USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program

Improved Access. Improved Services. Better Health Outcomes.

Forecasting Needs of RMNCH Medical Products

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Newborn and Child Health Commodities subgroup
June 2022

USAID FROM THE AMERICAN PEOPLE

Introduction to the RMNCH Forecasting Supplement

Jane Briggs
Senior Principal Technical Advisor
Lead for MNCH and FP
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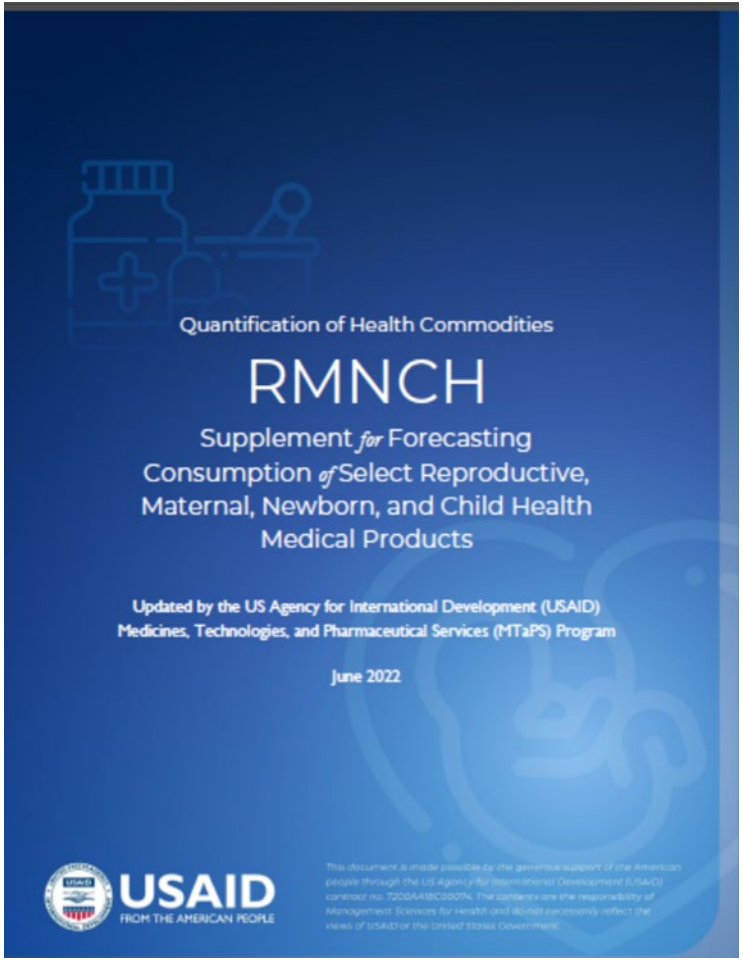
Outline

- Background
- The RMNCH Forecasting Supplement- updates and products
- Quantification & Forecasting
- Contents of the RMNCH Forecasting Supplement
- Forecasting example – Amoxicillin for pneumonia
- QAT* and the RMNCH Forecasting Supplement
- Experience from Nigeria
- Q&A
- Closing

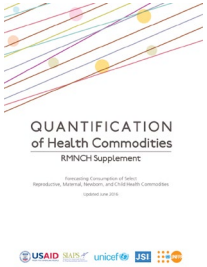
* QAT: Quantification Analytics Tool

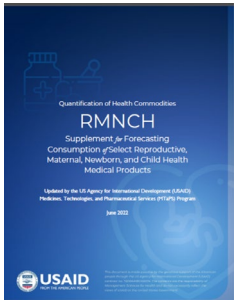


Background

- Increasing access to and appropriate use of RMNCH medical products could **save the lives of more than 6 million** women and children per year
- A major component of access is **availability**
- To ensure availability, **accurate and timely estimates/quantifications** of supply requirements are needed
- At the national level, **results of quantifications are essential** for budgeting, resource allocation and mobilization, and planning for procurement and supply chain operations

The RMNCH Forecasting Supplement





- Previous version was published in 2016
- Updates based on new recommendations:
  - ➢ New condition: Management of severe hypertension in pregnancy
  - ➢ New products used for management of PPH
  - ➢ New classifications of PSBI or very severe disease in newborns 0-59 days with respective changes in treatment options
- Updated based on new incidence and related data
- Organization of supplement by condition instead of by product
- Alternative forecasting approach (allocation) for magnesium sulphate and calcium gluconate
- Updated list of “Tools and Resources”

Priority Life-Saving Medical products (RH and MH)

Family Planning

emergency contraceptive pills

female condoms

contraceptive implants

Maternal Health

oxytocin

misoprostol

Tranexamic acid

Heat-Stable Carbetocin

$MgSO_4$

Calcium Gluconate

Methyldopa

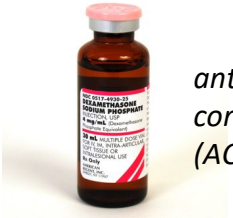
Hydralazine

Labetalol

Priority Life-Saving Medical Products (Newborn and CH)

Newborn Health

newborn resuscitation kits



antenatal corticosteroids (ACS)

Gentamicin

Ampicillin

Ceftriaxone

amoxicillin

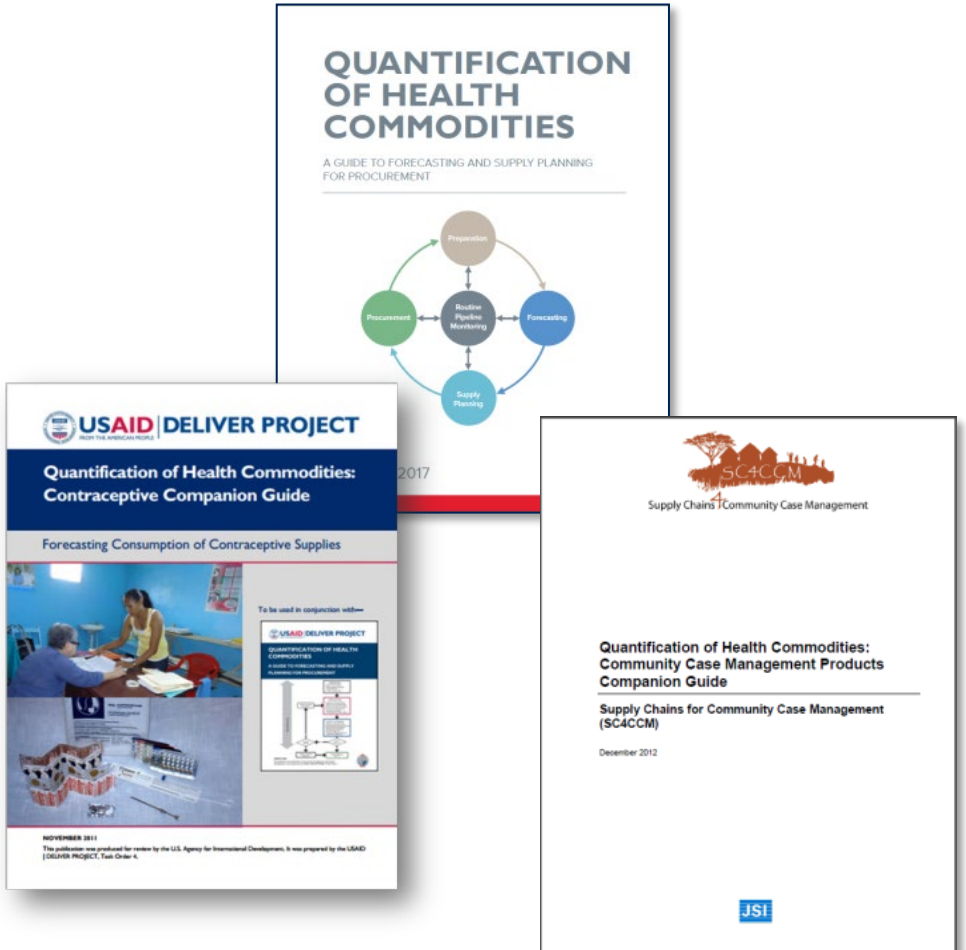
Child Health

amoxicillin

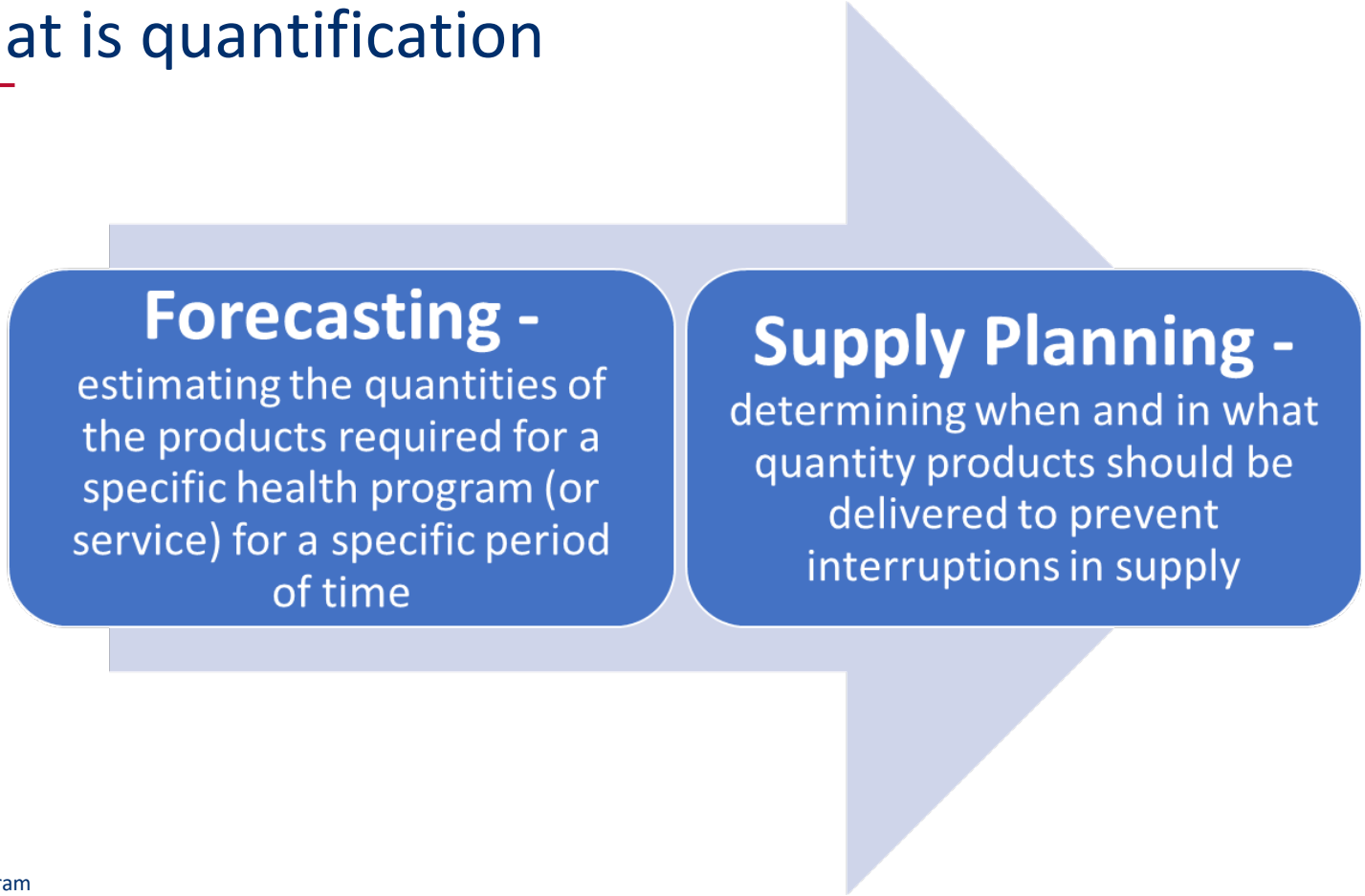
ORS & zinc

Complements other quantification resources

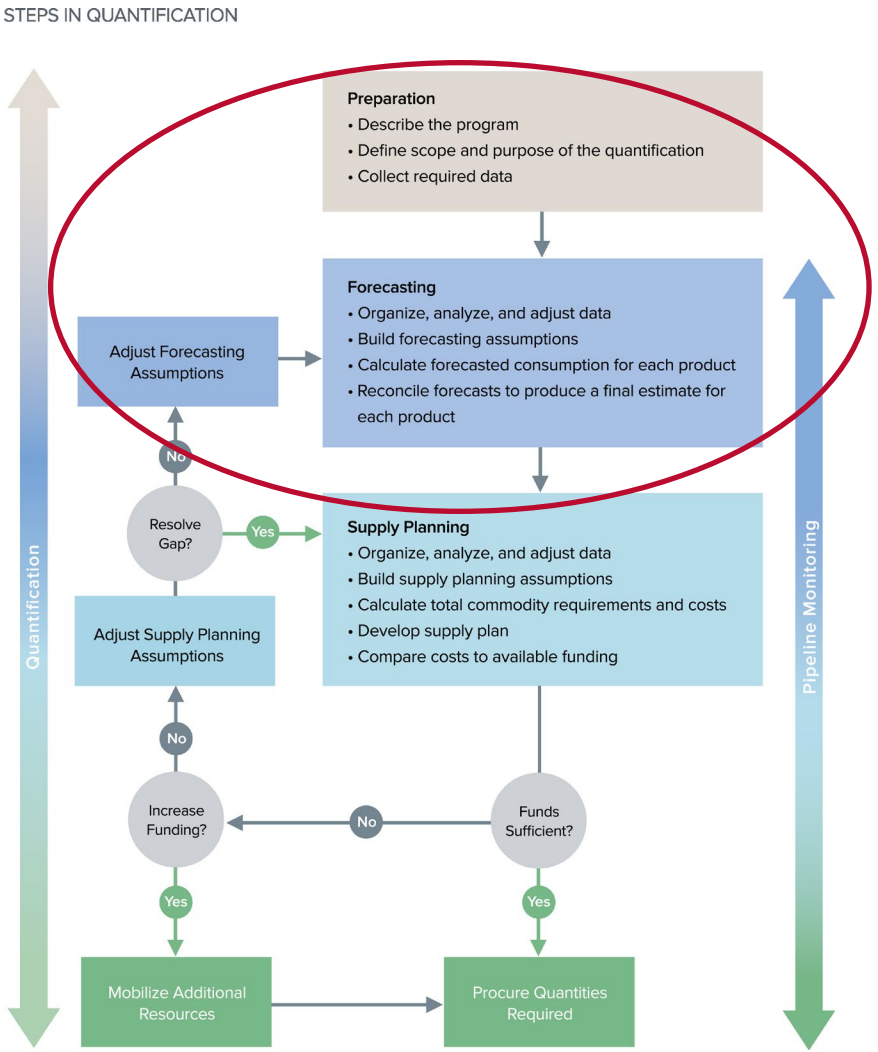
- **Quantification of Health Commodities: A Guide to Forecasting and Supply Planning for Procurement JSI 2017**
- Quantification of Health Commodities: Contraceptive companion guide JSI 2011
- Quantification of Health Commodities: Community Case Management Products Companion Guide 2014



What is quantification



Quantification process



Source: JSI 2017. Quantification of Health Commodities: A Guide to Forecasting and Supply Planning for Procurement

Data for Forecasting

- Historical **consumption (logistics)** data
  - Quantities of **products** dispensed/issued or used over a specified period of time
- **Service** data
  - Number of **services provided** – number of visits where clients were treated or referred over a specified period of time
- **Demographic** and **morbidity** data
  - Number and characteristics of the **population** targeted for services over a specified period of time
  - Data on **prevalence** or **incidence** of a disease or health condition in a specific population

Challenges in the forecasting of RMNCH medical products

- Consumption data not available or reliable
- Lacking morbidity or incidence data for MNCH conditions
- Limited use of available data
- Programs may have ambitious scale-up plans
- Limited coordination between program and procurement units and sometimes donors too
- Limited use of standard treatment protocols (low dissemination, non-adherence etc.)

Content of the RMNCH Forecasting Supplement

- Introduction
- Forecasting considerations, algorithms, and examples for products used to manage 9 RMNCH conditions
  1. Reproductive Health: Family Planning and Prevention of STIs
  2. Prevention and Treatment of Postpartum Hemorrhage
  3. Prevention and Treatment of Hypertensive Disorders in Pregnancy
  4. Reduction of Risk of Respiratory Distress Syndrome in Preterm Births
  5. Newborn Resuscitation and Essential Care around the Time of Birth
  6. Newborn Cord Care
  7. Treatment of Possible Serious Bacterial Infection (PSBI) or Very Severe Disease in Newborns and Young Infants (0–59 days)
  8. Treatment of Pneumonia in Children 2–59 Months
  9. Treatment of Diarrhea in Children under 5 Years
- Glossary
- Tools and resources

What is in each chapter

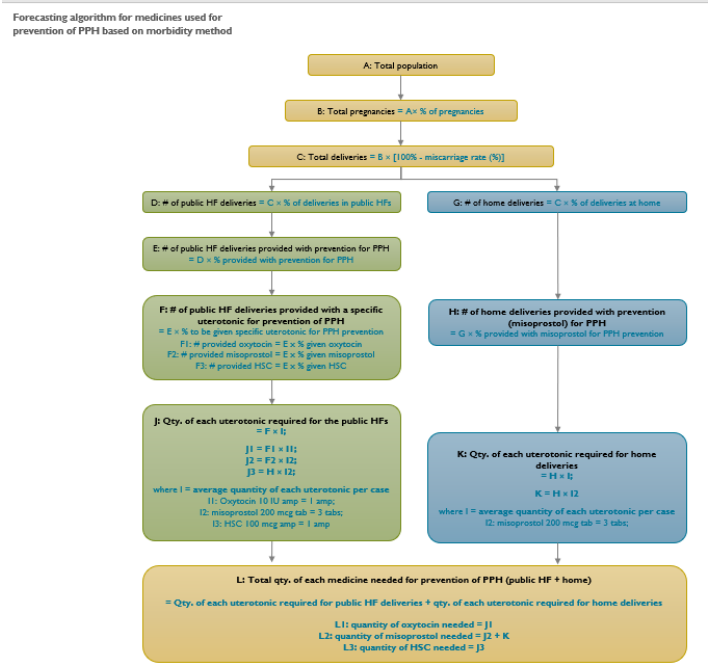
For each health condition/service:

- Introduction to the condition/service
- Product characteristics and other forecasting considerations
- Required data and potential sources (condition specific)
- Forecasting algorithms
- Summary of proxy data
- Example of forecasting assumptions and results
- References

RMNCH forecasting package

Flyer to describe the package
RMNCH forecasting supplement plus

RMNCH forecasting algorithms



and a set of RMNCH forecasting excel tools

Prevention of PPH

PARAMETER	INPUT		CURRENT YEAR	FORECAST YEAR 1	FORECAST YEAR 2
Total population (A)	A: Population = previous year population + (previous year population x PGR) (annual PGR is 2%)	2%	20,000,000	20,400,000	20,808,000
Total pregnancies (B)	B = A x % of pregnant women out of total population	4%	800,000	816,000	832,320
Total deliveries (C)	C = B x (100 % - miscarriage rate in %) (miscarriage rate of 10%)	90%	720,000	734,400	749,088
Number of public HF deliveries (D)	D = C x % of deliveries in the public HFs (Annual increase in compliance of 4%)	4%	360,000 50%	396,576 54%	434,471 58%
Number of public HF deliveries provided with prevention for PPH (E)	E = D x % compliance (annual increase in compliance of 5%)	5%	288,000 80%	337,090 85%	391,024 90%
Number of public HF deliveries given oxytocin for prevention of PPH (F)	F = E x % of deliveries given oxytocin	100%	288,000	337,090	391,024
Number of home deliveries (G)	G = C x % of home deliveries (annual decrease of 4%)	-4%	324,000 45%	301,104 41%	277,163 37%
Number of home deliveries provided with misoprostol for prevention of PPH (H)	H = G x % compliance (annual increase in compliance of 5%)	5%	97,200 30%	105,386 35%	110,865 40%
Quantity of oxytocin 10 IU ampoules needed for prevention of PPH (J)	J = F x I1; where I1: # of ampoules needed per case for prevention = 10 IU	1	288,000	337,090	391,024
Quantity of misoprostol 200 mcg tablet needed for prevention of PPH for home deliveries (K)	K = H x I2; where I2: # of tablets needed per case for prevention = 3 x 200 mcg = 3 tablets	3	291,600	316,159	332,595
Total quantity of oxytocin 10 IU ampoules needed for prevention of PPH (L1)	**L1 = J**		**288,000**	**337,090**	**391,024**
Total quantity of misoprostol 200 mcg tablet needed for prevention of PPH (L2)	**L2 = K**		**291,600**	**316,159**	**332,595**

Forecasting Amoxicillin Needs for Pneumonia: An Example

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Amoxicillin for pneumonia

Oral amoxicillin is recommended by WHO for the treatment of children with

- fast-breathing pneumonia with no chest indrawing or no general danger signs at the community level by qualified CHWs without the need for referral to HFs

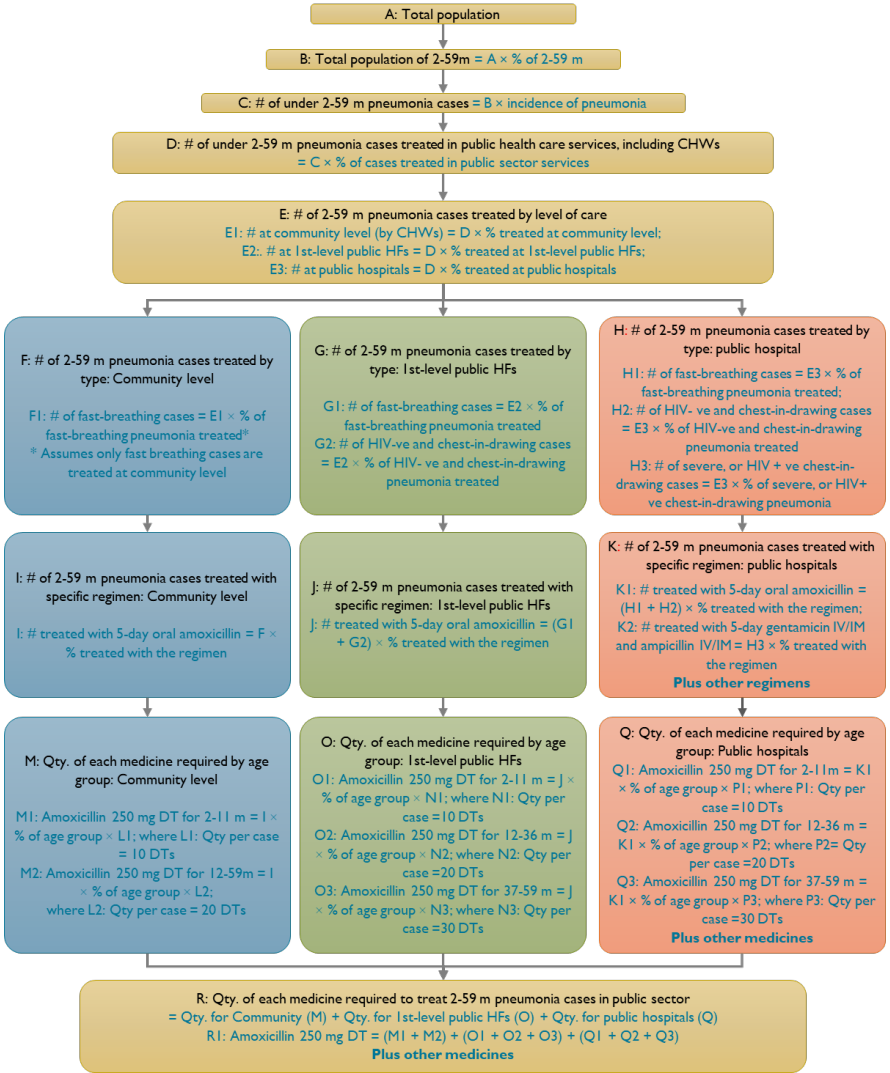
- fast-breathing pneumonia or HIV-negative chest-indrawing pneumonia at first-level HFs without the need for referral to hospitals.

Amoxicillin forecast using demographic and incidence data

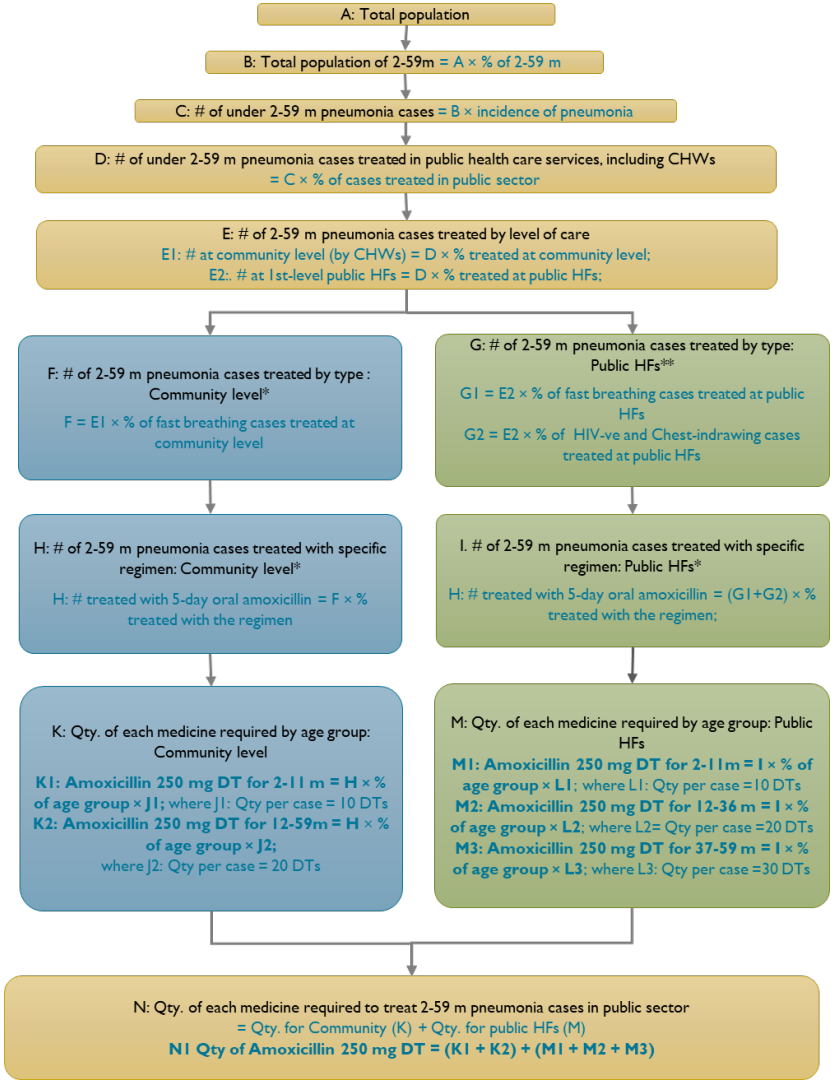
Steps

1. Calculate the total target number of cases to be treated for pneumonia
2. Calculate the number of cases per level to be treated with amoxicillin
3. Calculate the amount of amoxicillin needed per case
4. Calculate the total quantity of amoxicillin needed for the forecast period

Algorithm for pneumonia



Algorithm for pneumonia – Simplified



Types of data useful for forecasting consumption of amoxicillin for pneumonia

Data	Source
Total population per year	National census and projections, DHS, US Census Bureau International Programs Database, UN world population projections
Proportion/# of children under 5 years	
Incidence of pneumonia in children under 5	DHS, HMIS, national child morbidity and mortality surveys, special surveys, expert opinion, programmatic/strategic plans
Proportion/# of children with pneumonia with access to health services (at community, public, and private facilities)	
Proportion/# of children with pneumonia by type (fast breathing, chest indrawing, and severe) identified in the public sector by level of care	
Proportion/# of children with chest-indrawing and severe pneumonia cases identified at and referred by community and first-level HFs to higher-level HFs	
Proportion/# of each type of pneumonia case treated at each level of public health care by age group (2–11m, 12–36m, 37–59m)	
Proportion/# of cases treated with specific antibiotic regimens by type of pneumonia	HMIS, special surveys, national STG, WHO STG, expert opinion, programmatic/strategic plans
Quantity (formulation and dosage) of each medicine used in each regimen to treat one case by age group	National STG, WHO STG, expert opinion

Example: amoxicillin for pneumonia – forecast (1)

BOX 13. EXAMPLE OF COUNTRY FORECAST OF ANTIBIOTICS TO TREAT PNEUMONIA IN CHILDREN 2–59 MONTHS BASED ON MORBIDITY METHOD

Country *X* has a generalized HIV prevalence of 2.5%. The national pediatric STG recommends the use of oral amoxicillin for 5 days for the treatment of fast-breathing-only and HIV-chest-indrawing pneumonia. Fast-breathing pneumonia cases without any other complications can be treated at all levels, including by trained CHWs. The CHWs are trained to screen and refer HIV-positive, chest-indrawing pneumonia and severe pneumonia cases to public HFs. HIV-negative chest-indrawing cases can be treated at first- or higher-level public HFs. The guideline states that all severe and/or HIV-positive chest-indrawing pneumonia case should be referred to hospitals for treatment with ampicillin (IV/IM) and gentamicin (IV/IM) injections as the first-line option. Cases that don't respond to first line treatment should be treated with ceftriaxone IV/IM. Incidence of pneumonia in children under 5 is not known in the country; thus, the quantification team has agreed to take global average as a proxy.

Available data and assumptions:

- Total **population: 20,000,000** (current year)
- Annual population growth: **2.0%**
- Percentage of children 2–59m: **9%**
- Incidence of pneumonia in children 2–59m: **231 episodes per 1,000 children** (proxy)
- Percentage of pneumonia cases identified in the public sector, including at community level by CHWs, is estimated to increase by 5 percentage points per year (currently **60%**).
- Percentage of 2–59m pneumonia cases treated in the public sector by level of care
  - Hospitals = **15%,** expected to remain the same over the forecast period
  - First-level HFs = **65%,** expected to decrease by 3 percentage points per year
  - Community level (by CHWs) = **20%,** expected to increase by 3 percentage points per year
- Estimated proportions of pneumonia cases treated by level of care and type for the forecasting period based on HMIS data

	Community	First-level HFs	Hospitals
Fast breathing	100%	90%	10%
HIV-negative chest-indrawing	0%	10%	20%
Severe and/or HIV-positive chest-indrawing	0%	0%	70%

- Compliance to first-line treatment recommendations is estimated at 100% for all levels of care and is assumed to remain the same during the forecasting period.
- The following age groups and respective proportions were estimated based on HMIS data: 2–11m =3 3%, 12–36m = 37%, and 37–59m = 30%; these were assumed to be the same for all levels of care
- The following formulations and average quantities per case and age group were agreed by the quantification team, based on the STG and expert opinion:

	Level	Type of pneumonia	Formulations	Quantity per case by age group
1	Community	Fast breathing only	Amoxicillin 250 mg DT	2–11m: 10 tablets
				12–59m: 20 tablets
2	First-level public HFs and public hospitals	Fast breathing only and HIV-negative chest-indrawing	Amoxicillin 250 mg DT	2–11m: 10 tablets
				12–36m: 20 tablets
				37–59m: 30 tablets

Example: amoxicillin for pneumonia – forecast (2)

PARAMETER	INPUT		CURRENT YEAR	FORECAST YEAR 1	FORECAST YEAR 2
Total population (A)	A: Population = previous year population + (previous year population x PGR) (annual PGR is 2%)	2%	20,000,000	20,400,000	20,808,000
Total population of 2-59m (B)	B = A x % of population 2-59 months	9%	1,800,000	1,836,000	1,872,720
Number of total 2-59m pneumonia cases/episodes (C)	C = B x Incidence of pneumonia in children 2-59 months; where 231 episodes per 1,000 children	23.1%	415,800	424,116	432,598
Number of 2-59m pneumonia cases treated at public health care services, including CHWs (D)	D = C x % of cases treated at public sector heath care services		249,480	275,675	302,819
	(annual increase of 5%)	5%	60%	65%	70%
Number of 2-59m pneumonia cases treated by level of public health care (E)	(E1) # treated in the community (by CHWs) = D x % treated at		49,896	63,405	78,733
	community	3%	20%	23%	26%
	(E2) # treated in first-level public HFs = D x % treated at first-level HFs		162,162	170,919	178,663
	(annual decrease of 3%)	-3%	65%	62%	59%
	(E3) # treated in public hospitals = D x % treated at public hospitals		37,422	41,351	45,423
		0%	15%	15%	15%
Number of 2–59m pneumonia cases treated at community level by type (F)	(F) # of fast-breathing cases treated at community (by CHWs) = E1 x % of fast-breathing cases	100%	49,896	63,405	78,733
Number of 2–59m pneumonia cases by type treated at first-level public HFs (G)	(G1) # of fast-breathing cases treated at first-level public HFs = E2 x % of fast-breathing cases	90%	145,946	153,827	160,797
	(G2) # HIV-negative and chest-indrawing cases treated at first-level public HFs = E2 x % HIV-negative chest-indrawing cases	10%	16,216	17,092	17,866
Number of 2-59m pneumonia cases by type treated at public hospitals (H)	(H1) # of fast-breathing cases treated at public hospitals = E3 x % of fast-breathing cases	10%	3,742	4,135	4,542
	(H2) # HIV-negative and chest-indrawing cases treated at public hospitals	20%	7,484	8,270	9,085
	(H3) # of severe or HIV-positive chest-indrawing cases treated at public hospitals	70%	26,195	28,946	31,796

Example: amoxicillin for pneumonia– forecast (3)

Number of 2–59m pneumonia cases treated with specific regimen - Community/by CHWs (I)	(I) # of cases treated with 5-day amoxicillin oral (fast breathing) = F x % treated with the regimen		100%	49,896	63,405	78,733
Number of 2–59m pneumonia cases by type treated with specific regimen - first-level public	(J) # of cases treated with 5-day amoxicillin oral (fast breathing and HIV-negative chest-indrawing) = (G1 + G2) x % treated with the regimen		100%	162,162	170,919	178,663
Number of 2–59m pneumonia cases by type treated with specific regimen - public hospitals (K)	(K1) # of cases treated with 5-day amoxicillin oral (fast breathing and HIV-negative chest-indrawing) = (H1 + H2) x % treated with the regimen		100%	11,227	12,405	13,627
	(K2) # of cases treated with 5-day gentamycin IV/IM and ampicillin IV/IM (severe or HIV-positive chest-indrawing) = H3 x % treated with the regimen		100%	26,195	28,946	31,796
Quantity of amoxicillin 250 mg DT - community level (M)	(M1) Quantity for 2-11m cases = I x % of age group x L1; where, L1: quantity per case = 10 DTs	33%	10	164,657	209,238	259,819
	(M2) Quantity for 12-59m cases: I x % of age group x L2; where, L2: quantity per case = 20 DTs	67%	20	668,606	849,632	1,055,021
Quantity of amoxicillin 250 mg DT - first-level public HFs (O)	(O1) Quantity for 2-11m cases = J x % of age group x N1; where, N1: quantity per case = 10 DTs	33%	10	535,135	564,032	589,588
	(O2) Quantity for 12-36m cases = J x % of age group x N2; where, N2: quantity per case = 20 DTs	37%	20	1,199,999	1,264,799	1,322,107
	(O3) Quantity for 37-59m cases = J x % of age group x N3; where, N3: quantity per case = 30 DTs	30%	30	1,459,458	1,538,269	1,607,968
Quantity of amoxicillin 250 mg DT - public hospitals (Q)	(Q1) Quantity for 2-11m cases = K1 x % of age group x P1; where, P1: quantity per case = 10 DTs	33%	10	37,048	40,938	44,969
	(Q2) Quantity for 12-36m cases = K1 x % of age group x P2; where, P2: quantity per case = 20 DTs	37%	20	83,077	91,800	100,839
	(Q3) Quantity for 37-59m cases = K1 x % of age group x P3; where, P3: quantity per case = 30 DTs	30%	30	101,039	111,649	122,642
Total quantity of amoxicillin 250 mg DT for treatment of pneumonia in children 2-59m (R)	**R = (M1+M2) + (O1+O2+O3) + (Q1+Q2+Q3)**			**4,249,019**	**4,670,355**	**5,102,951**

USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM
Procurement and Supply Management

QAT Forecasting Module & the RMNCH Forecasting Supplement

June 2022

Lillian Gu, FASP team

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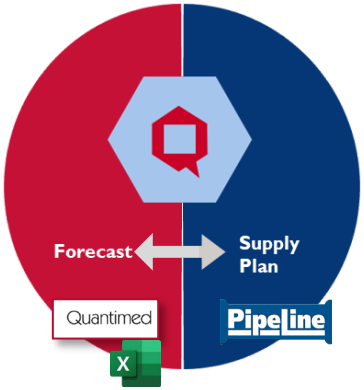
PEPFAR
U.S. President's Emergency Plan for AIDS Relief

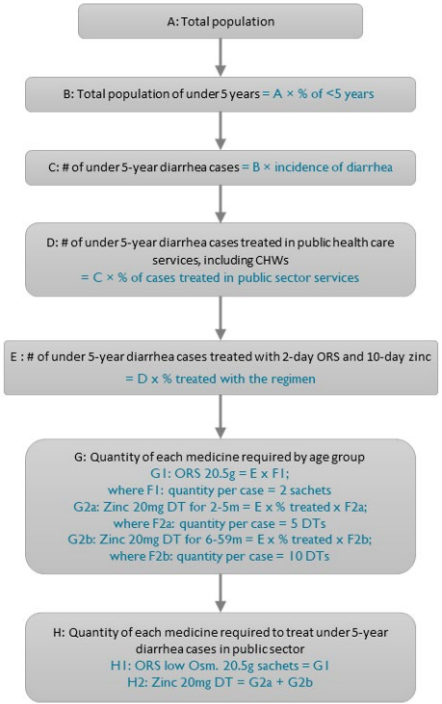
Quantification Analytics Tool (QAT)



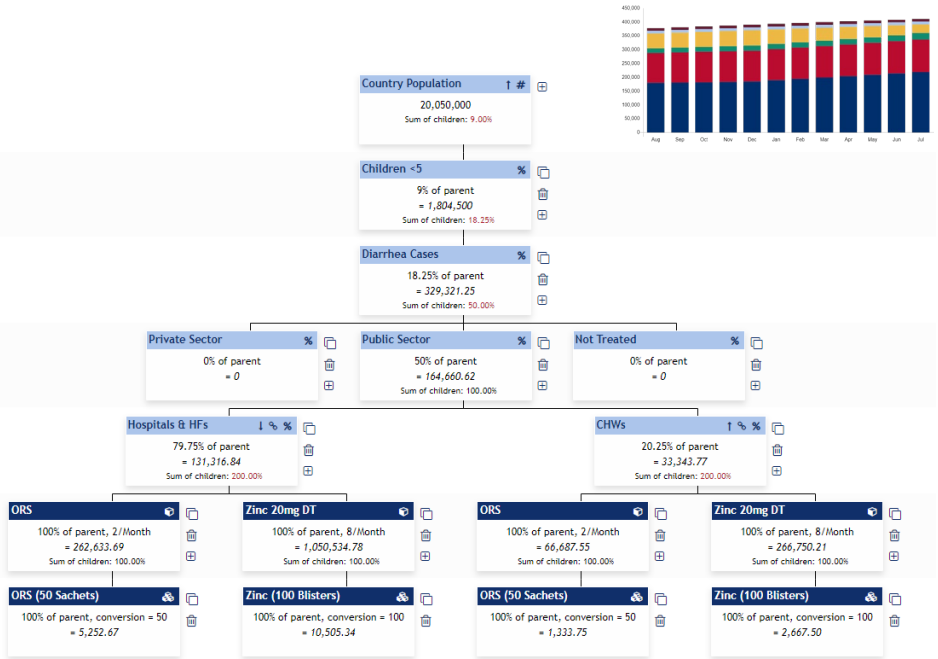
- A modernized solution for country-led supply planning and forecasting
  - Cloud-based with offline capabilities
  - Enhanced visuals & calculations
  - Built in data quality checks
  - Commodity agnostic
- Supply Planning Module
  - Launched Dec 2020
  - As of April 2022 – 117 supply plans onboarded; 27 countries trained
- Forecasting Module
  - Launched June 2022
  - Pilot: 4 countries / 16 users trained

QAT Forecasting & RMNCH Guide

RMNCH Guide



QAT Tree Forecast



Comments from
Anthonia Ibeme GHSC – PSM Nigeria

How and when the supplement was used

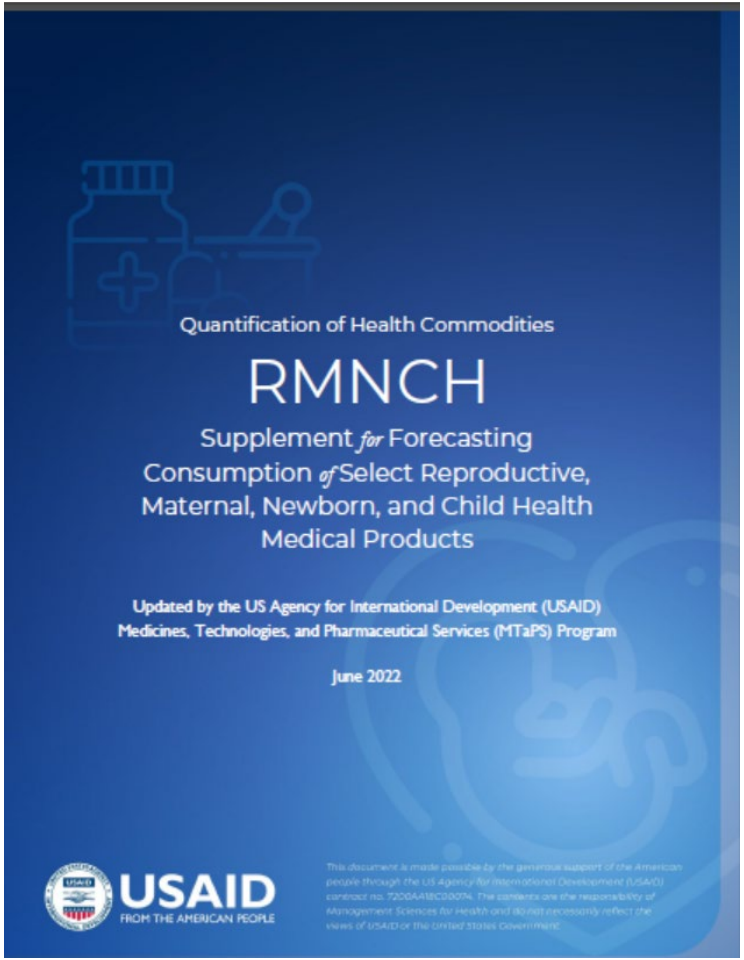
1. The forecasting supplement adapted and used to generated a three-year forecast for MNCH commodities in 5 States
2. Constituted State quantfication teams and trained over 50 members of the quantification team across the 5 States on the use of the supplement
3. The supplement will continue to be used by the State quantification team for annual forecast review.

Usefulness of the supplement

1. User friendly
2. Useful tool for data gathering
3. Algorithm follows a very detailed logic (the Excel forecast tool particularly very useful
4. Adaptable
5. Recommended assumptions/parameters
6. Regimens/products already selected in line with standard guidelines (useful for standardization and promotion of global best practices)

Other comments

Consumption based forecast should be generated and reconciled with the morbidity-based output where data is available



ACCESS AND DOWNLOAD:

https://www.mtapsprogram.org/our-resources/forecasting-consumption-of-select-reproductive-maternal-newborn-child-health-medical-products/

OR

1. Go to www.mtapsprogram.org
2. Click on Resources on main menu bar
3. Search by MNCH focus area

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Questions

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USAID MEDICINES, TECHNOLOGIES, AND PHARMACEUTICAL SERVICES (MTaPS) PROGRAM

Improved **Access**. Improved **Services**. Better **Health Outcomes**.

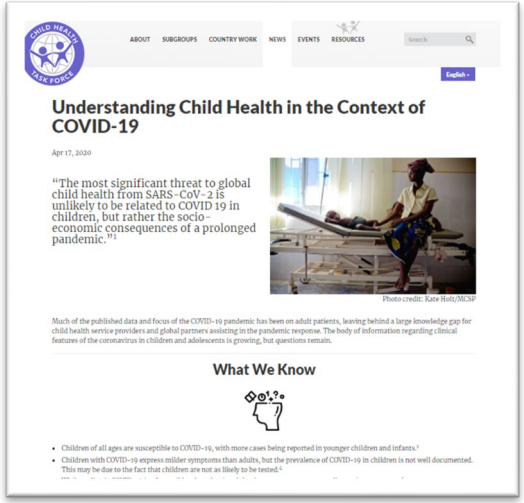
Resources

Engage with the **co-chairs**:

- Joseph: jmonehin@usaid.gov
- Patrick: pgaparayi@unicef.org

Subgroup information, recordings and presentations from previous webinars and meetings are available on the subgroup page of the Child Health Task Force website: www.childhealthtaskforce.org/subgroups/newborn
**The recording and presentations from this webinar will be available on this page later today*

Become a member of the Child Health Task Force: www.childhealthtaskforce.org/subscribe



Check out the Task Force Child Health & COVID-19 web page for additional resources!

Suggestions for improvement or additional resources are welcome. Please email childhealthtaskforce@jsi.com.