Multiple Micronutrient Powder Supply & Outlook

UNICEF Supply Division

December 2013
1. Summary

- MNP is a new and innovative product designed to improve quality of diet of young children. It is increasingly being used for home fortification of local complementary foods. Since 2007, 44 countries have procured MNP for use in home fortification programmes.
- A 10-fold increase in demand from 2007 to 2012 and inaccurate demand and country forecasting are contributing to constrained global MNP supply. MNP products are made-to-order (not to stock, due to short shelf life of 24 months) and typically have an estimated 8-12 weeks lead time for production, depending upon order size.
- Product specifications for MNP are being reviewed and will be updated to better control quality during production and use. Technical problems affecting stability and inappropriate storage conditions of one manufacturer’s MNP resulted in product deterioration and a recall of 100 million sachets. Replacement product is under production and is expected to be completed in the first half of 2014. Delivery schedules of replacement stocks are to be confirmed with affected countries.
- Existing Long Term Arrangements (LTAs) expire in April 2014. UNICEF intends to launch a new tender process in January 2014 to establish 24-month duration LTAs and seek an expanded supplier base, while also supporting regional production development.

2. MNP Product and Background

Millions of children suffer from undernutrition which jeopardizes their survival, health, growth and development. An estimated 165 million children are stunted, while 190 million and 293 million suffer from Vitamin A deficiency and anaemia, respectively. MNPs are a relatively new innovative product designed specifically to address anemia and improve overall quality of diet of young children. MNPs have proven to be both efficacious and effective, as studies have found that they reduce anaemia in young children by as much as 45 per cent. MNPs also have limited programmatic challenges because they are easily intergrated into existing local food practices. WHO recommends use of MNPs containing iron, vitamin A and zinc, to reduce anaemia among children aged 6-59 months.\(^1\) However, as other vitamins and minerals are often absent or lacking in foods typically consumed by young children, UNICEF promotes the use of 15-component MNP.\(^2\)

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UNICEF currently procures a MNP powder sachet presentation (Table 1).

Table 1 MNP Sachet Procured Through UNICEF

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Composition of 1 sachet $^{3}$</th>
<th>Use frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 box x 30 x 1 gram sachets</td>
<td>15 vitamins and minerals (including Iron, Zinc and vitamin A)</td>
<td>1 sachet a day</td>
</tr>
</tbody>
</table>

Source: UNICEF Supply Division.

3. Demand and Forecast

UNICEF experienced a 10-fold increase in MNP procurement volume and reached 8.8 million boxes (264 million sachets) in 2012 (Figure 1). Some key country programmes have ordered MNP every second year, and as a result, procurement volumes have experienced year-to-year fluctuations. In 2013 orders are expected to slightly decline to 8.5 million boxes (255 million sachets). UNICEF anticipates total 2014-2015 demand to reach 22.5 million boxes (675 million sachets).

Figure 1 UNICEF MNP Procurement and Forecast, 2007-2015

Source: UNICEF Supply Division.

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Since 2007, UNICEF has procured MNP for 44 countries with the majority going to Asia and Latin America (Figure 3). However, despite substantially increased volumes, the standard MNP pack price for a carton of 30 x 1 gram sachets has remained stable (Figure 2). Workshops organised since 2009 by UNICEF in collaboration with partners including Centres for Disease Control and Prevention (CDC), the World Food Programme (WFP) and the United Nations High Commissioner for Refugees (UNHCR) have supported country awareness and introduction of the product. Increased demand from Africa and Middle Eastern countries is anticipated as a result of recent workshops organised in these regions.

Below we detail key issues influencing regional demand and anticipated changes.

**Asia**
- Asian countries started procuring MNP as of 2007 and have the most developed micronutrient home fortification programmes. Many countries in Asia suffer less from acute malnutrition and more from micronutrient deficiencies. Most countries have introduced MNP into national programmes, with the exception of Bhutan and India.
- Kyrgyzstan, Afghanistan, Pakistan, Myanmar and Bangladesh have the largest programmes and
their demand is anticipated to increase.
• The current Philippines emergency has also increased requirements.
• A workshop was conducted in 2009 for the region.

**Latin America**
• Latin American countries generally started procuring MNP in 2008 and have also developed programmes addressing micronutrient deficiency.
• Guatemala, Ecuador and Haiti have the highest demand in the region.
• Other Latin American countries are piloting MNP use, and further development of national home fortification programmes is expected, generating expected MNP procurement requests.
• A workshop was conducted in 2010 for the region.

**Africa**
• African countries started to procure MNP in 2011 and are in the process of initiating home fortification programmes and MNP introduction. Kenya, Madagascar, Rwanda and Zambia are leading in that regard.
• UNICEF expects the region will introduce MNP in the near-to-mid-term following regional workshops undertaken by UNICEF, CDC, WFP and UNHCR in 2011 and 2012.

**Middle East**
• Demand from Middle Eastern countries began in 2012 and has been relatively modest, with the exception of Yemen. As countries suffer more from micronutrient deficiencies than forms of acute malnutrition, demand is expected to increase in the near-to-mid-term.
• A workshop for the region was conducted in 2013.

### 4. Supply and Capacity

UNICEF currently has Long Term Arrangements (LTAs) with four manufacturers, of which one LTA is for local procurement in Bangladesh (Table 2).

Table 2. Current UNICEF MNP Supply Arrangements

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Type of supply</th>
<th>Duration years</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piramal Healthcare (India)</td>
<td>Global</td>
<td>4</td>
<td>25-Oct-10</td>
<td>23-Apr-14</td>
</tr>
<tr>
<td>DSM Nutritional Products (Switzerland)</td>
<td>Global</td>
<td>4</td>
<td>25-Oct-10</td>
<td>23-Apr-14</td>
</tr>
<tr>
<td>Fortitech (Malaysia)</td>
<td>Global</td>
<td>1</td>
<td>23-May-13</td>
<td>21-Apr-14</td>
</tr>
<tr>
<td>Renata (Bangladesh)</td>
<td>Local</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: UNICEF Supply Division.

In recent years UNICEF has relied largely on two manufacturers, Piramal and DSM, to meet countries’ needs (60% and 40%, respectively, of UNICEF internationally purchased MNP since 2010). A new manufacturer, Fortitech (now part of DSM), was qualified in 2013, and although initial capacity is limited, work is ongoing to increase it. Renata covers Bangladesh’s programme needs but could in the future become a global supplier.

While capacity to meet demand was sufficient through the scale-up in 2011 and 2012, a large part of the capacity has been lost in 2013 as a result of quality problems identified with the largest supplier. This has had a significant impact on availability and consequently a negative impact on programmes. During the second and third quarter of 2013, reports were received of damaged product in 9 countries. The total quantity affected is 3.5 million packs. The investigation that followed identified reduced stability of the product due to changes in formulation and deficiencies in packaging. As a result, the product changed color when exposed to temperature and humidity conditions experienced during transport and storage.\(^4\) While no risk was identified as a result of the deterioration, the

\(^4\) Storage conditions for MNP are defined as “below 25°C” by all manufacturers. However, stability data indicates that products can tolerate exposure to higher temperatures (<40 °C) but not for the full shelf-life of the product.
product is not suitable for use. Corrections to the formula and the manufacturing process were made during the third quarter and have been validated, with production starting again in November. It is expected that the majority of the capacity available in the coming 6 months will be utilized to fulfill product replacements in affected countries, although new orders are being placed based upon need and the capacity to accommodate them.

At present, we are relying on a monthly capacity of approximately 1,300,000 packs which we are trying to maximize by increasing placement of orders for the SD warehouse. Orders for warehouse that are pending delivery (742,000 packs) should be fulfilled during Dec 2013 – Jan 2014. The direct order pipeline for Dec 2013 - Feb 2014 (1.7 million packs) is expected to be fulfilled as per agreement. Considering the current demand from orders received and the need derived from product replacement, the lead time for new orders is estimated to be between 3 and 5 months for customized product (depending upon quantity). For standard-label MNP, there should be better availability for new orders to be delivered from warehouse starting in the end of January.

It is very important to note that no significant orders have been placed beyond February. In the next four weeks, Supply Division will contact countries to gather information on planned orders that will allow for better planning with manufacturers. This will be done in parallel to the more comprehensive forecast on nutrition products that will be undertaken globally (Nutri Dash).

Through November 2013, UNICEF has delivered a total of 5.2 million boxes (156 million sachets), and an additional 1 million boxes (30 million sachets) are expected to be delivered by the end of the year. Emergency response-driven spikes in demand in Syria and the Philippines have prioritised those orders for delivery, which might necessitate rescheduling of deliveries to other countries with outstanding orders. The required rescheduling principally involves splits in deliveries and adjustments on delivery dates that are being coordinated with countries. Other key challenges in the market during 2013 are highlighted in Table 3.

**Table 3 Major Challenges in the MNP Market and Supply Chain**

<table>
<thead>
<tr>
<th>Issues</th>
<th>Possible Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• There are no detailed specifications for MNP, and UNICEF relies on general pharmacopoeia or Codex references to define standards. As a result there is need to rely on in-house specifications for quality assurance.</td>
<td>• Specifications will be reviewed in 2014, and WHO has been approached to assist in development of new standards (e.g., through International Pharmacopoeia).</td>
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<tr>
<td>• Current procurement forecasts are not accurate. Approximately 30 countries implement home fortification programmes, but only ⅔ responded to the Sep 2013 – Apr 2014 forecast, of which 14 anticipate procurement. The ⅔ of countries that did not respond included countries in Asia that procure some of the largest volumes.</td>
<td>• As a first MNP forecast exercise, UNICEF anticipates improved forecast accuracy based on country feedback, collaboration and following repetitive forecasting exercises. A follow-up will take place in coordination with PD in Dec 2013-Jan 2014.</td>
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<tr>
<td>• Manufacturers producing MNP also produce other powdered products, mainly for the food industry. Production capacity is not dedicated to MNP and is only allocated on a made-to-order basis, not for stock production. MNP manufacturers require firm order placements to ensure allocated production capacity.</td>
<td>• Options exist to theoretically increase production capacity and efficiency. However, these rely on provision of reliable forecast or on firm commitment to purchase with sufficient lead time to secure capacity. Forecast for SD warehouse is now reviewed regularly but a more solid forecast and planning of needs with Country Offices is essential for securing capacity.</td>
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</table>
5. Steps Forward

- UNICEF will work with partners in 2014 to develop revised specifications for MNP and potentially establish a dedicated monograph for the product.
- UNICEF is establishing yearly MNP forecast exercises. Anticipated improved forecast accuracy will be based on country feedback and collaboration following repetitive forecasting exercises and the encouragement of participation of all procuring countries.
- Guidelines for the management of nutrition products are being incorporated in the Supply Manual. These will make specific reference to MNP storage and distribution.
- The new tender planned for 1Q 2014 will aim at securing availability of quality product from competitive sources and encourage participation of new suppliers both for international and local procurement. Current LTAs will expire at the end of April 2014 and the tender plans is as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
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<tbody>
<tr>
<td>November 2013</td>
<td>MNP Request for Expressions of Interest launched beginning of November.</td>
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<tr>
<td>December 2013</td>
<td>Request for Expressions of Interest closes end of December.</td>
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<tr>
<td></td>
<td>Review of product specifications.</td>
</tr>
<tr>
<td>February 2014</td>
<td>Tender bid closes second half of February.</td>
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<tr>
<td>March 2014</td>
<td>Evaluation of tender bids.</td>
</tr>
<tr>
<td>April 2014</td>
<td>New LTAs established.</td>
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For further questions or additional information, please contact:

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Information notes can be found: [http://www.unicef.org/supply/index_54214.html](http://www.unicef.org/supply/index_54214.html).