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USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM
Procurement and Supply Management

Improved utilization of amoxicillin for management of childhood pneumonia through drug use evaluation at select health facilities in Ethiopia

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Outline of presentation

- Overview of amoxicillin use in Ethiopia
- Challenges of amoxicillin dispersible tablet (DT) use
- Key interventions to address amoxicillin DT use
  - Drug use evaluations (DUEs), root cause analysis and key interventions
- Post-intervention DUEs
- Summary
- Lessons learned
- Recommended next steps

Overview of amoxicillin use in Ethiopia

- Pneumonia is the leading cause of death among under-five children in Ethiopia.
- Despite the reduction of childhood mortality due to pneumonia over the last ten years, children are still dying of pneumonia and related causes.
- In 2015, Ethiopia added amoxicillin DT 125mg, 250mg to its Essential Medicines List.
- In 2016, Ethiopia updated its Integrated Management of Newborn and Childhood Illness (IMNCI) protocol, recommending oral amoxicillin as first-line treatment for pneumonia.
- By the end of 2018, amoxicillin DT was integrated into the national supply management system.
- Rational prescribing and use of amoxicillin is critical for better treatment outcomes for childhood pneumonia.
- Despite the recommendation in IMNCI protocol, amoxicillin DT supply management, demand and use remained sub-optimal, resulting in significant expiration and wastage.

Challenges of amoxicillin DT use

- Prescribing practice and use of this antibiotic have not been aligned with the STGs despite the Ethiopia's standard treatment guidelines (STGs) recommend oral amoxicillin as first-line treatment for non-severe pneumonia.
- Through routine supportive supervision, the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project identified barriers and challenges:
  - Prescribers and dispensers had limited awareness and use of amoxicillin
  - Health and supply chain workers did not adhere to the national protocols
  - Facilities were unaware of product availability, despite the supply hubs were providing amoxicillin DT free of cost
  - Prescribers had preference for high-cost second-line medicines despite existence of less expensive alternatives for clients

Key interventions to address amoxicillin DT use

To address facility-level problems, GSHC-PSM supported four facilities to conduct:

- Baseline DUEs to assess adherence to STGs
- Retrospective review of 100 medical records of children treated for pneumonia at four facilities using a DUE tool
- Root cause analysis for lack of adherence
- Design and implementation of facility-specific interventions
- Post-intervention DUEs to measure how baseline gaps had been addressed and improved through interventions

Drug Use Evaluation: The evaluation of medical records of children treated for pneumonia by Drug and Therapeutic Committee (DTCs) to assess adherence to STGs, analysis and implementation of corrective actions.

DUEs to identify barriers to amoxicillin use

- The baseline DUEs revealed that:
  - Facilities' adherence to STGs in prescribing the first line options at correct dose and duration was 13%, 55%, 48% and 43% respectively
  - Amoxicillin DT was not prescribed at any of the health facilities despite its availability at no cost

Root causes for the identified problems

- Identified reasons for low adherence to STGs and low amoxicillin use:
  - Limited availability and inconsistent use of IMNCI chart booklet/STGs
  - Knowledge gaps due to lack of updated training and skill transfer practices
  - Turnover of trained staff and rotation of trained prescribers within the facility
  - Lack of awareness on the availability of amoxicillin DT in the facility
  - Misperceptions on amoxicillin DT efficacy and non-aligned preferences of health workers
  - Weak drug information services

Interventions to address problems and root causes

- Each facility developed an intervention plan to address the identified problems
- Disseminated DUE findings to prescribers for corrective action
- Shared physical and electronic copies of STGs with health workers
- Facilities posted amoxicillin dosing charts in treatment areas
- Oriented dispensers on how to manage amoxicillin DT prescription
- Encouraged prescribers to follow prescribing practice for amoxicillin DT
- Conducted supportive supervision at facilities to
  - Monitor and train on proper prescribing practice and utilization of amoxicillin DT
  - Reinforce proper requestion (i.e., ordering) by the facility to supplying hubs
  - Monitor consistent availability of amoxicillin DT as a tracer drug

Additional interventions

- Implemented pre-printed order sheets for pneumonia management
  - Includes a two-page checklist to be filed with the medical chart.
  - Helps the clinician select the correct and most cost-effective antibiotic.
  - Helps new staff minimize errors in prescribing antibiotics.
- Management and DTC work with facilities to monitor correct prescribing practices through prescription review
- Post-intervention DUEs conducted at the four facilities one year into the interventions to measure progress

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CHECKLIST FOR PHARMACOLOGIC MANAGEMENT OF PNEUMONIA IN UDER 5 CHILDEN AT OPD LEVEL

Chart NO: _____ Date: ____/____/____

NAME | Age: ____(years) Sex: ☐ F ☐ M Weight (Kg): _____ | Residence area: 1. Urban 2. Rural; Family size: _____

1. Severe pneumonia
   - Cough or difficult breathing ☐Yes ☐ No;
   - Lower chest indrawing ☐Yes ☐ No;
   - Nasal flaring ☐Yes ☐ No;
   - Grunting in young infants, ☐Yes ☐ No;
   - Fast breathing or abnormal breath sounds, ☐Yes ☐ No;

2. Pneumonia
   - Cough - Fast breathing - But no signs for severe pneumonia ☐Yes ☐ No;

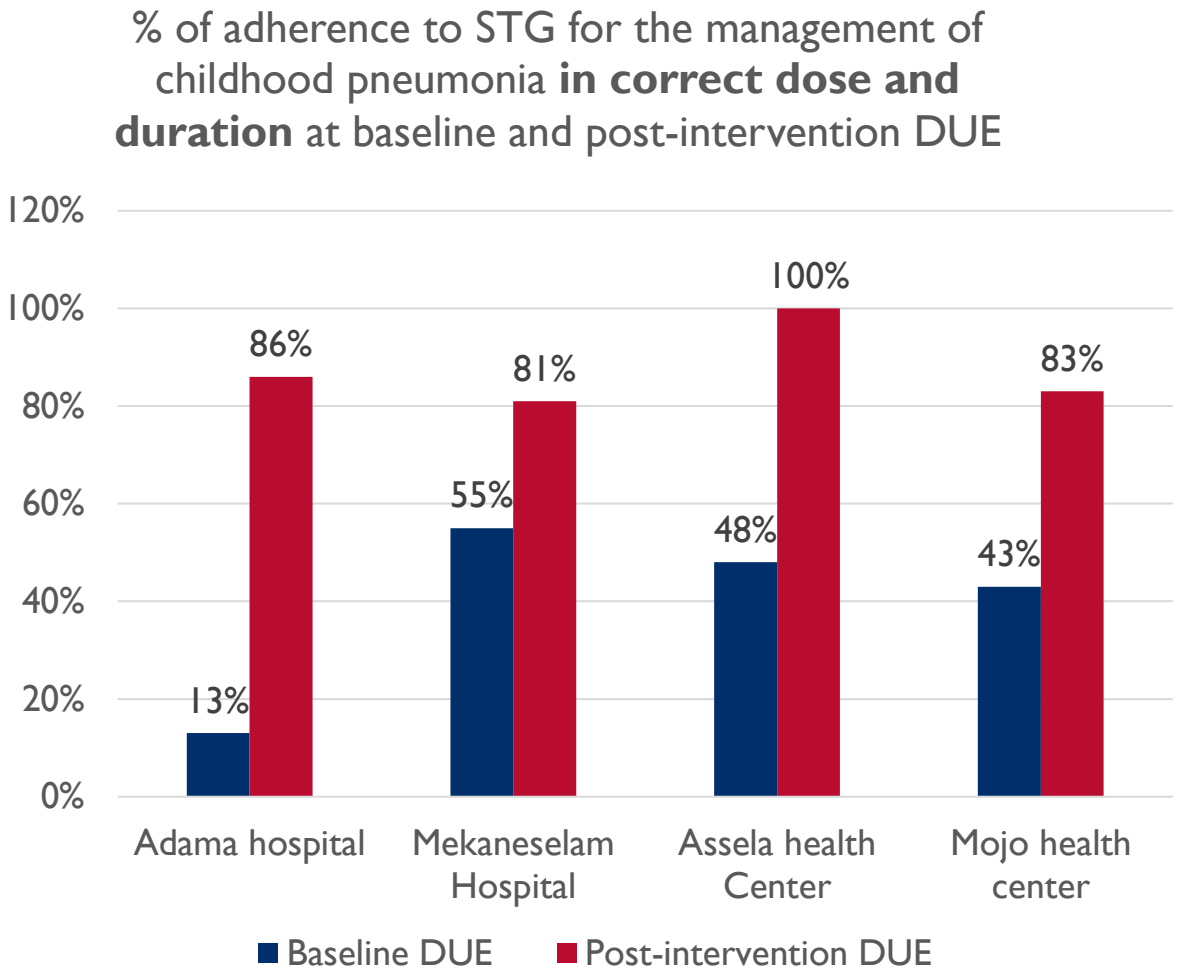
3. No pneumonia
   - Cough or cold, if no sign for pneumonia or severe pneumonia ☐Yes ☐ No

4. Length/height: _____
5. Head circumference (HC): _____
6. MUAC: _____
7. Immunization Status: _____
8. Serology for RVI: 1= +ve, 2= -ve 3. Not done
9. P/E Respiratory rate: _____
10. Body Temperature (°C): _____
11. WBC(write Absolute number): _____
12. Neutrophil% (write Absolute number): _____
13. Lymphocyte%(write Absolute number): _____

13. # of previous pneumonia treatment visits within the last 1 year: _____
14. history of ADR to any pneumonia medicines: _____
15. Concomitant disease: _____
16. Recent treatment with any drugs reported for similar illness (1=Y, 0=No): _____

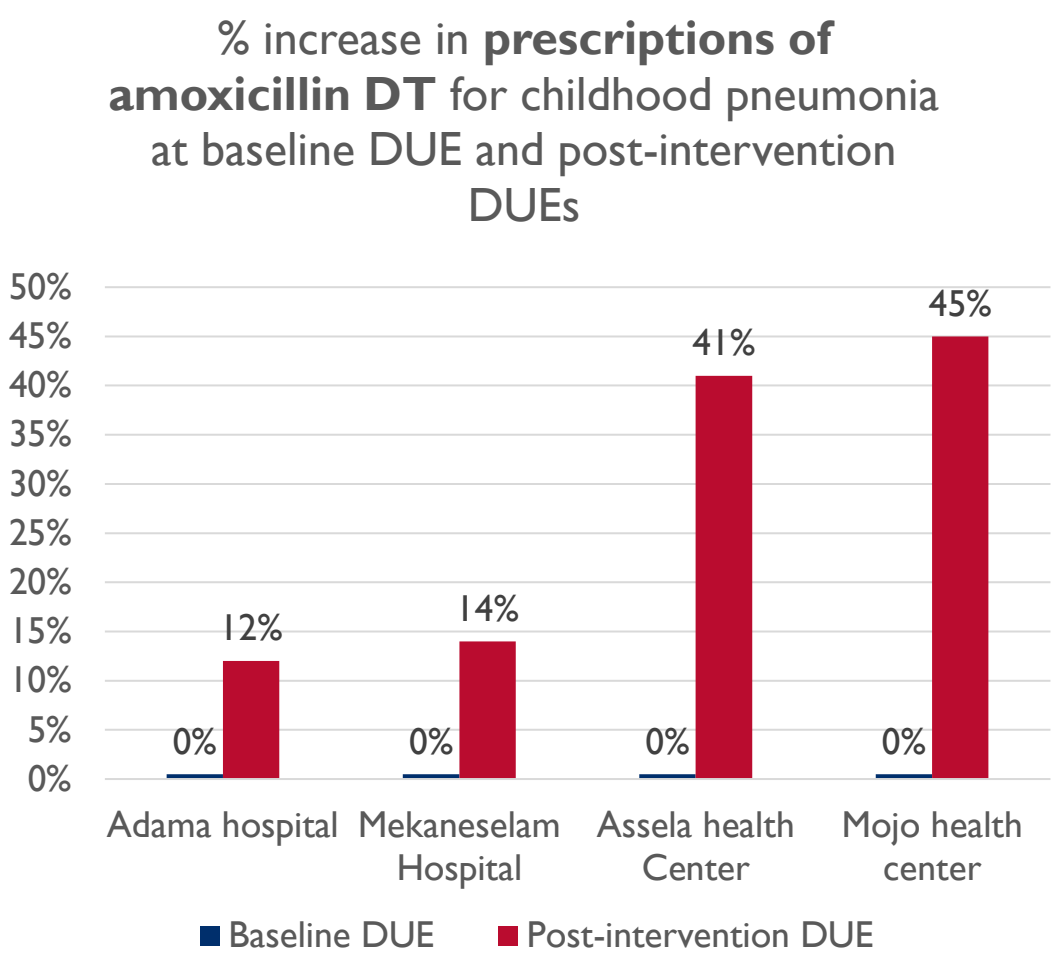
Rule out (please cross out in short what the history alludes to by writing a specific diagnosis):
Diagnosis: 1. Pneumonia 2. Others

Post-intervention DUEs: Comparison of result on pre- and post-intervention DUEs



- Improved adherence with STGs for appropriate use of first line antibiotics – the right medicine, dose and duration. STGs are informed by WHO requirements. Indicates use of one of the following, as appropriate:
  - Amoxicillin oral suspension
  - Amoxicillin dispersible tablet
  - Azithromycin syrup
- Still there were a few cases of incorrect dose, duration and use of amoxicillin + clavulanic acid 28.5mg / 5ml, cephalexin and cotrimoxazole for childhood pneumonia.

Post-intervention DUEs: Comparison of result on pre- and post-intervention DUEs



- Significant improvement in prescribing amoxicillin DT among the first line treatment options (in addition to amoxicillin suspension and azithromycin syrup) as compared to the baseline.
- Important to note:
  - Amoxicillin DT is preferable to the other treatment options by virtue of its dose accuracy, storage condition, cost and twice dosing.
  - Those who are unable to pay can get amoxicillin DT free of charge.
- Results showed more improvement in prescribing practice of amoxicillin DT at health centers than at hospitals.

Summary

DUEs conducted at the four facilities after one year of intervention indicated:

- The adherence of prescribing practice to STGs for treatment of childhood pneumonia using first-line antibiotics has shown significant improvement.
- Children appropriately treated (correct dose and duration as per the STGs) improved by 73%, 26%, 52%, and 40% from the base line at the four facilities, respectively.
- The prescription of amoxicillin DT increased from zero to 12%, 14%, 41% and 45% at each facility, respectively.
- The interventions have allowed better monitoring by health facility management and DTC to reinforce correct prescribing practices through feedback provision.

Lessons learned

- Facility-specific DUEs are effective strategies to improve use of amoxicillin for management of childhood pneumonia.
- Important to use evidence-based interventions such as measuring how medicine use practices at facilities adhere with treatment protocols.
- Ensuring availability of standard treatment guidelines, providing supportive supervision, securing government enforcement of prescribing practices, and promoting use of amoxicillin DT are effective strategies to improve proper management of childhood pneumonia.
- DUEs are doable in low-resource settings.

Recommended next steps

- Scale up facility-specific DUEs to improve practices for newborn and child health diseases at multiple health facilities
  - Newborn Intensive Care Unit (NICU) in the utilization of gentamicin
  - Severe pneumonia management for children under five
  - Management of childhood diarrhea and utilization of zinc
- Conduct cross-sectional DUE studies through modifying the methodology at multiple facilities to bring national level results and recommendations
- Develop a user-friendly DUE implementation guide and tools specific to MNCH diseases and drugs to improve the practice at low-resource settings

THANK YOU.

For additional information, please contact:

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