 (69.43)**	**407 (83.74)**	**606**	**289 (47.69)**	**246 (85.12)**	**393**	**290 (73.79)**	**256 (88.28)**	**432**	**275 (63.66)**	**254 (92.36)**	**240**	**190 (79.17)**	**155 (81.58)**

n (%) %b = b/a %c = c/b

* As of October and November 2025, data collection remains ongoing, and the final dataset is not yet available.

Table 5 presents hospitalized AGE case identification from medical records, enrollment and stool sample collection by months across sentinel sites in South Kalimantan (Banjarmasin, Banjarbaru and Tapin) and Bali (Buleleng and Badung).

The four site performance is summarized as follows:

5. Banjarmasin enrolled 486 of 700 hospitalized AGE cases (69.43%), with 83.74% stool sample collection.
6. Banjarbaru enrolled 289 of 606 hospitalized AGE cases (47.69%), with 85.12% stool sample collection.
7. Tapin enrolled 290 of 393 hospitalized AGE cases (73.79%), with 88.28% stool sample collection.
8. Buleleng enrolled 275 of 432 hospitalized AGE cases (63.66%), with 92.36% stool sample collection.
9. Badung enrolled 190 of 240 hospitalized AGE cases (79.17%), with 81.58% stool sample collection

Overall, Badung demonstrated the highest enrollment proportions, indicating consistent case identification and recruitment processes, whereas Banjarbaru showed the lowest enrollment, primarily during the first and second year; however, improvements were observed during the mid–third-year period, where enrollment trends increased steadily.

d. West Nusa Tenggara, East Nusa Tenggara and Maluku

Table 6. Number of Hospitalized AGE based on Hospitalized AGE from Hospital Data, Enrollment Data, Sample Collection in West Nusa Tenggara, East Nusa Tenggara and Maluku

	West Nusa Tenggara									East Nusa Tenggara			Maluku		
Site and Provinces	**East Lombok**			**Mataram**			**West Lombok**			**Kupang**			**Central Maluku**		
Month-Year	**Hospitalized AGE collected from medical record (a)**	**Hospitalized AGE enrolled (b)**	**Number of sample collection (c)**	**Hospitalized AGE collected from medical record (a)**	**Hospitalized AGE enrolled (b)**	**Number of sample collection (c)**	**Hospitalized AGE collected from medical record (a)**	**Hospitalized AGE enrolled (b)**	**Number of sample collection (c)**	**Hospitalized AGE collected from medical record (a)**	**Hospitalized AGE enrolled (b)**	**Number of sample collection (c)**	**Hospitalized AGE collected from medical record (a)**	**Enrolled (b)**	**Number of sample collection (c)**
n (%)															
August 2023	18	6 (33.33)	5 (83.33)	5	4 (80.00)	4 (100.00)	6	NA	NA	10	4 (40.00)	4 (100.00)	2	NA	NA
September 2023	12	4 (33.33)	4 (100.00)	4	5 (125.00)	5 (100.00)	10	NA	NA	7	3 (42.86)	2 (66.67)	1	NA	NA
October 2023	10	5 (50.00)	5 (100.00)	2	2 (100.00)	0 (0.00)	11	NA	NA	7	6 (85.71)	5 (83.33)	4	NA	NA
November 2023	11	8 (72.73)	8 (100.00)	2	1 (50.00)	1 (100.00)	12	NA	NA	9	8 (88.89)	7 (87.50)	8	NA	NA
December 2023	18	8 (44.44)	8 (100.00)	0	0 (0.00)	0 (0.00)	13	NA	NA	15	14 (93.33)	14 (100.00)	5	NA	NA
January 2024	4	3 (75.00)	3 (100.00)	1	1 (100.00)	1 (100.00)	5	NA	NA	11	10 (90.91)	9 (90.00)	15	NA	NA
February 2024	9	0 (0.00)	0 (0.00)	3	3 (100.00)	3 (100.00)	7	NA	NA	16	14 (87.50)	11 (78.57)	5	NA	NA
March 2024	11	2 (18.18)	2 (100.00)	4	4 (100.00)	4 (100.00)	4	NA	NA	9	8 (88.89)	8 (100.00)	11	NA	NA
April 2024	13	4 (30.77)	3 (75.00)	4	4 (100.00)	4 (100.00)	4	NA	NA	5	4 (80.00)	3 (75.00)	14	NA	NA
May 2024	9	1 (11.11)	1 (100.00)	3	3 (100.00)	3 (100.00)	5	NA	NA	6	4 (66.67)	4 (100.00)	10	NA	NA
June 2024	12	5 (41.67)	5 (100.00)	1	1 (100.00)	1 (100.00)	4	NA	NA	3	3 (100.00)	3 (100.00)	8	NA	NA
July 2024	6	2 (33.33)	2 (100.00)	3	3 (100.00)	3 (100.00)	5	NA	NA	9	8 (88.89)	7 (87.50)	11	NA	NA
August 2024	23	7 (30.43)	7 (100.00)	3	4 (133.33)	4 (100.00)	2	NA	NA	8	5 (62.50)	4 (80.00)	5	NA	NA
September 2024	15	3 (20.00)	2 (66.67)	4	4 (100.00)	4 (100.00)	5	NA	NA	9	5 (55.56)	4 (80.00)	7	NA	NA
October 2024	16	9 (56.25)	7 (77.78)	2	2 (100.00)	2 (100.00)	5	NA	NA	8	5 (62.50)	5 (100.00)	7	NA	NA
November 2024	13	1 (7.69)	1 (100.00)	2	3 (150.00)	3 (100.00)	5	NA	NA	5	4 (80.00)	4 (100.00)	5	NA	NA
December 2024	8	7 (87.50)	5 (71.43)	5	5 (100.00)	5 (100.00)	5	5 (100.00)	4 (80.00)	7	5 (71.43)	3 (60.00)	6	NA	NA
January 2025	18	4 (22.22)	4 (100.00)	0	0 (0.00)	0 (0.00)	23	21 (91.30)	21 (100.00)	9	8 (88.89)	8 (100.00)	7	NA	NA

February 2025	17	1 (5.88)	1 (100.00)	2	2 (100.00)	2 (100.00)	16	11 (68.75)	10 (90.91)	4	3 (75.00)	2 (66.67)	5	2 (40.00)	2 (100.00)
March 2025	13	1 (7.69)	0 (0.00)	0	0 (0.00)	0 (0.00)	21	16 (76.19)	16 (100.00)	4	2 (50.00)	2 (100.00)	9	8 (88.89)	7 (87.50)
April 2025	11	7 (63.64)	7 (100.00)	0	0 (0.00)	0 (0.00)	18	10 (55.56)	8 (80.00)	0	0 (0.00)	0 (0.00)	8	6 (75.00)	5 (83.33)
May 2025	6	7 (116.67)	7 (100.00)	2	2 (100.00)	2 (100.00)	16	7 (43.75)	6 (85.71)	3	3 (100.00)	3 (100.00)	7	6 (85.71)	6 (100.00)
June 2025	23	9 (39.13)	8 (88.89)	3	3 (100.00)	3 (100.00)	12	5 (41.67)	5 (100.00)	6	6 (100.00)	3 (50.00)	2	2 (100.00)	2 (100.00)
July 2025	15	5 (33.33)	5 (100.00)	9	9 (100.00)	9 (100.00)	15	14 (93.33)	14 (100.00)	2	1 (50.00)	1 (100.00)	4	4 (100.00)	3 (75.00)
August 2025	21	14 (66.67)	13 (92.86)	3	3 (100.00)	3 (100.00)	8	7 (87.50)	7 (100.00)	36	36 (100.00)	31 (86.11)	3	3 (100.00)	2 (66.67)
September 2025	17	11 (64.71)	11 (100.00)	0	0 (0.00)	0 (0.00)	11	9 (81.82)	9 (100.00)	29	29 (100.00)	23 (79.31)	15	12 (80.00)	11 (91.67)
October 2025		8 (0.00)	7 (87.50)		5 (0.00)	5 (100.00)		8 (0.00)	8 (100.00)		14 (0.00)	11 (78.57)		35 (0.00)	35 (100.00)
November 2025		7 (0.00)	6 (85.71)		0 (0.00)	0 (0.00)		4 (0.00)	4 (100.00)		6 (0.00)	6 (100.00)		22 (0.00)	13 (59.09)
Total	**349**	**149 (42.69)**	**137 (91.95)**	**67**	**73 (108.96)**	**71 (97.26)**	**248***	**117 (47.18**)**	**112 (95.73)**	**237**	**218 (91.98)**	**187 (85.78)**	**184***	**100 (54.35**)**	**86 (86.00)**

n (%) %b = b/a %c = c/b
As of October and November 2025, data collection remains ongoing, and the final dataset is not yet available.
NA = Indicates that data were not collected during the specified period because the site had not yet begun active surveillance
* = Total number of hospitalized AGE cases in the medical records reflects only the period after the site began active surveillance, rather than from the overall study start date
** = The percentage shown represents the proportion of enrolled hospitalized AGE cases calculated using the adjusted denominator marked with *

Table 6 presents hospitalized AGE case identification from medical records, enrollment and stool sample collection by months across sentinel sites in West Nusa Tenggara (East Lombok and Mataram), East Nusa Tenggara (Kupang) and Maluku (Central Maluku).

The four site performance is summarized as follows:

10. East Lombok enrolled 149 of 349 hospitalized AGE cases (42.69%), with 91.17% stool sample collection.
11. Mataram enrolled 73 of 67 hospitalized AGE cases (108.96%), with 97.26% stool sample collection.
12. West Lombok enrolled 117 of 145 hospitalized AGE cases (80.69%), with 95.73% stool sample collection.
13. Kupang enrolled 218 of 237 hospitalized AGE cases (91.98%), with 85.78% stool sample collection.
14. Central Maluku enrolled 100 of 53 hospitalized AGE cases (188.68%), with 86.00% stool sample collection.

Across the reporting period, Kupang demonstrated the strongest recruitment performance, with consistently high enrollment levels. East Lombok showed lower enrollment performance, primarily during the first and second year; however, improvements were observed during the mid–third-year period, where enrollment trends increased steadily. Newly added sites, including West Lombok and Central Maluku, demonstrated moderate-to-high enrollment proportions with stool sampling closely aligned to the number of enrolled participants, indicating a stable operational workflow. Mataram continued to report

a small number of hospitalized AGE cases despite participating as an active sentinel site across three reporting periods**.** According to site investigators and coordinating nurses, AGE-related admissions among children under five years of age, whether referred from neighboring hospitals or admitted directly, has been confirmed to be low within the surrounding area.

Enrollment percentages exceeding 100% in some sites reflect a mismatch between passive hospital record data and active surveillance data collected by the study team. This discrepancy is likely due to incomplete medical record due to ongoing data collection or inaccuracies within routine hospital record documentation.

4. Samples Collection: Feces vs. Diapers

Table 7. Samples Collected

District/City	N = 4619	Stool Sample*			
		Collected Stool Sample (N= 4156 (90.0%))			Not Collected Stool Sample (N= 441 (9.5%))
		Feces (n = 3175 (76.4%))	Diapers (n=981 (23.6%)	Total: n (%)	
Central Java					
1. Klaten	218	186 (93.94)	12 (6.06)	198 (90.83)	20 (9.17)
2. Boyolali	168	107 (70.39)	45 (29.61)	152 (90.48)	16 (9.52)
Yogyakarta					
3. Sleman	159	79 (54.48)	66 (45.52)	145 (91.19)	14 (8.81)
4. Kulonprogo	487	336 (78.50)	92 (21.50)	428 (87.89)	59 (12.11)
Lampung					
5. Bandar Lampung	409	382 (96.46)	14 (3.54)	396 (96.82)	13 (3.18)
6. South Lampung	437	428 (100.00)	0 (0.00)	428 (97.94)	5 (1.14)
Central Sulawesi					
7. Palu	342	81 (26.73)	222 (73.27)	303 (88.60)	39 (11.40)
8. Donggala	222	176 (90.72)	18 (9.28)	194 (87.39)	28 (12.61)
South Kalimantan					
9. Banjarmasin	476	302 (74.20)	105 (25.80)	407 (85.50)	69 (14.50)
10. Banjarbaru	289	139 (56.50)	107 (43.50)	246 (85.12)	43 (14.88)
11. Tapin	290	205 (80.08)	51 (19.92)	256 (88.28)	22 (7.59)
Bali					
12. Buleleng	275	175 (68.90)	79 (31.10)	254 (92.36)	21 (7.64)
13. Badung	190	154 (99.35)	1 (0.65)	155 (81.58)	35 (18.42)
West Nusa Tenggara					
14. East Lombok	149	102 (73.91)	36 (26.09)	138 (92.62)	11 (7.38)
15. Mataram	73	67 (94.37)	4 (5.63)	71 (97.26)	2 (2.74)
16. West Lombok	117	62 (55.36)	50 (44.64)	112 (95.73)	5 (4.27)
East Nusa Tenggara					
17. Kupang	218	150 (80.21)	37 (19.79)	187 (85.78)	31 (14.22)
Maluku					
18. Central Maluku	100	44 (51.16)	42 (48.84)	86 (86.00)	8 (8.00)

%Collected stool sample = Total collected stool sample/N
%Not collected stool sample = Total not collected stool sample/N
* 22 samples (0.48%) had missing information regarding sample availability

Table 8. Reason Sample Not Taken

Reason	Frequency	Percentage
No stool during hospitalization	226	51.25%
Sample too watery	59	13.38%
Parents forgot to collect stool	61	13.83%
Insufficient volume of stool	50	11.34%
Discharge against medical advice	45	10.20%
Total	**441**	**100.00%**

Table 7 presents stool specimen collection across all 18 sentinel sites, stratified by type of specimen (feces or diapers), total of sample collected per site and the amount of stool sample not collected per site. Of 4619 enrolled hospitalized AGE participants, 4156 stool samples were collected (90%), while 441 participants (9.5%) did not provide a sample. Of the collected samples, 3175 (76.4%) were feces and 981 (23.6%) were diapers.

Across sites, markedly different patterns of feces versus diapers collection were observed. Site with high diaper sampling was Palu (73.27%). Conversely, sites with predominant fecal stool collection (>90%) were South Lampung (100%), Badung (99.35%) and Bandar Lampung (96.46%), Mataram (94.37%), Klaten (93.94%) and Donggala (90.72%), indicating routine feasibility of feces-based collection in those locations.

Table 8 explains the reasons stool samples were not obtained. The most frequent reason was not stool available during hospitalization, often due to participants not experiencing any episodes of diarrhea from the time of recruitment to discharge. This was followed by stool sample being too watery and insufficient stool volume for aliquot preparation. In some cases, parents of the participants tend to forget to collect the stool or the child was discharged against medical advice. Collectively, these findings indicate that most missed sample collections were related to clinical circumstances or timing of sample availability rather than procedural non-compliance.

Overall, stool sample collection rates remained high across all sentinel sites, although the proportion of diaper-based samples varied considerably.

5. Demographic Data

Table 9. Demographic Data

Parameter	Subjects in All Regions: 4619
Age: in month	
Mean	20.3
SD	14.4
Median	16.00
Min - Max	(0.00 - 59.00)
Age Group: n (%)	
0-5 Month	571 (12.36)
6-11 Month	1019 (22.06)
12-23 Month	1446 (31.31)
24-59 Month	1583 (34.27)
Sex: n (%)	
Boys	2792 (60.45)
Girls	1827 (39.55)

Table 9 outlines the demographic characteristics of 4619 hospitalized AGE participants enrolled across all sentinel sites. The mean age at enrollment was 20.3 months and the median age was 16 months. The age distribution range from newborn (0 months) to 59 months, reflecting the intended focus on children under five years. The highest proportion of cases occurred among children aged 24-59 months, with the smallest proportion among

infants ages 0-5 months. This distribution suggests that hospitalization due to AGE were more frequently observed among older infants and toddlers than among younger infants.

6. Clinical Profile

Table 10. Clinical Profile (Diarrhea) by Age Group

Clinical Profile (Diarrhea)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Diarrhea					
Pre-Hospital					
Diarrhea (n = 4607)					
Yes	542 (12.95)	913 (21.82)	1310 (31.31)	1419 (33.91)	4184 (90.82)
No	29 (6.86)	104 (24.59)	133 (31.44)	157 (37.12)	423 (9.18)
NA	0 (0.00)	2 (0.47)	3 (0.71)	7 (1.65)	12 (0.26)
Duration of Diarrhea (n = 4184)					
1-4 days	495 (12.97)	830 (21.74)	1178 (30.86)	1314 (34.42)	3817 (91.23)
5 days	11 (8.59)	27 (21.09)	53 (41.41)	37 (28.91)	128 (3.06)
≥ 6 days	36 (15.06)	56 (23.43)	79 (33.05)	68 (28.45)	239 (5.71)
Maximum Frequency of Diarrhea within 24 Hours (n = 4183)					
1-3 times	100 (8.52)	245 (20.87)	369 (31.43)	460 (39.18)	1174 (28.06)
4-5 times	154 (12.21)	284 (22.52)	414 (32.83)	409 (32.43)	1261 (30.14)
≥ 6 times	288 (16.48)	384 (21.97)	526 (30.09)	550 (31.46)	1748 (41.78)
NA	0 (0.00)	0 (0.00)	1 (0.06)	0 (0.00)	1 (0.02)
During Hospitalization					
Diarrhea (n = 4619)					
Yes	558 (12.81)	995 (22.84)	1375 (31.57)	1428 (32.78)	4356 (94.31)
No	9 (3.91)	20 (8.70)	60 (26.09)	141 (61.30)	230 (4.98)
NA	4 (12.12)	4 (12.12)	11 (33.33)	14 (42.42)	33 (0.71)
Duration of Diarrhea (n = 4356)					
1-4 days	472 (12.06)	868 (22.18)	1232 (31.48)	1342 (34.29)	3914 (89.85)
5 days	41 (16.80)	65 (26.64)	84 (34.43)	54 (22.13)	244 (5.60)
≥ 6 days	45 (22.73)	62 (31.31)	59 (29.80)	32 (16.16)	198 (4.55)
Maximum Frequency of Diarrhea within 24 Hours (n = 4356)					
1-3 times	124 (9.83)	233 (18.48)	424 (33.62)	480 (38.07)	1261 (28.95)
4-5 times	185 (12.84)	336 (23.32)	449 (31.16)	471 (32.69)	1441 (33.08)
≥ 6 times	249 (15.05)	426 (25.76)	502 (30.35)	477 (28.84)	1654 (37.97)

Table 10 summarizes one of the clinical characteristics relating to AGE, which is diarrhea prior to admission and during hospitalization among enrolled participants, stratified by age groups. A small proportion of data (<1%) were recorded as “Not Available”, representing missing data not entered into the database.

Pre-Hospitalization Diarrhea

Prior to hospitalization, 4184 participants (90.82%) experienced diarrhea, with the highest proportion in children aged 24-59 months (33.91%) and lowest among infants 0-5

months (12.95%). Across age groups, the majority reported diarrhea lasting 1-4 days (91.23%) and 5.71% reported ≥6 days of symptoms before admission. Maximum frequency of diarrhea within 24 hours was ≥6 times in 41.78% of cases overall, suggesting moderate to severe diarrheal illness in many children prior to hospitalization.

During Hospitalization Diarrhea

During admission, 4356 children (94.31%) continued to experience diarrhea, reflecting persistence of illness even after hospital entry. Duration of diarrhea during hospitalization was predominantly 1-4 days (89.85%) while around 4.55% had persistent diarrhea lasting ≥6 days. Maximum diarrheal frequency of ≥6 times per 24 hours remained high during hospitalization (37.97%), indicating clinically significant diarrhea even after treatment was initiated.

Older children (12-23 months and 24-59 months) comprised the largest proportion in experiencing AGE. Taken together, these finding indicate that most hospitalized AGE cases presented with ongoing and frequent diarrhea both prior and during hospitalization, with moderate-to-severe disease pattern.

Table 11. Clinical Profile (Vomiting) by Age Group

Clinical Profile (Vomiting)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Vomiting					
Pre-Hospital					
Vomiting (n = 4619)					
Yes	298 (9.10)	707 (21.60)	1056 (32.26)	1212 (37.03)	3273 (71.04)
No	273 (20.46)	310 (23.24)	387 (29.01)	364 (27.29)	1334 (28.96)
NA	0 (0.00)	2 (0.15)	3 (0.22)	7 (0.52)	12 (0.26)
Duration of Vomiting (n = 3273)					
1 day	214 (9.53)	476 (21.19)	709 (31.57)	847 (37.71)	2246 (68.62)
2 days	47 (8.99)	123 (23.52)	162 (30.98)	191 (36.52)	523 (15.98)
≥ 3 days	37 (7.36)	108 (21.47)	184 (36.58)	174 (34.59)	503 (15.37)
NA	0 (0.00)	0 (0.00)	1 (0.20)	0 (0.00)	1 (0.03)
Maximum Frequency of Vomiting within 24 Hours (n = 3273)					
1 time	62 (11.57)	129 (24.07)	181 (33.77)	164 (30.60)	536 (16.38)
2-4 times	133 (9.98)	322 (24.17)	430 (32.28)	447 (33.56)	1332 (40.70)
≥ 5 times	103 (7.34)	256 (18.23)	444 (31.62)	601 (42.81)	1404 (42.90)
NA	0 (0.00)	0 (0.00)	1 (0.07)	0 (0.00)	1 (0.03)
During Hospitalization					
Vomiting (n = 4619)					
Yes	195 (10.12)	470 (24.39)	597 (30.98)	665 (34.51)	1927 (42.02)
No	372 (13.99)	545 (20.50)	838 (31.52)	904 (34.00)	2659 (57.98)
NA	4 (0.15)	4 (0.15)	11 (0.41)	14 (0.53)	33 (0.72)
Duration of Vomiting (n = 1927)					
1 day	124 (9.79)	280 (22.12)	385 (30.41)	477 (37.68)	1266 (65.70)

2 days	43 (9.66)	123 (27.64)	146 (32.81)	133 (29.89)	445 (23.09)
≥ 3 days	28 (12.96)	67 (31.02)	66 (30.56)	55 (25.46)	216 (11.21)
Maximum Frequency of Vomiting within 24 Hours (n = 1927)					
1 time	69 (10.27)	166 (24.70)	207 (30.80)	230 (34.23)	672 (34.87)
2-4 times	89 (10.00)	226 (25.39)	295 (33.15)	280 (31.46)	890 (46.19)
≥ 5 times	37 (10.14)	78 (21.37)	95 (26.03)	155 (42.47)	365 (18.94)

Table 11 summarizes one of the clinical characteristics relating to AGE, which is vomiting prior to admission and during hospitalization among enrolled participants, stratified by age groups. A small proportion of data (<1%) were recorded as "Not Available", representing missing data not entered into the database.

Pre-Hospital Vomiting

Prior to hospitalization, 3273 children (71.04%) experienced vomiting, with the highest proportion in children aged 24-59 months (37.03%). Vomiting mostly lasted 1 day (68.62%), while 15.37% experienced vomiting for ≥3 days before admission. Maximum vomiting frequency within 24 hours was ≥5 times in 42.90% of participants, indicating that many children presented with significant vomiting prior to hospital care.

During Hospitalization Vomiting

During admission, 1927 children (42.02%) continued to experience vomiting. Duration of vomiting was generally 1 day. Frequent vomiting (≥5 times/24 hours) occurred in 18.95% of cases, lower than pre-hospital proportions, suggesting symptoms improvement after inpatient management.

Vomiting is also most frequently reported among children 12-23 months and 24-59 months. Results above suggest that vomiting was common prior to hospitalization and less prevalent during admission, indicating that there is a possible symptom resolution following inpatient management.

Table 12. Clinical Profile (Fever) by Age Group

Clinical Profile (Fever)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Fever					
Pre-Hospital					
Fever (n = 4619)					
Yes	421 (13.08)	781 (24.27)	1014 (31.51)	1002 (31.14)	3218 (69.85)
No	150 (10.80)	236 (16.99)	429 (30.89)	574 (41.32)	1389 (30.15)
NA	0 (0.00)	2 (0.14)	3 (0.22)	7 (0.50)	12 (0.26)
Duration of Fever (n = 3218)					
1 day	228 (15.24)	329 (21.99)	447 (29.88)	492 (32.89)	1496 (46.49)
2 days	80 (13.72)	147 (25.21)	175 (30.02)	181 (31.05)	583 (18.12)
3 days	58 (11.96)	115 (23.71)	170 (35.05)	142 (29.28)	485 (15.07)
≥ 4 days	55 (8.41)	190 (29.05)	222 (33.94)	187 (28.59)	654 (20.32)
Body Temperature on Admission (n = 3218)					

Lower than 37.1 celcius	97 (11.64)	168 (20.17)	290 (34.81)	278 (33.37)	833 (25.89)
37.1-38.4 celcius	176 (14.25)	309 (25.02)	388 (31.42)	362 (29.31)	1235 (38.38)
38.5-38.9 celcius	56 (13.69)	127 (31.05)	114 (27.87)	112 (27.38)	409 (12.71)
≥ 39.0 celcius	92 (12.42)	177 (43.28)	222 (54.28)	250 (61.12)	741 (23.03)
During Hospitalization					
Fever (n = 4619)					
Yes	240 (10.93)	501 (22.81)	694 (31.60)	761 (34.65)	2196 (47.68)
No	329 (13.65)	516 (21.41)	751 (31.16)	814 (33.78)	2410 (52.32)
NA	2 (0.08)	2 (0.08)	1 (0.04)	8 (0.33)	13 (0.28)
Duration of Fever (n = 2196)					
1 day	139 (12.47)	248 (22.24)	349 (31.30)	379 (33.99)	1115 (50.77)
2 days	58 (8.80)	154 (23.37)	204 (30.96)	243 (36.87)	659 (30.01)
3 days	22 (8.87)	53 (21.37)	85 (34.27)	88 (35.48)	248 (11.29)
≥ 4 days	21 (12.07)	46 (26.44)	56 (32.18)	51 (29.31)	174 (7.92)
Highest Temperature Recorded (n = 2196)					
Lower than 37.1 celcius	9 (10.71)	18 (21.43)	30 (35.71)	27 (32.14)	84 (3.83)
37.1-38.4 celcius	151 (12.68)	265 (22.25)	387 (32.49)	388 (32.58)	1191 (54.23)
38.5-38.9 celcius	31 (7.85)	94 (23.80)	115 (29.11)	155 (39.24)	395 (17.99)
≥ 39.0 celcius	49 (9.33)	123 (23.43)	162 (30.86)	191 (36.38)	525 (23.91)
NA	0 (0.00)	1 (0.19)	0 (0.00)	0 (0.00)	1 (0.05)

Table 12 summarizes one of the clinical characteristics relating to AGE, which is fever prior to admission and during hospitalization among enrolled participants, stratified by age groups. A small proportion of data (<1%) were recorded as “Not Available”, representing missing data not entered into the database.

Pre-Hospital Fever

Prior to hospitalization, 3128 participants (69.85%) experienced fever, with highest proportion in children aged 12-23 months (31.51%) and 24-59 months (31.14%). Duration of fever was commonly 1 day (46.49%), with body temperature on admission ranging at 37.1 - 38.4 celcius.

During Hospitalization Fever

During admission, 2196 participants (47.68%) continued to experience fever, with duration commonly only taking 1 day (50.77%). The highest body temperature of ≥39 celcius is found in 23.91% of cases, reflecting persistent fever severity during inpatient management.

Fever was observed frequently in children aged 12-23 months and 24-59 months, corresponding to the age groups with the highest occurrences of diarrhea and vomiting. Overall, most hospitalized AGE participants presented with fever prior to admission and nearly half continued to have fever during hospitalization.

7. Physical Examination

Table 13. Physical Examination by Age Group

Physical Examination (N = 4619)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Diagnosis of Shock During Hospitalization					
Yes	10 (27.78)	10 (27.78)	7 (19.44)	9 (25.00)	36 (0.78)
No	561 (12.27)	1007 (22.03)	1436 (31.42)	1567 (34.28)	4571 (98.96)
NA	0 (0.00)	2 (0.04)	3 (0.07)	7 (0.15)	12 (0.26)
Dehydration State During Hospitalization					
None	117 (12.41)	200 (21.21)	325 (34.46)	301 (31.92)	943 (20.42)
Mild / moderate / not severe dehydration	395 (11.50)	756 (22.02)	1057 (30.78)	1226 (35.70)	3434 (74.35)
Severe dehydration	50 (30.86)	48 (29.63)	27 (16.67)	37 (22.84)	162 (3.51)
Dehydration in malnutrition	9 (13.04)	13 (18.84)	34 (49.28)	13 (18.84)	69 (1.49)
NA	0 (0.00)	2 (2.90)	3 (4.35)	6 (8.70)	11 (0.24)
Patient Consciousness During Hospitalization					
Fussy/restless	14 (15.73)	23 (25.84)	27 (30.34)	25 (28.09)	89 (1.93)
Compos mentis / conscious	554 (12.37)	983 (21.96)	1409 (31.47)	1531 (34.20)	4477 (96.93)
Others	3 (7.32)	11 (26.83)	7 (17.07)	20 (48.78)	41 (0.89)
NA	0 (0.00)	2 (16.67)	3 (25.00)	7 (58.33)	12 (0.26)
Thirst During Hospitalization					
Drinks poorly, or not able to drink	147 (9.52)	318 (20.60)	467 (30.25)	612 (39.64)	1544 (33.43)
Thirsty, drinks eagerly	102 (17.03)	132 (22.04)	180 (30.05)	185 (30.88)	599 (12.97)
Drinks normally, not thirsty	322 (13.08)	564 (22.92)	796 (32.34)	779 (31.65)	2461 (53.28)
NA	0 (0.00)	5 (33.33)	3 (20.00)	7 (46.67)	15 (0.32)
Sunken Eyes During Hospitalization					
Yes	255 (12.90)	426 (21.55)	583 (29.49)	713 (36.06)	1977 (42.80)
No	316 (12.02)	591 (22.47)	860 (32.70)	863 (32.81)	2630 (56.94)
NA	0 (0.00)	2 (16.67)	3 (25.00)	7 (58.33)	12 (0.26)
Skin Pinch During Hospitalization					
Very slow (return ≥ 2 seconds)	12 (26.09)	10 (21.74)	10 (21.74)	14 (30.43)	46 (1.00)
Slow (return < 2 seconds)	139 (15.69)	197 (22.23)	270 (30.47)	280 (31.60)	886 (19.18)
Normal	420 (11.43)	809 (22.02)	1163 (31.65)	1282 (34.89)	3674 (79.54)
NA	0 (0.00)	3 (23.08)	3 (23.08)	7 (53.85)	13 (0.28)

Table 13 outlines the physical examination findings during hospitalization among hospitalized AGE participants. A small proportion of data (<1%) were recorded as “Not Available”, representing missing data not entered into the database.

A diagnosis of shock was rare, documented in only 0.78% of participants, while vast majority showed no signs of circulatory collapse (98.95%). State of dehydration indicated that mild to moderate dehydration accounted for 74.35% of cases, while 3.51% of children presented with severe dehydration and 1.49% with dehydration associated with malnutrition.

Severe dehydration was slightly more common among younger age groups, but remained infrequent overall.

Severity of dehydration is graded through consciousness, thirst, presence of sunken eye and skin pinch. Consciousness state was stable in most participants with 96.93% fully conscious (compos mentis). Approximately 33.43% of children drank poorly, whereas 53.28% were drinking normally. Sunken eyes were observed in 42.80% of participants and delayed skin pinch (<2 seconds) was noted at 19.18%, indicating that some participant experience mild to moderate dehydration.

Taken together, physical examination findings indicate that dehydration was common with generally of mild-to-moderate severity, while more severe complications such as shock or altered consciousness were rare.

8. Treatment Pre and During Hospitalization

Table 14. Treatment by Group

Treatment (N = 4619)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Pre-Hospital					
IV Fluid					
IV Fluid I	559 (12.43)	991 (22.03)	1404 (31.21)	1544 (34.33)	4498 (97.38)
IV Fluid II	198 (16.69)	287 (24.20)	394 (33.22)	307 (25.89)	1186 (25.68)
IV Fluid III	48 (20.34)	50 (21.19)	65 (27.54)	73 (30.93)	236 (5.11)
Zinc					
Yes	357 (13.35)	583 (21.80)	863 (32.27)	871 (32.57)	2674 (57.89)
No	214 (11.08)	434 (22.48)	579 (29.98)	704 (36.46)	1931 (41.81)
NA	0 (0.00)	2 (14.29)	4 (28.57)	8 (57.14)	14 (0.30)
Antibiotic					
Yes	250 (16.86)	354 (23.87)	451 (30.41)	428 (28.86)	1483 (32.11)
No	321 (10.28)	663 (21.24)	991 (31.74)	1147 (36.74)	3122 (67.59)
NA	0 (0.00)	2 (14.29)	4 (28.57)	8 (57.14)	14 (0.30)
During Hospitalization					
IV Fluid					
IV Fluid I	570 (12.40)	1014 (22.06)	1441 (31.35)	1572 (34.20)	4597 (99.52)
IV Fluid II	163 (12.14)	303 (22.56)	389 (28.97)	488 (36.34)	1343 (29.08)
IV Fluid III	41 (15.07)	65 (23.90)	66 (24.26)	100 (36.76)	272 (5.89)
Zinc					
Yes	509 (11.89)	945 (22.07)	1357 (31.70)	1470 (34.34)	4281 (92.68)
No	62 (18.84)	73 (22.19)	87 (26.44)	107 (32.52)	329 (7.12)
NA	0 (0.00)	1 (11.11)	2 (22.22)	6 (66.67)	9 (0.19)
Antibiotic					
Yes	427 (13.65)	725 (23.17)	978 (31.26)	999 (31.93)	3129 (67.74)
No	144 (9.72)	293 (19.78)	466 (31.47)	578 (39.03)	1481 (32.06)
NA	0 (0.00)	1 (11.11)	2 (22.22)	6 (66.67)	9 (0.19)

*IV Fluid I: initial type of fluid administered upon admission
**IV Fluid II: second type of fluid given when there is a change in the type or rate of the IV Fluid I
***IV Fluid III: third type of fluid given when there is a change in the type or rate of the IV Fluid II

Table 14 summarizes the treatments provided during the initial hospital encounter, either in the emergency room of the sentinel site or previous visits to other healthcare facilities and throughout inpatient admission, stratified by age groups. A small proportion of data (<1%) were recorded as "Not Available", representing missing data not entered into the database.

Pre-Hospital Treatment

Upon arrival at the hospital (prior to inpatient admission), 97.38% of participants received IV fluid, reflecting early recognition of dehydration at the emergency level and its routine use for rehydration among patients with moderate to severe dehydration. Zinc was provided in 57.89%, while antibiotics were given in 32.11% during this initial phase. Antibiotic use at this stage likely reflects early empirical management, especially in patients presenting with fever or suspicion of systemic infection.

During Hospitalization Treatment

Once admitted, IV fluid administration continued in 99.52% of participants with 29.08% transitioning to IV Fluid II and 5.89% to IV Fluid III, indicating clinical adjustment of fluid type and infusion rate according to the patient's hydration status. Zinc supplementation increased markedly during inpatient care (92.68%), consistent with national treatment guideline for pediatric diarrhea. Antibiotic use also increased to 67.74%, reflecting the need of management for suspected bacterial infection.

Treatment patterns show that dehydration management was initiated promptly in the emergency department for most AGE cases. Zinc supplementation became universal during inpatient care and antibiotic use became more common after admission. Overall, treatment trends align with guideline-based management of acute diarrhea and dehydration in pediatric patients.

9. Outcome Patient

Table 15. Outcome Patient by Age Group

Outcome Patient (N = 4619)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Length of Stay					
0-5 days	492 (11.59)	920 (21.67)	1329 (31.31)	1504 (35.43)	4245 (91.90)
6-10 days	73 (22.26)	86 (26.22)	105 (32.01)	64 (19.51)	328 (7.10)
More than 10 days	4 (12.12)	12 (36.36)	10 (30.30)	7 (21.21)	33 (0.71)
NA	2 (15.38)	1 (7.69)	2 (15.38)	8 (61.54)	13 (0.28)
Discharge Condition					
Recovered	552 (12.20)	997 (22.03)	1425 (31.48)	1552 (34.29)	4526 (97.99)
Not Recovered	12 (17.65)	16 (23.53)	18 (26.47)	22 (32.35)	68 (1.47)
Died	6 (40.00)	5 (33.33)	2 (13.33)	2 (13.33)	15 (0.32)
NA	1 (10.00)	1 (10.00)	1 (10.00)	7 (70.00)	10 (0.22)
Reason of Discharge					

Doctor Authorized	548 (12.16)	994 (22.05)	1420 (31.50)	1546 (34.29)	4508 (97.60)
Discharge Againts Medical Advice	14 (18.18)	18 (23.38)	20 (25.97)	25 (32.47)	77 (1.67)
Referred	2 (22.22)	1 (11.11)	3 (33.33)	3 (33.33)	9 (0.19)
Died	6 (40.00)	5 (33.33)	2 (13.33)	2 (13.33)	15 (0.32)
- Pneumonia	3 (42.86)	3 (42.86)	0 (0.00)	1 (14.29)	7 (0.15)
- Congenital heart disease	0 (0.00)	1 (100.00)	0 (0.00)	0 (0.00)	1 (0.02)
- Meningitis	1 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.02)
- Leukemia	0 (0.00)	0 (0.00)	1 (100.00)	0 (0.00)	1 (0.02)
- Malnutrition	0 (0.00)	0 (0.00)	0 (0.00)	1 (100.00)	1 (0.02)
- Focal brain injury	0 (0.00)	1 (100.00)	0 (0.00)	0 (0.00)	1 (0.02)
- Epilepsy	0 (0.00)	0 (0.00)	1 (100.00)	0 (0.00)	1 (0.02)
- No comorbid	2 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.04)
NA	1 (10.00)	1 (10.00)	1 (10.00)	7 (70.00)	10 (0.22)

Table 15 describes hospitalization outcomes among enrolled AGE participants across age groups, including length of stay, discharge condition and reason for discharge. A small proportion of data (<1%) were recorded as “Not Available”, representing missing data not entered into the database.

The majority of participants were hospitalized ≤5 days (91.90%). Hospitalization between 6-10 days occurred in 7.10% and only 0.71% require >10 days admission, possibly reflecting complications or comorbid conditions. Longer stays appeared more frequently in infants under 12 months, likely reflecting higher severity in younger children.

Most participants were discharged in recovered state (97.99%). 15 children (0.32%) passed away during hospitalization, with contributing comorbidities such as pneumonia, congenital heart disease, meningitis and malnutrition. Although the mortality remained low, cases are distributed across all age groups, suggesting that severe outcome can occur across all pediatric ages.

Overall, most children hospitalized with AGE were discharged following clinical recovery as determined by medical assessment. Mortality were uncommon and were largely attributable to underlying or co-existing comorbid conditions rather than AGE alone.

10. Vaccine Information and Vaccination Status

Table 16. Vaccine Status by Age Group

Vaccine Status (N = 4619)	Age Group				Total
	0-5 Month	6-11 Month	12-23 Month	24-59 Month	
Vaccinated	184 (15.02)	457 (37.31)	472 (38.53)	112 (9.14)	1225 (26.52)
Not Vaccinated	293 (10.01)	451 (15.41)	841 (28.73)	1342 (45.85)	2927 (63.37)
NA	94 (20.13)	111 (23.77)	133 (28.48)	129 (27.62)	467 (10.11)
Vaccine Dose 1 (n = 1225)					
Vaccine Brand for Dose 1					

Rotarix	5 (21.74)	2 (8.70)	9 (39.13)	7 (30.43)	23 (1.88)
Rotateq	8 (25.81)	9 (29.03)	6 (19.35)	8 (25.81)	31 (2.53)
Rotavac	171 (14.60)	446 (38.09)	457 (39.03)	97 (8.28)	1171 (95.59)
RV3	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Vaccination Site for Dose 1					
Doctor/Midwifery Clinic	20 (17.54)	49 (42.98)	37 (32.46)	8 (7.02)	114 (9.31)
Public Health Center	156 (14.89)	380 (36.26)	421 (40.17)	91 (8.68)	1048 (85.55)
Hospital	3 (6.52)	16 (34.78)	14 (30.43)	13 (28.26)	46 (3.76)
NA	5 (29.41)	12 (70.59)	0 (0.00)	0 (0.00)	17 (1.39)
Vaccine Dose 2 (n = 978)					
Vaccine Brand for Dose 2					
Rotarix	3 (13.04)	5 (21.74)	7 (30.43)	8 (34.78)	23 (2.35)
Rotateq	0 (0.00)	7 (36.84)	6 (31.58)	6 (31.58)	19 (1.94)
Rotavac	95 (10.15)	362 (38.68)	394 (42.09)	85 (9.08)	936 (95.71)
RV3	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Vaccination Site for Dose 2					
Doctor/Midwifery Clinic	10 (10.00)	43 (43.00)	38 (38.00)	9 (9.00)	100 (10.22)
Public Health Center	86 (10.37)	311 (37.52)	354 (42.70)	78 (9.41)	829 (84.76)
Hospital	1 (2.44)	15 (36.59)	13 (31.71)	12 (29.27)	41 (4.19)
NA	1 (12.50)	5 (62.50)	2 (25.00)	0 (0.00)	8 (0.82)
Vaccine Dose 3 (n = 694)					
Vaccine Brand for Dose 3					
Rotarix	0 (0.00)	3 (60.00)	1 (20.00)	1 (20.00)	5 (0.72)
Rotateq	0 (0.00)	3 (20.00)	5 (33.33)	7 (46.67)	15 (2.16)
Rotavac	35 (5.19)	277 (41.10)	304 (45.10)	58 (8.61)	674 (97.12)
RV3	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Vaccination Site for Dose 3					
Doctor/Midwifery Clinic	2 (2.56)	37 (47.44)	35 (44.87)	4 (5.13)	78 (11.24)
Public Health Center	32 (5.46)	231 (39.42)	268 (45.73)	55 (9.39)	586 (84.44)
Hospital	0 (0.00)	11 (44.00)	7 (28.00)	7 (28.00)	25 (3.60)
NA	1 (20.00)	4 (80.00)	0 (0.00)	0 (0.00)	5 (0.72)

Table 17. Vaccine Information

Vaccine Information	Frequency	Percentage
Pink Book	3139	75.68%
ASIK Application	869	20.95%
District Health Office	45	1.08%
Medical Record	48	1.16%
Doc. 06	27	0.65%
Vaccine card	17	0.41%
Immunization Book	3	0.07%
Total	**4148**	**100%**

Table 16 summarizes vaccination status, vaccine product and vaccination site across age groups among enrolled hospitalized AGE patients.

A total of 2927 participants (63.37%) had not received any dose in vaccination, with children aging 24-59 months at time of enrollment representing the highest proportion of unvaccinated participants. Vaccinated participants only account for 26.52%, indicating a suboptimal vaccination coverage in children under five years of age.

Across all doses, Rotavac accounted for the vast majority of administered vaccines. Dose 1 to Dose 3 comprised of 95.59%, 95.71% and 97.12% respectively. Rotarix and Rotateq were rarely used (<5%). Among vaccinated subject, the number of participants receiving dose 2 and 3 decreased progressively, suggesting incomplete vaccination series. This pattern may reflect the gaps in follow-up vaccination at primary health care facilities, various health-seeking behaviour or missed opportunities due to geographic and access barrier, particularly in rural and remote areas.

Most vaccinations were administered at Public Health Centers, also known as Puskesmas across all doses, followed by doctor or midwifery clinics. Hospitals contributed minimal vaccination delivery, which is consistent with Indonesian routine immunization pathways where vaccination is implemented as a part of the primary health care services.

Table 17 outlines the sources of where vaccination information can be found, with the Pink Book (maternal and child health handbook) accounting for the largest proportion (75.68%), followed by ASIK, a Ministry of Health application used for health service data recording (20.95%). Its increasing use indicates the gradual adoption of digital documentation and integration of immunization information system, even if completeness of ASIK records may vary by facility and regions.

11. Laboratory Work

Table 18. Positive rate and negative rate at each site

District/City	ELISA		*Total
	Positive	Negative	
Central Java: n (%)			
1. Klaten	52 (29.21)	126 (70.79)	178 (5.11)
2. Boyolali	36 (26.28)	101 (73.72)	137 (3.94)
Yogyakarta: n (%)			
3. Sleman	29 (23.77)	93 (76.23)	122 (3.50)
4. Kulonprogo	122 (33.33)	244 (66.67)	366 (10.51)
Lampung: n (%)			
5. Bandar Lampung	129 (36.75)	222 (63.25)	351 (10.08)
6. South Lampung	100 (27.93)	258 (72.07)	358 (10.28)
Central Sulawesi: n (%)			
7. Palu	44 (17.81)	203 (82.19)	247 (7.10)
8. Donggala	23 (16.79)	114 (83.21)	137 (3.94)

South Kalimantan: n (%)			
9. Banjarmasin	76 (22.82)	257 (77.18)	333 (9.57)
10. Banjarbaru	50 (24.88)	151 (75.12)	201 (5.77)
11. Tapin	36 (20.11)	143 (79.89)	179 (5.14)
Bali: n (%)			
12. Buleleng	59 (24.18)	185 (75.82)	244 (7.01)
13. Badung	40 (27.97)	103 (72.03)	143 (4.11)
West Nusa Tenggara: n (%)			
14. East Lombok	25 (20.16)	99 (79.84)	124 (3.56)
15. Mataram	15 (22.73)	51 (77.27)	66 (1.90)
16. West Lombok	23 (23.00)	77 (77.00)	100 (2.87)
East Nusa Tenggara: n (%)			
17. Kupang	65 (38.24)	105 (61.76)	170 (4.88)
Maluku: n (%)			
18. Central Maluku	4 (16.00)	21 (84.00)	25 (0.72)
Total	**928 (26.66)**	**2553 (73.34)**	**3481 (100.00)**

*The percentage contribution of each district/city to the total number of ELISA tests

Table 18 summarizes the proportion of stool specimens testing positive and negative for rotavirus antigen using ELISA across all sentinel site. 928 (26.66%) were tested positive and 2553 (73.74%) tested negative.

Across sites, positive rates varied substantially. Higher proportions of ELISA positivity were observed in Kupang (38.24%), Bandar Lampung (36.75%) and Kulon Progo (33.33%). Conversely, lower positivity rates were recorded in Central Maluku (16.00%), Donggala (16.79%) and Palu (17.81%). These variations may reflect differing rotavirus burden or seasonal patterns across regions, although a further analysis would be needed to confirm this.

Table 19. Genotype Detection

Genotype (N= 928)	Frequency
Genotype G: n (%)	
G-Untypeable	330 (35.56)
G1	11 (1.19)
G3	277 (29.85)
G4	2 (0.22)
G6	1 (0.11)
G8	12 (1.29)
G9	295 (31.79)
Genotype P: n (%)	
P-Untypeable	327 (35.24)
P6	14 (1.51)
P8	586 (63.15)
P9	1 (0.11)
Mixed Genotype: n (%)	
G-UntypeableP-Untypeable	325 (35.02)
G-UntypeableP8	5 (0.54)
G1P8	11 (1.19)
G3P-Untypeable	1 (0.11)

G3P8	275 (29.63)
G3P9	1 (0.11)
G4P6	2 (0.22)
G6P8	1 (0.11)
G8P8	12 (1.29)
G9P-Untypeable	1 (0.11)
G9P6	12 (1.29)
G9P8	282 (30.39)

Table 19 summarizes rotavirus genotype distribution from ELISA-positive samples. In the newer findings, genotyping detected new series of G and P types, with a substantial proportion of untypeables strains.

Among G-genotypes, the most frequently detected were: G9 (31.79%), G3 (29.85%) and G-untypeable (35.56%). Less common strains included G1 (1.19%), G8 (1.29%) and rare detections of G4 and G6 (<1%). Among P-genotypes, the distribution was strongly dominated by: P8 (63.15%) followed by P-untypeable (35.24%) while P6 and P9 were rarely detected (<2%). Mixed genotypes demonstrated predominance of G9P8 (30.39%) followed by G3P8 (29.63%), with a substantial proportion of G/P untypeables (35.02%).

Table 20. Variation in the distribution of G types at each site

District/City	G-Untypeable	G1	G3	G4	G6	G8	G9	*Total
Central Java: n (%)								
1. Klaten	22 (42.31)	0 (0.00)	12 (23.08)	1 (1.92)	0 (0.00)	0 (0.00)	17 (32.69)	52 (5.60)
2. Boyolali	8 (22.22)	3 (8.33)	5 (13.89)	0 (0.00)	0 (0.00)	0 (0.00)	20 (55.56)	36 (3.88)
Yogyakarta: n (%)								
3. Sleman	13 (44.83)	0 (0.00)	10 (34.48)	0 (0.00)	0 (0.00)	0 (0.00)	6 (20.69)	29 (3.13)
4. Kulonprogo	84 (68.85)	0 (0.00)	13 (10.66)	0 (0.00)	0 (0.00)	0 (0.00)	25 (20.49)	122 (13.15)
Lampung: n (%)								
5. Bandar Lampung	20 (15.50)	1 (0.78)	73 (56.59)	0 (0.00)	0 (0.00)	0 (0.00)	35 (27.13)	129 (13.90)
6. South Lampung	22 (22.00)	0 (0.00)	10 (10.00)	0 (0.00)	0 (0.00)	0 (0.00)	68 (68.00)	100 (10.78)
Central Sulawesi: n (%)								
7. Palu	1 (2.27)	2 (4.55)	17 (38.64)	1 (2.27)	0 (0.00)	0 (0.00)	23 (52.27)	44 (4.74)
8. Donggala	0 (0.00)	0 (0.00)	12 (52.17)	0 (0.00)	0 (0.00)	0 (0.00)	11 (47.83)	23 (2.48)
South Kalimantan: n (%)								
9. Banjarmasin	2 (2.63)	2 (2.63)	55 (72.37)	0 (0.00)	0 (0.00)	0 (0.00)	17 (22.37)	76 (8.19)
10. Banjarbaru	2 (4.00)	0 (0.00)	23 (46.00)	0 (0.00)	1 (2.00)	0 (0.00)	24 (48.00)	50 (5.39)
11. Tapin	0 (0.00)	2 (5.56)	17 (47.22)	0 (0.00)	0 (0.00)	0 (0.00)	17 (47.22)	36 (3.88)
Bali: n (%)								
12. Buleleng	36 (61.02)	1 (1.69)	19 (32.20)	0 (0.00)	0 (0.00)	0 (0.00)	3 (5.08)	59 (6.36)
13. Badung	27 (67.50)	0 (0.00)	6 (15.00)	0 (0.00)	0 (0.00)	1 (2.50)	6 (15.00)	40 (4.31)
West Nusa Tenggara: n (%)								
14. East Lombok	13 (52.00)	0 (0.00)	3 (12.00)	0 (0.00)	0 (0.00)	0 (0.00)	9 (36.00)	25 (2.69)
15. Mataram	9 (60.00)	0 (0.00)	1 (6.67)	0 (0.00)	0 (0.00)	0 (0.00)	5 (33.33)	15 (1.62)
16. West Lombok	23 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	23 (2.48)
East Nusa Tenggara: n (%)								

17. Kupang	48 (73.85)	0 (0.00)	1 (1.54)	0 (0.00)	0 (0.00)	11 (16.92)	5 (7.69)	65 (7.00)
Maluku: n (%)								
18. Central Maluku	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (100.00)	4 (0.43)
Total	**330 (35.56)**	**11 (1.19)**	**277 (29.85)**	**2 (0.22)**	**1 (0.11)**	**12 (1.29)**	**295 (31.79)**	**928 (100.00)**

*The percentage contribution of each district/city to the total number of positive ELISA tests

Table 20 summarizes the distribution of G-genotypes among ELISA-positive samples across all sentinel sites. Higher proportion of G-untypeable strains were observed in West Lombok (100%), Kupang (73.85%) and Kulon Progo (68.85%). G3 strains predominated sites such as Banjarmasin (72.37%) and Bandar Lampung (56.59%), whereas G9 strains reached high presentation in Central Maluku (100%) and South Lampung (68.00%).

Table 21. Variation in the distribution of P types at each site

District/City	P-Untypeable	P6	P8	P9	*Total
Central Java: n (%)					
1. Klaten	22 (42.31)	1 (1.92)	29 (55.77)	0 (0.00)	52 (5.60)
2. Boyolali	8 (22.22)	1 (2.78)	27 (75.00)	0 (0.00)	36 (3.88)
Yogyakarta: n (%)					
3. Sleman	13 (44.83)	0 (0.00)	15 (51.72)	1 (3.45)	29 (3.13)
4. Kulonprogo	84 (68.85)	0 (0.00)	38 (31.15)	0 (0.00)	122 (13.15)
Lampung: n (%)					
5. Bandar Lampung	20 (15.50)	4 (3.10)	105 (81.40)	0 (0.00)	129 (13.90)
6. South Lampung	22 (22.00)	6 (6.00)	72 (72.00)	0 (0.00)	100 (10.78)
Central Sulawesi: n (%)					
7. Palu	1 (2.27)	1 (2.27)	42 (95.45)	0 (0.00)	44 (4.74)
8. Donggala	0 (0.00)	0 (0.00)	23 (100.00)	0 (0.00)	23 (2.48)
South Kalimantan: n (%)					
9. Banjarmasin	1 (1.32)	0 (0.00)	75 (98.68)	0 (0.00)	76 (8.19)
10. Banjarbaru	3 (6.00)	0 (0.00)	47 (94.00)	0 (0.00)	50 (5.39)
11. Tapin	0 (0.00)	1 (2.78)	35 (97.22)	0 (0.00)	36 (3.88)
Bali: n (%)					
12. Buleleng	36 (61.02)	0 (0.00)	23 (38.98)	0 (0.00)	59 (6.36)
13. Badung	27 (67.50)	0 (0.00)	13 (32.50)	0 (0.00)	40 (4.31)
West Nusa Tenggara: n (%)					
14. East Lombok	13 (52.00)	0 (0.00)	12 (48.00)	0 (0.00)	25 (2.69)
15. Mataram	9 (60.00)	0 (0.00)	6 (40.00)	0 (0.00)	15 (1.62)
16. West Lombok	23 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	23 (2.48)
East Nusa Tenggara: n (%)					
17. Kupang	45 (69.23)	0 (0.00)	20 (30.77)	0 (0.00)	65 (7.00)
Maluku: n (%)					
18. Central Maluku	0 (0.00)	0 (0.00)	4 (100.00)	0 (0.00)	4 (0.43)
Total	**327 (35.24)**	**14 (1.51)**	**586 (63.15)**	**1 (0.11)**	**928 (100.00)**

Table 21 describes the distribution of P-genotypes among ELISA-positive samples across sentinel sites. Across all the sites combined, P8 was the most frequently detected genotype (63.15%), followed by P- untypeable strains (35.24%). P6 was detected in 1.51% of samples and P9 was rarely identified (0.11%).

Marked geographic variation was observed in the distribution of P8, with high proportions in Central Sulawesi (Donggala 100% and Palu 95.45%), Central Maluku (100%) and South Kalimantan (Banjarmasin 98.68%, Tapin 97.22% and Banjarbaru 94.00%). High proportions of P-untypeables were identified in West Lombok (100%) and Kupang (69.23%). P6 was occasionally detected in small number of sites including South Lampung, Boyolali and Tapin, although at consistently low levels.

Table 22. Variation in the distribution combination of G and P types at each site

District/City	G-Untypeable P-Untypeable	G-Untypeable P8	G1P8	G3 P-Untypeable	G3P8	G3P9	G4P6	G6P8	G8P8	G9 P-Untypeable	G9P6	G9P8	*Total
Central Java: n (%)													
1. Klaten	22 (42.31)	0 (0.00)	0 (0.00)	0 (0.00)	12 (23.08)	0 (0.00)	1 (1.92)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	17 (32.69)	52 (5.60)
2. Boyolali	8 (22.22)	0 (0.00)	3 (8.33)	0 (0.00)	5 (13.89)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (2.78)	19 (52.78)	36 (3.88)
Yogyakarta: n (%)													
3. Sleman	13 (44.83)	0 (0.00)	0 (0.00)	0 (0.00)	9 (31.03)	1 (3.45)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	6 (20.69)	29 (3.13)
4. Kulonprogo	84 (68.85)	0 (0.00)	0 (0.00)	0 (0.00)	13 (10.66)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	25 (20.49)	122 (13.15)
Lampung: n (%)													
5. Bandar Lampung	20 (15.50)	0 (0.00)	1 (0.78)	0 (0.00)	73 (56.59)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (3.10)	31 (24.03)	129 (13.90)
6. South Lampung	22 (22.00)	0 (0.00)	0 (0.00)	0 (0.00)	10 (10.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	6 (6.00)	62 (62.00)	100 (10.78)
Central Sulawesi: n (%)													
7. Palu	1 (2.27)	0 (0.00)	2 (4.55)	0 (0.00)	17 (38.64)	0 (0.00)	1 (2.27)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	23 (52.27)	44 (4.74)
8. Donggala	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	12 (52.17)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	11 (47.83)	23 (2.48)
South Kalimantan: n (%)													
9. Banjarmasin	1 (1.32)	1 (1.32)	2 (2.63)	0 (0.00)	55 (72.37)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	17 (22.37)	76 (8.19)
10. Banjarbaru	1 (2.00)	1 (2.00)	0 (0.00)	1 (2.00)	22 (44.00)	0 (0.00)	0 (0.00)	1 (2.00)	0 (0.00)	1 (2.00)	0 (0.00)	23 (46.00)	50 (5.39)
11. Tapin	0 (0.00)	0 (0.00)	2 (5.56)	0 (0.00)	17 (47.22)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (2.78)	16 (44.44)	36 (3.88)
Bali: n (%)													
12. Buleleng	36 (61.02)	0 (0.00)	1 (1.69)	0 (0.00)	19 (32.20)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	3 (5.08)	59 (6.36)
13. Badung	27 (67.50)	0 (0.00)	0 (0.00)	0 (0.00)	6 (15.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (2.50)	0 (0.00)	0 (0.00)	6 (15.00)	40 (4.31)
West Nusa Tenggara: n (%)													
14. East Lombok	13 (52.00)	0 (0.00)	0 (0.00)	0 (0.00)	3 (12.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	9 (36.00)	25 (2.69)
15. Mataram	9 (60.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (6.67)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	5 (33.33)	15 (1.62)
16. West Lombok	23 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	(0.00)	23 (2.48)
East Nusa Tenggara: n (%)													
17. Kupang	45 (69.23)	3 (4.62)	0 (0.00)	0 (0.00)	1 (1.54)	0 (0.00)	0 (0.00)	0 (0.00)	11 (16.92)	0 (0.00)	0 (0.00)	5 (7.69)	65 (7.00)
Maluku: n (%)													
18. Central Maluku	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (100.00)	4 (0.43)
Total	**325 (35.02)**	**5 (0.54)**	**11 (1.19)**	**1 (0.11)**	**275 (29.63)**	**1 (0.11)**	**2 (0.22)**	**1 (0.11)**	**12 (1.29)**	**1 (0.11)**	**12 (1.29)**	**282 (30.39)**	**928 (100.00)**

*The percentage contribution of each district/city to the total number of positive ELISA tests

Table 22 describes the distribution of combined G and P genotypes detected at each sentinel site. Across all ELISA-positive specimens, G9P8 (30.39%) and G3P8 (29.63%) were the most frequently detected combinations, followed by a substantial proportion of G-untypeable/P-untyepable (35.02%). Other combination were detected at low frequency.

Geographical variation varied among detected genotypes: G9P8 were predominant in South Lampung (62%) and Boyolali (52.78%), whereas G3P8 were predominant in Banjarmasin (72.37%) and Bandar Lampung (56.59%). G-untypeable/P-untypeable were predominant in sites such as West Lombok (100%) and Kupang (69.23%). Overall, the combined genotype patterns confirm that G9P8 and G3P8 represent the dominant circulating genotypes in this study, although the notable proportion of untypeable combination highlights either assay limitation or underlying strain diversity.

B. Passive Surveillance

Passive surveillance data were collected from sentinel hospitals and District Health Offices across nine provinces in Indonesia. The surveillance includes data on annual live births, the number of diarrheal outpatient visits among children under five years of age and total outpatient visits for children under five years of age, covering the period from 2016 through the end of the study. In addition, data on rotavirus and pentavalent (pentabio) vaccination coverage were collected to provide context for interpreting trends in outpatient diarrheal and vaccination uptake over time.

1. Hospital Data

Passive surveillance data from hospitals were collected up to the cut-off date of November 2025. Several sites had pending or unavailable historical data. In Bandar Lampung, passive data for 2016–2018 could not be retrieved because medical records older than five years had been archived and transferred to storage. In Mataram, passive surveillance data only exist from 2022 onward, as the hospital became operational in that year. Similarly, in Banjarmasin, the sentinel site was established in August 2019, resulting in missing data prior to that period. In Kupang, data from 2016–2019 were not available due to failure of the hospital's medical record software and the absence of a recoverable data backup.

Taken together, these gaps largely reflect variations in hospital establishment timelines, medical record storage procedures, and information system readiness, and should be considered when interpreting temporal trends across sentinel sites. The data from sentinel hospitals are presented in Section 1 – 2 below.

2. District Health Office Data

Passive surveillance data from the District Health Services were collected up to November 2025. Several sites are still in the process of compiling 2025 data, particularly Kupang and Donggala. In addition, a number of districts continue to face challenges completing historical datasets, even in early surveillance years. These gaps mainly occurred because previous diarrheal reporting personnels were no longer in contact and earlier records could not be retrieved from local archives. In several districts, the required outpatient diarrheal reports had not yet been submitted by the District Health Office and remain under follow-up.

Furthermore, for a number of sites, release of surveillance data is still pending completion of administrative procedures, including the signing of cooperation agreements (PKS) between local government and health authorities. The data from sentinel hospitals are presented in Section 3 – 5 below.

1. **Proportion of Diarrhea Hospitalizations Before the Pandemic (2016 – 2019) and After Pandemic (2020-2025)**

Table 23 summarizes the annual proportion of diarrhea-related hospitalizations across sentinel hospitals from 2016–2025. Overall, the data show substantial variation between sites and across years. Most hospitals report proportions between approximately 2–30% annually, although several districts demonstrate markedly higher values in certain years, occasionally exceeding 60%. These higher peaks may reflect periods of increased diarrheal burden, localized outbreaks or changes in admission thresholds for other conditions.

Sites such as Donggala, Lampung (Bandar Lampung and South Lampung) consistently report higher proportions across multiple years, while hospitals located in Java (Sleman, Kulon Progo, Klaten, Wates, Boyolali) generally show much lower proportions (<15–20%).

When comparing the period before the pandemic (2016–2019) with the post-pandemic years (2020–2023), there does not appear to be a clear overall shift at the national level. Some sites such as Bandar Lampung, Maluku, and Palu demonstrated substantial fluctuation in the post-pandemic period, however direct comparisons remain limited due to missing or unavailable earlier data.

Continuous surveillance remains essential to detect epidemiologic shifts and to support targeted prevention efforts, particularly in areas where diarrhea accounts for a considerable proportion of hospital admissions.

Table 23. Proportion of Diarrhea Hospitalizations

City/Site	Proportion (% per Year)									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Sleman	3%	2%	2%	3%	3%	2%	3%	3%	6%	5%
2. Wates	17%	17%	23%	21%	15%	18%	25%	16%	10%	20%
3. Klaten	17%	8%	11%	11%	11%	4%	4%	3%	6%	9%
4. Boyolali	3%	4%	6%	7%	3%	5%	6%	8%	8%	20%
5. Buleleng	8%	8%	10%	7%	7%	5%	10%	11%	12%	23%
6. Badung	NA	NA	34%	26%	13%	18%	24%	23%	15%	25%
7. South Lampung	28%	29%	33%	26%	19%	26%	19%	33%	31%	18%
8. Bandar Lampung	NA	NA	NA	41%	35%	52%	26%	34%	52%	27%
9. East Lombok	5%	3%	2%	2%	1%	1%	1%	4%	6%	5%
10. Mataram	NA	NA	NA	NA	NA	NA	15%	17%	24%	21%
11. Kupang	NA	NA	NA	NA	4%	5%	12%	5%	9%	11%
12. Banjarmasin	NA	NA	NA	NA	14%	14%	20%	25%	35%	30%
13. Banjarbaru	5%	16%	35%	6%	10%	13%	22%	18%	13%	14%
14. Tapin	13%	31%	29%	6%	1%	4%	10%	10%	9%	9%
15. Palu	NA	NA	NA	8%	8%	8%	13%	20%	22%	46%
16. Donggala	64%	44%	66%	33%	31%	44%	46%	49%	41%	45%
17. West Lombok	2%	3%	3%	3%	2%	3%	1%	3%	1%	4%
18. Central Maluku	19%	21%	25%	24%	19%	42%	13%	16%	14%	19%

2. Diarrhea and All Cases Hospitalizations at Hospital Sentinel (2016-2025)

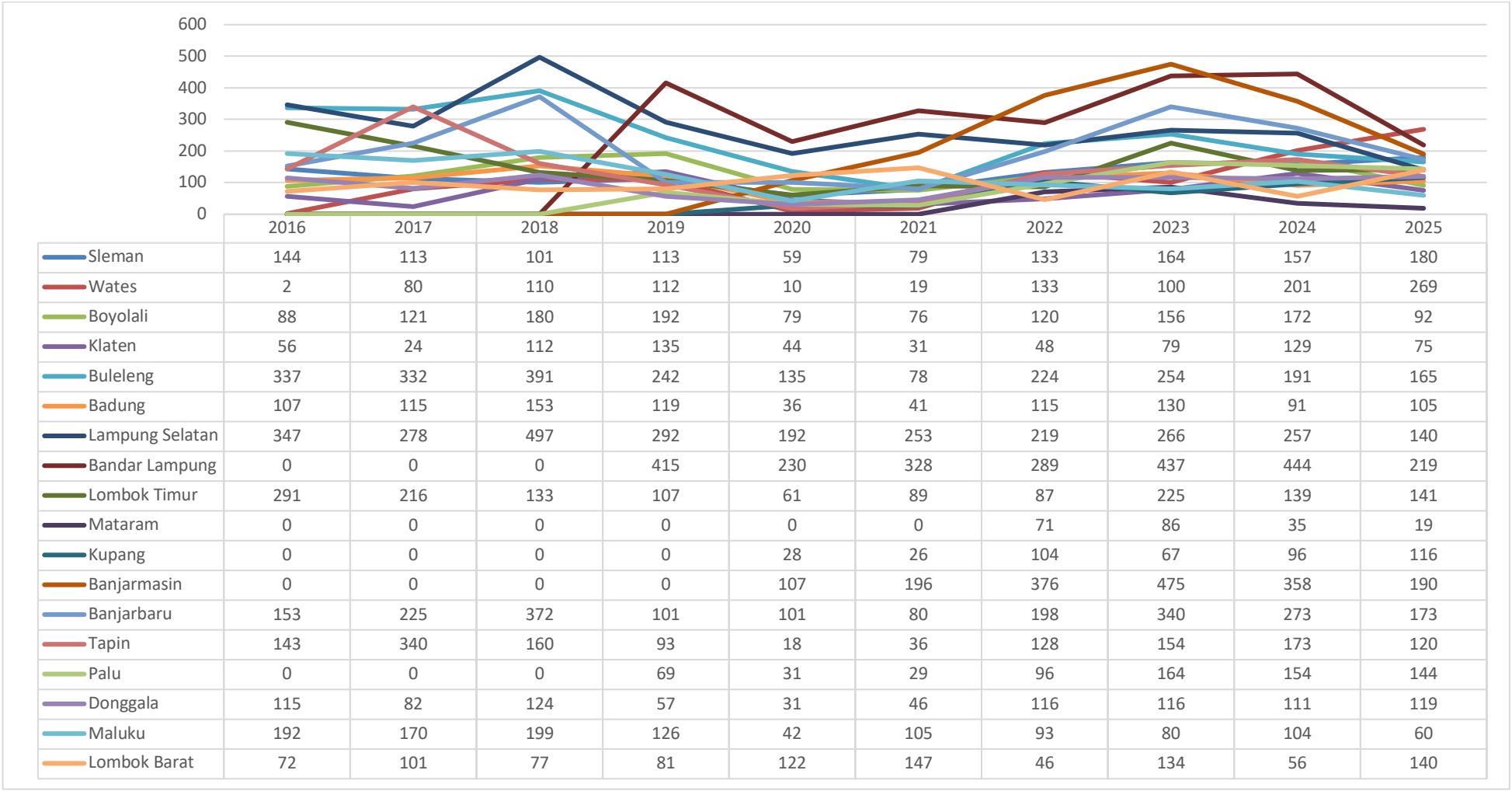
Table 24 along with Graph 1 (diarrhea hospitalization) and Graph 2 (total hospitalization) describe long term trends of hospitalized cases across sentinel hospitals from 2016 – 2025. Overall, both diarrhea-specific admission and total hospitalization showed yearly fluctuations.

Marked variation was between hospitals with highest diarrheal caseloads seen in Lampung Province (South Lampung and Lampung) and Buleleng. These sites consistently reported relatively high diarrhea admissions across multiple years, however it is to be taken into account that several site show “NA” values in earlier years, which reflect the differences in the timing of sentinel site initiation. The appearance of data in later years reflects gradual expansion of surveillance coverage.

This data not only reflects the frequency of diarrhea outbreaks but also shows how the overall case numbers (which include all health-related issues) evolve year over year in various locations. The year-to-year variation in cases provides a useful overview for assessing public health trends, the effectiveness of health interventions, and the regional challenges that may influence health outcomes.

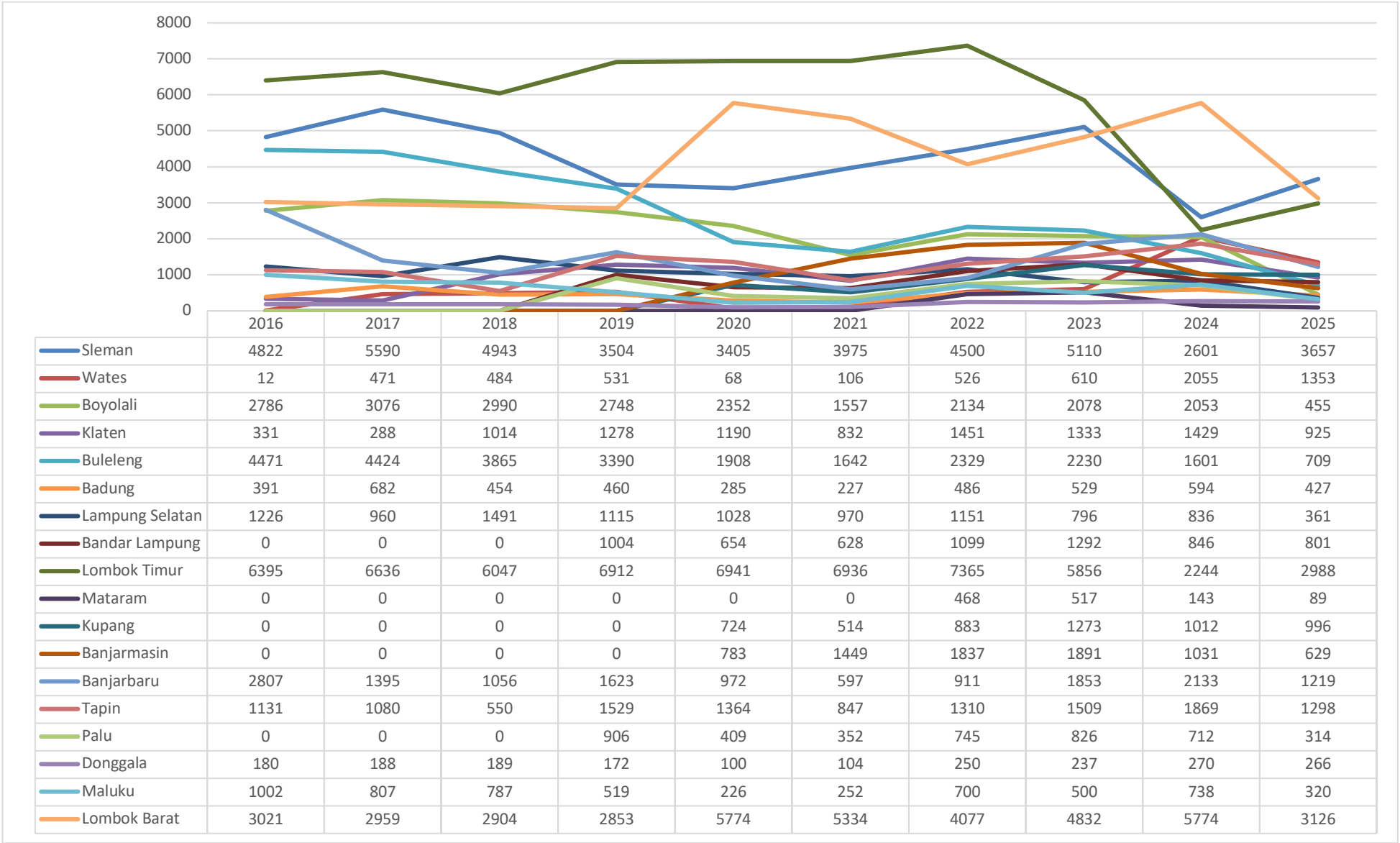
Table 24. Diarrhea and All Cases Hospitalizations at Hospital Sentinel (2016-2025)

City/Site	Diarrhea cases (Year)										All cases (Year)									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Sleman	144	113	101	113	59	79	133	164	157	180	4822	5590	4943	3504	3405	3975	4500	5110	2601	3657
2. Wates	2	80	110	112	10	19	133	100	201	269	12	471	484	531	68	106	526	610	2055	1353
3. Klaten	49	24	112	135	44	31	48	79	129	75	331	288	1014	1278	1190	832	1451	1333	1429	925
4. Boyolali	88	121	180	192	79	76	120	156	172	92	2786	3076	2990	2748	2352	1557	2134	2078	2053	455
5. Buleleng	337	332	391	242	135	78	224	254	191	165	4471	4424	3865	3390	1908	1642	2329	2230	1601	709
6. Badung	107	115	153	119	36	41	115	130	91	105	391	682	454	460	285	227	486	529	594	427
7. South Lampung	347	278	497	292	192	253	219	266	257	140	1226	960	1491	1115	1028	970	1151	796	836	361
8. Bandar Lampung	NA	NA	NA	415	230	328	289	289	444	219	NA	NA	NA	1004	654	628	1099	1292	846	801
9. East Lombok	291	216	133	107	61	89	87	225	139	141	6395	6636	6047	6912	6941	6936	7365	5856	2244	2988
10. Mataram	NA	NA	NA	NA	NA	NA	71	86	35	19	NA	NA	NA	NA	NA	NA	468	517	143	89
11. Kupang	NA	NA	NA	NA	28	26	104	67	96	116	NA	NA	NA	NA	724	514	883	1273	1012	996
12. Banjarmasin	NA	NA	NA	NA	107	196	376	475	358	190	NA	NA	NA	NA	783	1449	1837	1891	1031	629
13. Banjarbaru	153	225	372	101	101	80	198	340	273	173	2807	1395	1056	1623	972	597	911	1853	2133	1219
14. Tapin	143	340	160	93	18	36	128	154	173	120	1131	1080	550	1529	1364	847	1310	1509	1869	1298
15. Palu	NA	NA	NA	69	31	29	96	164	154	144	NA	NA	NA	906	409	352	745	826	712	314
16. Donggala	115	82	124	57	31	46	116	116	111	119	180	188	189	172	100	104	250	237	270	266
17. West Lombok	72	101	77	81	122	147	46	134	56	140	3021	2959	2904	2853	5774	5334	4077	4832	5774	3126
18. Central Maluku	192	170	199	126	42	105	93	80	104	60	1002	807	787	519	226	252	700	500	738	320



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sleman	144	113	101	113	59	79	133	164	157	180
Wates	2	80	110	112	10	19	133	100	201	269
Boyolali	88	121	180	192	79	76	120	156	172	92
Klaten	56	24	112	135	44	31	48	79	129	75
Buleleng	337	332	391	242	135	78	224	254	191	165
Badung	107	115	153	119	36	41	115	130	91	105
Lampung Selatan	347	278	497	292	192	253	219	266	257	140
Bandar Lampung	0	0	0	415	230	328	289	437	444	219
Lombok Timur	291	216	133	107	61	89	87	225	139	141
Mataram	0	0	0	0	0	0	71	86	35	19
Kupang	0	0	0	0	28	26	104	67	96	116
Banjarmasin	0	0	0	0	107	196	376	475	358	190
Banjarbaru	153	225	372	101	101	80	198	340	273	173
Tapin	143	340	160	93	18	36	128	154	173	120
Palu	0	0	0	69	31	29	96	164	154	144
Donggala	115	82	124	57	31	46	116	116	111	119
Maluku	192	170	199	126	42	105	93	80	104	60
Lombok Barat	72	101	77	81	122	147	46	134	56	140

Graph 1. Diarrhea Case in Hospital Sentinel



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sleman	4822	5590	4943	3504	3405	3975	4500	5110	2601	3657
Wates	12	471	484	531	68	106	526	610	2055	1353
Boyolali	2786	3076	2990	2748	2352	1557	2134	2078	2053	455
Klaten	331	288	1014	1278	1190	832	1451	1333	1429	925
Buleleng	4471	4424	3865	3390	1908	1642	2329	2230	1601	709
Badung	391	682	454	460	285	227	486	529	594	427
Lampung Selatan	1226	960	1491	1115	1028	970	1151	796	836	361
Bandar Lampung	0	0	0	1004	654	628	1099	1292	846	801
Lombok Timur	6395	6636	6047	6912	6941	6936	7365	5856	2244	2988
Mataram	0	0	0	0	0	0	468	517	143	89
Kupang	0	0	0	0	724	514	883	1273	1012	996
Banjarmasin	0	0	0	0	783	1449	1837	1891	1031	629
Banjarbaru	2807	1395	1056	1623	972	597	911	1853	2133	1219
Tapin	1131	1080	550	1529	1364	847	1310	1509	1869	1298
Palu	0	0	0	906	409	352	745	826	712	314
Donggala	180	188	189	172	100	104	250	237	270	266
Maluku	1002	807	787	519	226	252	700	500	738	320
Lombok Barat	3021	2959	2904	2853	5774	5334	4077	4832	5774	3126

Graph 2. Total Cases in Hospital Sentinel

3. Proportion of Diarrhea Outpatient Visit Based on District Health Office Data

Table 25 presents the annual proportion of diarrhea-related outpatient visits based on District Health Office (DHO) data from 2016–2025. Several districts show generally low proportional contribution of diarrhea to outpatient visits, including Wates (12–25%), Buleleng (7–16%), Kupang (3–19%), and Banjarmasin (7–15%). These relatively lower proportions likely reflect either lower diarrhea incidence in the community, larger outpatient volumes for non-diarrheal conditions.

In contrast, a few areas display exceptionally high proportions, such as Palu (44–76%) and Donggala (22–39%), suggesting diarrhea constitutes a substantial share of outpatient case. These districts may represent areas where diarrhea remains a major driver of outpatient consultations. These findings highlight that diarrhea continues to represent a recognizable portion of outpatient consultations in several districts. Continued routine outpatient diarrhea reporting and improved completeness of district-level data remain essential for monitoring community burden, identifying local outbreaks, and evaluating preventive interventions.

Table 25. Proportion of Diarrhea Outpatient Visit Based on District Health Office Data

District Health Office	Proportion (% per Year)									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025*
1. Sleman	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Wates	20%	25%	14%	12%	16%	NA	NA	NA	NA	NA
3. Klaten	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Boyolali	NA	NA	NA	NA	NA	NA	NA	NA	7%	NA
5. Buleleng	11%	16%	15%	11%	13%	7%	12%	13%	10%	11%
6. Badung	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7. South lampung	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8. Bandar Lampung	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9. East Lombok	NA	NA	NA	42%	24%	21%	4%	10%	13%	21%
10. Mataram	168%	44%	31%	19%	19%	10%	5%	7%	5%	6%
11. Kupang	14%	19%	9%	5%	4%	3%	3%	4%	4%	NA
12. Banjarmasin	15%	15%	8%	9%	13%	7%	8%	9%	6%	4%
13. Banjarbaru	NA	NA	NA	NA	NA	NA	NA	NA	NA	64%
14. Tapin	NA	NA	NA	NA	NA	NA	NA	6%	NA	15%
15. Palu	76%	70%	72%	59%	45%	44%	58%	77%	77%	52%
16. Donggala	NA	NA	22%	15%	26%	27%	38%	39%	37%	NA
17. West Lombok	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18. Central Maluku	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Public Health Office sent the data per semester or annual

4. Number of Diarrhea Outpatient Visits and All Outpatient Visits

Table 26 summarizes yearly diarrhea outpatient visits and all outpatient visits reported by District Health Offices (DHO) across all sentinel areas. Considerable variability was observed between districts and across reporting years, reflecting differences in population size, reporting systems, and data availability at each DHO.

Across sites, several districts consistently reported high diarrhea outpatient volumes, particularly East Lombok, South Lampung, and Banjarmasin, diarrhea makes up a large share of outpatient encounters, suggesting a high community burden of AGE or high health-seeking toward formal health facilities for diarrheal illness. These sites also has a peaking number of diarrheal cases from 2016-2017. Years marked NA usually occur in periods before digitization or during reporting system transitions.

Table 26. Diarrhea Outpatient Visit with Diarrhea and All Cases Based on Site Health Office Data

District Health Office	Diarrhea Outpatient Visit (Year)										All Outpatient Visit (Year)									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Sleman	NA	NA	1924	2950	595	771	1561	2177	1804	1701	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Wates	2321	375	129	1959	853	338	744	920	1208	994	11596	1471	929	15674	5276	NA	NA	NA	NA	NA
3. Klaten	6854	8173	6542	6220	3742	1990	2861	2490	4101	2699	6854	8173	6542	6220	3742	1990	2861	2490	4101	2699
4. Boyolali	NA	NA	NA	3344	1958	1331	1422	1560	1857	499	NA	NA	NA	3344	1958	1331	1422	1560	1857	499
5. Buleleng	2549	2737	2536	2190	2234	1169	2296	2449	2056	1639	2549	2737	2536	2190	2234	1169	2296	2449	2056	1639
6. Badung	NA	2355	2212	1709	1139	839	970	1237	1538	1276	NA	2355	2212	1709	1139	839	970	1237	1538	1276
7. South Lampung	13236	12684	11871	6819	4638	4276	5004	6118	108	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8. Bandar Lampung	7471	6766	6907	6658	6695	2805	3677	5882	5812	2880	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9. East Lombok	53951	52271	23804	23291	18770	13641	5536	11525	9361	6183	NA	NA	NA	54840	79246	65037	126653	115613	73353	29256
10. Mataram	7156	7676	7952	5336	2468	3142	2703	4004	3326	3159	4266	17285	25874	28694	12786	31934	57018	57304	69265	53221
11. Kupang	3966	6804	5857	2749	1800	1000	1171	1656	1825	1896	28480	35539	63066	59756	50362	28692	37801	43646	45083	NA
12. Banjarmasin	11746	10346	4471	4285	1979	809	2448	3083	2640	2196	10346	69495	52196	47834	15751	12290	28861	34919	40938	49235

13. Banjarbaru	NA	NA	NA	1618	738	386	684	1479	1291	1061	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14. Tapin	1342	1878	1607	1873	670	442	780	1001	897	604	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15. Palu	3570	3084	3472	2072	957	942	1602	2288	2353	1600	4720	4412	4853	3483	2146	2142	2744	2976	3038	3052
16. Donggala	NA	NA	2707	1712	978	938	802	765	749	447	NA	NA	12567	11180	3812	3456	2129	1888	2018	NA
17. West Lombok	NA	NA	NA	NA	NA	NA	7178	6535	5975	4397	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18. Central Maluku	NA	NA	431	NA	NA	NA	NA	NA	2426	1479	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5. Number of Rotavirus Vaccine Receipt and Pentabio Vaccine Receipt

Table 27 summarizes rotavirus and pentabio vaccine receipt reported by district health offices from 2016-2025. Several districts began reporting rotavirus doses in 2022, while others initiated reporting in late 2023, consistent with the phased national introduction. Across sites, rotavirus coverage varied widely. Some districts demonstrated rapid uptake in the first year of implementation (Wates, Bandar Lampung, Banjarbaru), whereas others reported relatively low initial coverage (Mataram, Buleleng, Donggala). By the second year of implementation, many sites showed marked increases in rotavirus coverage, although several districts, such as Tapin continued to report lower levels, suggesting localized challenges such as delayed distribution, incomplete reporting or barriers to access. In 2025, some sites remain in the process of updating their figures, therefore the reported coverage for that year should be interpreted as preliminary.

Pentabio vaccination, by contrast, shows consistently high receipt across most districts from 2016-2025, generally ranging between 80-100%. Overall, rotavirus vaccine uptake is encouraging yet remains uneven across regions. Continued coordination with district health offices and strengthened integration into routine immunization services will be essential for achieving levels of coverage comparable to well-established vaccines such as pentabio.

Table 27. Rotavirus Vaccine Receipt and Pentabio Vaccine Receipt Based on District Health Office Data

District Health Office	Rotavirus Vaccine (Year)				Pentabio Vaccine (Year)									
	2022	2023	2024	2025	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Sleman		40%	98%	49%	98%	97%	98%	99%	98%	99%	99%	97%	99%	50%
2. Wates		77%	98%	69%	97%	99%	100%	99%	99%	99%	99%	99%	99%	71%
3. Boyolali		46%	90%	48%	100%	100%	98%	100%	98%	85%	99%	100%	99%	72%
4. Klaten		21%	95%	67%	100%	99%	100%	101%	97%	95%	99%	100%	95%	67%
5. Buleleng		6%	75%	41%	NA	NA	NA	83%	83%	76%	99%	NA	NA	NA
6. Badung		15%	93%	60%	NA	NA	NA	NA	NA	NA	NA	95%	94%	68%
7. South Lampung		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8. Bandar Lampung		78%	57%	57%	101%	99%	99%	98%	91%	8%	97%	94%	93%	73%
9. East Lombok		16%	79%	42%	NA	NA	108%	112%	116%	95%	127%	106%	76%	48%
10. Mataram	6%	70%	82%	NA	NA	NA	88%	89%	82%	77%	82%	76%	80%	NA
11. Kupang		47%	60%	34%	97%	98%	96%	99%	83%	90%	99%	85%	69%	49%
12. Banjarmasin		39%	80%	65%	NA	NA	NA	90%	84%	89%	87%	112%	84%	70%
13. Banjarbaru		77%	84%	44%	NA	NA	NA	88%	75%	80%	93%	82%	79%	65%
14. Tapin		19%	46%	35%	66%	77%	70%	79%	69%	71%	76%	95%	75%	54%
15. Palu		7%	83%	74%	56%	56%	59%	57%	50%	51%	54%	97%	88%	84%
16. Donggala		1%	33%	34%	NA	NA	NA	45%	44%	44%	40%	57%	45%	51%
17. West Lombok		16%	79%	44%	102%	103%	100%	106%	108%	81%	109%	88%	79%	48%
18. Central Maluku		33%	49%	2%	NA	NA	NA	NA	NA	NA	NA	134%	58%	43%

C. Intussusception Study

The intussusception sub-study aims to monitor the occurrence of intussusception cases and assess any potential association with Rotavac® and/or RV3 vaccine administration as part of vaccine introduction safety. The study is primarily conducted in selected Type A and Type B referral hospitals, initially focusing on RSUP dr. Sardjito Yogyakarta, RSUP Soeradji Tirtonegoro Klaten, and RSD Mangusada Badung. During the mid–third-year period, additional audience meetings are conducted with referral hospitals in several provinces to support expansion of surveillance coverage, enhance passive case detection and improve geographic representativeness.

As of November 2025, a total of three audience meetings had been completed, with further engagements planned and ongoing, pending hospital availability and completion of non-disclosure agreement (NDA) reviews.

Table 28. Audience Meetings for Intussusception Sub-Study (as of November 2025)

Status	Hospital	Location	Date	Remarks
Completed	RSUD Prof. Dr. W.Z. Johannes	Kupang	23 October 2025	Initial audience meeting to introduce intussusception surveillance and support passive case detection
Completed	RSUD Ulin	Banjarmasin	14 November 2025	Audience meeting with pediatricians and pediatric surgeons
Completed	RSUP Prof. dr. Ngoerah	Bali	21 November 2025	Audience meeting; NDA review currently in progress
Planned	RSUD dr. Zainoel Abidin	Banda Aceh	To Be Confirmed	Planned audience meeting for potential site expansion
Planned	RSUP Leimena	Ambon	To Be Confirmed	Planned audience meeting to assess feasibility
Planned	RSUD Ulin	Banjarmasin	To Be Confirmed	Follow-up audience meeting in coordination with the Training and Education Unit (Diklat)
Planned	RS Urip Sumoharjo	Bandar Lampung	To Be Confirmed	Planned audience meeting to support geographic expansion

Table 29. Recruitment Intussusception All Site

	Dr. Sardjito General Hospital (a)	Dr. Soeradji Tirtonegoro General Hospital (b)	Mangusada Regional Public Hospital (c)	Total (d)
n (%)				
Enrolment data (2020-2024)	13 (76.43)	3 (17.65)	1 (5.88)	17 (100.00)

%a = a/d %b = b/d %c = c/d

Table 30. Demographic Profile of Intussusception

Characteristic	Dr. Sardjito General Hospital (n=13)	Dr. Soeradji Tirtonegoro General Hospital (n=3)	Mangusada Regional Public Hospital (n=1)	Total (n=17)
n (%)				
Gender				

Male	10 (76.92)	1 (33.33)	1 (100.00)	12 (70.59)
Female	3 (23.08)	2 (66.67)	0 (0.00)	5 (29.41)
Age				
1-5 months	3 (23.08)	1 (33.33)	1 (100.00)	5 (29.41)
6-11 months	10 (76.92)	2 (66.67)	0 (0.00)	12 (70.59)
Referral Case				
Yes	11 (84.62)	2 (66.67)	1 (100.00)	14 (82.35)
No	2 (15.38)	1 (33.33)	0 (0.00)	3 (17.65)

Table 29 summarizes recruitment of intussusception cases across the three participating referral hospital. A total of 17 cases were identified, with the majority recruited at dr. Sardjito General Hospital (76.43%), followed by dr. Soeradji Tirtonegoro General Hospital (17.65%) and Mangusada Regional Public Hospital (5.88%). The uneven distribution may reflects differences in hospital classification (Type A vs. Type B), referral patterns and geographic catchment area.

Table 30 describes demographic characteristics of the enrolled cases. Most affected children were male (70.59%). The majority occurred in infants aged 6-11 months (70.59%), which corresponds with the typical age window of intussusception incidence.

Additionally, 82.35% of cases were referral admissions. This highlights the role of tertiary hospitals as referral centers for severe gastrointestinal presentations and also suggests awareness of intussusception signs in lower-level services.

Table 31. Clinical Profile of Intussusception

Parameters	Dr. Sardjito General Hospital (n=13)	Dr. Soeradji Tirtonegoro General Hospital (n=3)	Mangusada Regional Public Hospital (n=1)	Total (n=17)
n (%)				
Bloody Stools				
Yes	12 (92.31)	3 (100.00)	1 (100.00)	16 (94.12)
No	1 (7.69)	0 (0.00)	0 (0.00)	1 (5.88)
Crying or Being Irritable				
Yes	11 (84.62)	3 (100.00)	1 (100.00)	15 (88.24)
No	2 (15.38)	0(0.00)	0 (0.00)	2 (11.76)
Vomiting				
Yes	11 (84.62)	3 (100.00)	1 (100.00)	15 (88.24)
No	2 (15.38)	0(0.00)	0 (0.00)	2 (11.76)

Table 31 describes the clinical presentation among the 17 intussusception cases. The most commonly reported symptom was bloody stools (94.12%), followed by vomiting (88.24%), and prolonged crying or irritability (88.24%).

Across all hospitals, nearly all enrolled cases presented with at least one of the hallmark symptoms, demonstrating relatively uniform clinical severity at presentation.

Overall, the clinical profiles observed in this study align with the typical symptom patterns of intussusception

Table 32. Management and Outcomes of Intussusception

Parameters	Dr. Sardjito General Hospital (n=13)	Dr. Soeradji Tirtonegoro General Hospital (n=3)	Mangusada Regional Public Hospital (n=1)	Total (n=17)
n (%)				
Reduction				
Yes	13 (100.00)	2 (66.67)	1 (100)	16 (94.12)
No	0 (0.00)	1 (33.33)	0 (0.00)	1 (5.88)
Reduction Method				
Surgery	7 (53.85)	2 (66.67)	0 (0.00)	9 (52.94)
Hydrostatic	3 (23.08)	0 (0.00)	1 (100)	4 (23.53)
Surgery and Hydrostatic	3 (23.08)	0 (0.00)	0 (0.00)	3 (17.65)
Spontaneous	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
No	0 (0.00)	1 (33.33)	0 (0.00)	1 (5.88)
Intestinal Resection				
Yes	3 (23.08)	1 (33.33)	0 (0.00)	4 (23.53)
No	10 (76.92)	2 (66.67)	1 (100)	13 (76.47)
Discharged Condition				
Stable	12 (92.31)	2 (66.67)	1 (100)	15 (88.24)
Death	1 (7.69)	1 (33.33)	0 (0.00)	2 (11.76)
Referred to Another Hospital	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Discharge Against Medical Advice	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

Table 32 summarizes the management strategies and discharge outcomes among the 17 intussusception cases recruited. Successful reduction was achieved in 94.12% (n=16) of cases, with only one child (5.88%) not undergoing reduction procedures. Across health facilities, the majority of reductions were performed surgically (52.94%), while hydostatic reduction accounted for 23.53%, with a smaller proportion underwent combined surgical and hydrostatic methods (17.65%).

Intestinal resection was required in 23.53% of children. Despite these cases requiring surgical resection, most children recovered and were discharged in stable condition.

Overall outcomes were favourable, with 88.24% discharged in stable condition. Two deaths were reported (11.76%), each occurring at different hospitals. No cases were discharged against

medical advice or referred to other hospitals, indicating that management was generally completed at the admitting facility.

Table 33. Rotavirus Vaccination Profile of Intussusception

Parameters	Dr. Sardjito General Hospital (n=13)	Dr. Soeradji Tirtonegoro General Hospital (n=3)	Mangusada Regional Public Hospital (n=1)	Total
n (%)				
Vaccination Status				
Vaccinated	4 (30.77)	1 (33.33)	0 (0.00)	5 (29.41)
Not Vaccinated	8 (61.54)	2 (66.67)	1 (100.00)	11 (64.71)
NA	1 (7.69)	0 (0.00)	0 (0.00)	1 (5.88)
Rotavirus Vaccine Doses				
Not Vaccinated	8 (61.54)	2 (66.67)	1 (100.00)	11 (64.71)
1	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
2	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
3	4 (30.77)	1 (33.33)	0 (0.00)	5 (29.41)
NA	1 (7.69)	0 (0.00)	0 (0.00)	1 (5.88)
Source Vaccine Information				
District health office	12 (92.31)	1 (33.33)	1 (100.00)	14 (82.35)
Medical records	0 (0.00)	2 (66.67)	0 (0.00)	2 (11.76)
Vaccine book	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
NA	1 (7.69)	0 (0.00)	0 (0.00)	1 (5.88)

Table 33 presents the rotavirus vaccination status among 17 intussusception cases for which vaccination history could be traced. Overall, approximately two-thirds of children (64.71%) had not received rotavirus vaccine, while only 29.41% were documented as vaccinated. The remaining case (5.88%) had unavailable vaccine information.

Among vaccinated children, most had completed the vaccination up to the third dose (29.41%). The lack of documentation for the first and second doses suggests possible limitations in vaccination record completeness, reporting practices, or data linkage. As a result, the available data may disproportionately capture children with complete vaccination histories, while under-representing those with partial or incomplete immunization.

Sources of vaccination information were predominantly derived from district health office immunization systems (82.35%), whereas only a small proportion relied on individual medical records. Although centralized systems allow retrospective tracing, it may not consistently capture dose-by-dose details, timing of administration, or vaccinations received outside the routine reporting pathway. This reliance may explain why partial vaccination (first or second dose only) was not identified in any case.

D. Qualitative Study

The qualitative study is one of the sub-studies designed to evaluate the acceptance of the rotavirus vaccine among communities, religious leaders, and healthcare providers in Indonesia, as well as to explore factors that facilitate or hinder the implementation of the rotavirus vaccination program. Data were collected through focus group discussions (FGDs) and in-depth interviews (IDIs) conducted across selected study sites.

As of June 2025, qualitative activities were limited to implementation and data collection in Yogyakarta. By November 2025, the qualitative component had expanded to include additional FGDs and IDIs in Bali and Maluku, with preliminary analyses completed.

1. Study Site

The first round of the study has been carried out in Yogyakarta and Bali, whereas the second round of the study will be carried out in Maluku. In each district, two primary health care centers were selected, representing urban sites. Information about these study sites are presented in Table below.

Study Location for the 1st Round

Province	District	Study Sites
D.I. Yogyakarta	Sleman	Puskesmas Depok 2
		Puskesmas Mlati 1
	Kulon Progo	Puskesmas Wates
		Puskesmas Panjatan 2
Bali	Denpasar	Puskesmas Denpasar Barat 1
		Puskesmas Denpasar Selatan 4
	Buleleng	Puskesmas Buleleng 1
		Puskesmas Sawan 1

Study Location for the 2nd Round

Province	District	Study Sites
Maluku	Central Maluku	Puskesmas Suli
		Puskesmas Tulehu

2. Implementation of Qualitative Study

a. Ethical Clearance

The ethical clearance for this study was obtained from the Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada, Yogyakarta, with the approval letter numbered KE/FK/0394/EC/2025.

b. Research Agreements and Permits

Research permits for the implementation of this research were obtained from each site in accordance with the provisions of each site. In the table below, the research permits from each site are presented.

Province	District	Research Permit
D.I. Yogyakarta (DIY)	Sleman	Sleman District Health Office: In the form of a Statement Letter of Data Collection valid for 5 months starting from March until July 2025.
	Kulon Progo	Kulon Progo District Health Office: In the form of Research Permit starting from February 2025 until the end of the study.
Bali	Denpasar	Integrated Services and Investment Agency (DPMPTSP) of Denpasar Regency Government: In the form of a Research Certificate, valid for 6 months starting from June until December 2025.
	Buleleng	Integrated Services and Investment Agency (DPMPTSP) of Buleleng Regency Government: In the form of a Research Certificate, valid for 3 months starting from July until October 2025.
Maluku	Central Maluku	National and Political Unity Agency: Letter of Research Permission valid for 5 years starting April 2025 until 2030

c. Coordination Meeting (Workshop and Training)

The coordination meeting was conducted to facilitate team introductions, training, and ensure preparedness for the research kickoff.

i. Workshop

Workshop was held offline in May 21st 2025, with the objective was to discuss and finalize all research documents with the research team.

For qualitative initiation study at Maluku, workshop was held online on November 24th and December 4th 2025, with the objective to introduce about study protocol, and all documents regarding the qualitative study.

ii. Training

The objective was to ensure that all team members clearly understand their respective roles and responsibilities in the implementation of the study. The training for site DIY, Bali and Maluku was held offline in 23 May 2025, 20 August 2025 and 7 December 2025 respectively, with interactive discussions were also held between participants and trainers and all researchers. The objective for every training is to train the enumerator to conduct a focus group discussion, and review the document.

d. Data Collection

i. Focus Group Discussion (FGD)

Data Collection using FGD techniques was conducted on community, which the participant are parents of children aged < 1 years vaccinated (full dose) for Rotavirus vaccine (Rotavac or RV3). The implementation of FGDs were conducted offline determined according to the agreement of the informants and the research team.

In the case of Maluku, due to geographic barriers and varying health-seeking behaviours, we slightly broadened the inclusion criteria for FGD respondents. To diversify perspectives, we recruited parents of children aged <1 year who had not yet completed the rotavirus vaccination dose.

ii. In-depth Interview (IDI)

Data collection using in-depth interview technique was conducted on groups of parents of children aged < 1 years not vaccinated for Rotavirus vaccine (Rotavac or RV3), policy makers, health care providers, religious leaders, vaccine providers, and other related institutions. The IDI were conducted offline, where the time and place were determined according to the agreement of the informants and the research team.

Additionally, an extended respondent category was incorporated, in which parents of children <1 year who declined rotavirus vaccination were included to further explore reasons for refusal and barriers to vaccine uptake and this extended respondent has been added to the recent implementation in Maluku.

e. Research Implementations

The implementation of qualitative studies in research locations was carried out by the research team in each location. The progress of research implementation at each sites can be seen in the table below.

Research Implementation Progress for DIY Site (Sleman & Kulon Progo)

No.	Group	Informant	Number (person)	Implementation	Notes
1.	FGD Community	Parents of children aged < 1 years vaccinated (full dose) for Rotavirus vaccine (Rotavac or RV3).	20 (10 for each site)	14 June 2025 (Sleman) 19 June 2025 (Kulon Progo)	
2.	IDI Religious Leaders	Konghucu Religious Leader	1	19 June 2025	
		Islamic Religious Leader	1	23 June 2025	
		Christian Religious Leader	1	10 July 2025	
		Catholic Religious Leader	1	19 June 2025	
3.	IDI Healthcare Providers	Head of Public Health Center	2 (1 for each site)	23 June 2025	
		Midwife/Nurse Coordinator of Immunization	4 (2 for each site)	23 June 2025 (Depok PHC) 29 June 2025 (Mlati PHC)	
4.	Policy Makers	Provincial Health Office Immunization Unit Team	1	11 July 2025	
		District/City Health Service Immunization Unit Team	2 (1 for each site)	14 July 2025 (site Sleman)	

Research Implementation Progress for Bali Site (Denpasar & Buleleng)

No.	Group	Informant	Number (person)	Implementation	Notes
1.	FGD Community	Parents of children aged < 1 years vaccinated (full dose) for Rotavirus vaccine (Rotavac or RV3).	20 (10 for each site)	21 – 22 August 2025	
2.	IDI Religious Leaders	Budha Religious Leader	1	26 August 2025	
		Hindhu Religious Leader	1	26 August 2025	
3.	IDI Healthcare Providers	Head of Public Health Center	2 (1 for each site)	26 August 2025	
		Midwife/Nurse Coordinator of Immunization	4 (2 for each site)	25 August 2025	
4.	Policy Makers	Provincial Health Office Immunization Unit Team	1	29 August 2025	
		District/City Health Service Immunization Unit Team	2 (1 for each site)	29 August 2025	

Research Implementation Progress for Central Maluku

No.	Group	Informant	Number (person)	Implementation	Notes
1.	FGD Community	Parents of children aged < 1 years vaccinated (half dose) for Rotavirus vaccine (Rotavac or RV3).	10	8 December 2025	
2.	IDI Religious Leaders	Konghucu Religious Leader			Schedule to be announced
		Islamic Religious Leader			
		Christian Religious Leader			
		Catholic Religious Leader			
3.	IDI Healthcare Providers	Head of Public Health Center	1	10 December 2025	
		Midwife/Nurse Coordinator of Immunization	2 (1 for each site)	8 and 9 December 2025	
4.	Policy Makers	Provincial Health Office Immunization Unit Team	1 (Site Tulehu)		Schedule to be announced
		District/City Health Service Immunization Unit Team	2 (1 for each site)		Schedule to be announced

f. Qualitative Findings

Preliminary qualitative findings indicate that overall community acceptance of childhood vaccination is high, with most caregivers expressing trust in government recommendations and health care providers. In many settings, decisions regarding childhood vaccination are primarily made by mothers, although fathers or other senior family members may also influence decision-making.

Despite this, knowledge regarding specific vaccines, particularly rotavirus vaccine, remains superficial. Many parents reported receiving vaccines without fully understanding what was administered, its purpose or its benefits. Limited explanations during vaccination sessions and insufficient educational outreach by frontline health workers contribute to this information gap.

Concerns about adverse events following immunization (AEFI) are still present among some caregivers. Moreover, vaccine availability and inconsistent health promotion, particularly in more remote areas such as parts of Maluku, have resulted in lower awareness and incomplete vaccination in certain communities.

Overall, these early insights underscores the need to strengthen vaccine education and counselling as rotavirus vaccination continues to expand nationally.

IV. BUDGET AND EXPENDITURES

Details of the expenses is attached in the attached Financial Report.

V. CHALLENGES ENCOUNTERED

Several operational challenges were present for the research team:

1. Data completeness varies substantially across sites, particularly when obtaining data from district health offices, resulting in missing fields that require continuous verification and repeated follow-up with focal persons. These follow-ups are often inefficient and difficult, as persons-in-charge frequently change, do not respond, or previous PICs no longer retain access to older datasets, hindering data recapitulation from earlier surveillance periods.
2. The long waiting time and bureaucratic pathways required to retrieve and validate district-level data further hinder timely data consolidation.
3. Documentation originates from multiple sources (paper, electronic medical records, ASIK platform) each with different structures and terminologies, thereby complicating standardization and requiring additional time and verification steps prior to integration into the study database.
4. Cleaning data require extensive manual checking, as diverse and often inconsistent records are found across hospitals and district-level sources and across different time periods.

The Surveillance Rotavirus Acute Gastroenteritis (RVGE) in Children Under Five Years of Age and Effectiveness of Rotavirus Vaccination Against Hospitalized RVGE in Indonesia

Center for Child Health (CCH-PRO)
Faculty of Medicine, Public Health, and Nursing
Universitas Gadjah Mada Yogyakarta Indonesia