



USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM

TECHNICAL ASSISTANCE, NATIONAL SUPPLY CHAIN ASSESSMENT TASK ORDER

Final Report: December 2018

NSCA 2.0



DISCLAIMER: Development of the NSCA 2.0 toolkit was funded by the United States Agency for International Development (USAID). The authors' views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.

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About Axios

Axios International, Inc. is part of a global healthcare organization with over 20 years of experience in the delivery of sustainable and innovative access to care solutions in low- and middle-income countries, providing a broad range of services in the global health sector to help modernize and strengthen health systems and quality of care. For more information, visit www.axiosint.com.

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ACRONYMS AND ABBREVIATIONS

| | |
|----------|--|
| BI&A | Business Intelligence and Analytics |
| CMM | Capability Maturity Model |
| DDL | Development Data Library |
| DEC | Development Experience Clearinghouse |
| GHSC | Global Health Supply Chain |
| GHSC-PSM | Global Health Supply Chain – Procurement and Supply Management |
| KPI | Key Performance Indicator |
| MOH | Ministry of Health |
| NSCA | National Supply Chain Assessment |
| SCMS | Supply Chain Management System |
| SCTA | Supply Chain Technical Advisor |
| SME | Subject Matter Expert |
| TO | Task Order |
| USAID | United States Agency for International Development |

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EXECUTIVE SUMMARY

In February 2015, Axios International, Inc. (Axios) received an IDIQ award under the USAID | Global Health Supply Chain Program Technical Assistance project. Subsequently, the National Supply Chain Assessment Task Order (Contract # AID-OAA-TO-00013) was awarded to Axios in July 2016. This task order focused on updating a national supply chain assessment tool appropriate for use in developing country contexts. This report provides a brief overview of the activities and deliverables completed as part of this task order (TO). It summarizes program highlights, achievements, major activities, funds obligated, implementation challenges and risk mitigation strategies employed over the life cycle of the TO (July 2016 – November 2018). Considerations for future iterations are also discussed.

TASK ORDER CONTEXT

A National Supply Chain Assessment (NSCA) tool was initially developed between 2010 and 2012 at the request of USAID by the PEPFAR-funded Supply Chain Management System (SCMS) project. USAID's objective was to establish a common basis by which to assess the performance of national public health supply chains for health commodities. The concept included developing a methodology that would produce a single score on a set performance scale that delivered the ability 1) for countries to self-assess the status, progress, and future needs within the public health supply chain, 2) to compare results across countries, and 3) to inform USAID investment decisions.

To develop the NSCA 1.0 tool, SCMS first conducted a literature review of Key Performance Indicators (KPIs) in use or recommended by international agencies, countries, and academia. Three issues emerged from this review:

- Though there was a wide range of KPIs, enough commonality existed to support the development of a core set of indicators (<20).
- Creating a meaningful single score outcome would be very difficult and could distract from other findings.
- KPIs alone provide an incomplete picture of a health supply chain. It is also necessary to understand the capabilities and potential capacity of the health supply chain.

After further review of the literature, and with the agreement of USAID, SCMS drew on the SCOR¹ model to create the NSCA Capability Maturity Module (CMM) as a complement to the KPI assessment.

This version of the NSCA, now referred to as NSCA 1.0, was piloted in three countries and subsequently deployed in a further 13 assessments over a three-year period.

This task order (AID-OAA-TO-00013) was developed to build on the achievements and lessons learned from NSCA 1.0 by developing an updated tool. This task order focused on updating the tool itself, preparing a number of support tools to guide and improve implementation efforts, creating templates to support dissemination, and piloting the new tool, NSCA 2.0, in two countries, Rwanda and Zambia. The result of this centrally funded effort was an updated and complete toolkit intended to guide the design, implementation, and dissemination of national supply chain assessments of public health supply chains in resource poor settings globally.

¹ The **Supply Chain Operations Reference (SCOR)** model is unique in that it links business processes, performance metrics, practices, and people skills into a unified structure. It is hierarchical in nature, interactive and interlinked. <http://www.apics.org/apics-for-business/frameworks/scor>

PROGRAM HIGHLIGHTS

This task order included a series of deliverables aimed at completing a few key categories of activity. These are briefly outlined below.

- 1) **Update the NSCA 2.0 tool:** The Axios team worked with stakeholders and USAID to update the composition of the NSCA 2.0 tool. These updates focused on item inclusion, response values, scoring rubrics for both capability maturity model (CMM) and key performance indicator (KPI) metrics. The products developed related to this key highlight include: Survey CTO code (can be loaded to tablets for data collection activities), codebooks, capability maturity model master questionnaire, and paper-based tools for data collection (CMM, KPI [Central], KPI [Non-Central]).
- 2) **Develop support materials to improve the implementation of the NSCA 2.0:** In addition to the tool update itself, a number of products were developed to support teams interested in implementing an NSCA 2.0 assessment. The products focused on planning and preparation for an NSCA 2.0, data collection and analysis activities, and reporting and dissemination support. The products developed for this item are grouped by sub-category in the brief list that follows:

Overview of the NSCA: Brief Overview: National Supply Chain Assessment, Training of Trainers (TOT) Training Package

Training and Supply Chain Mapping Resources for the NSCA Toolkit: National Supply Chain Assessment (NSCA): Supply Chain Mapping Workshop, National Supply Chain Assessment (NSCA): Data Collection Training, List of Support Resources for Data Collection Training, Glossary, How to Conduct KPI and Capability Interviews

Planning Tools for an NSCA: Implementation Guide, Data Use Policy for the National Supply Chain Assessment (NSCA), Instructions for Using the Sampling Template, Sampling Template

Data Collection Tools for an NSCA (CMM): CMM Master Questionnaire, Guidance on Updating the SurveyCTO Code for the Capability Maturity Model (CMM) Survey, CMM SurveyCTO Code, Capability Maturity Module Questionnaire for All Levels

Data Collection Tools for an NSCA (KPI-General): Key Performance Indicators

Data Collection Tools for an NSCA (KPI-Central): KPI SurveyCTO Code – Central, Guidance on Updating the SurveyCTO Code for the Key Performance Indicator (KPI) Data Collection Central Tool, KPI Data Collection Form for Data Collected at Central Levels Only

Data Collection Tools for an NSCA (KPI-Non-Central): KPI SurveyCTO Code - Non-Central, Guidance on Updating the SurveyCTO Code for the Key Performance Indicator (KPI) Data Collection Non-Central Tool, KPI Data Collection Form for Data Collected at SDPs, Referral Hospitals, and Warehouses

Analysis Tools for an NSCA (CMM): Data Analysis Plan for the Capability Maturity Model (CMM) survey, Capability Maturity Model Survey Analysis Template, Instructions for using the CMM Survey Analysis Template for scoring capability maturity model results

Analysis Tools for an NSCA (KPI-General): Data Analysis Plan for Key Performance Indicators

Analysis Tools for an NSCA (KPI-Central): Central KPI Analysis Template, Instructions for Using the KPI Central Analysis Template for Calculating Key Performance Indicators, KPI Central Codebook

Analysis Tools for an NSCA (KPI-Non-Central): KPI Non-Central Analysis Template, Instructions for Using the KPI Non-Central Analysis Template for Calculating Key Performance Indicators, KPI Non-Central Codebook

Analysis Tools for an NSCA (KPI & CMM): KPI/CMM Mapping for Results Analysis

Dissemination Tools for NSCA: National Supply Chain Assessment Outbrief and Final Presentation Template, National Supply Chain Assessment Brief – Template, NSCA Brief Example – Healthland Supply Chain Brief, Final Report Template

- 3) **Pilot the NSCA 2.0 tool in an assessment in Rwanda:** One of the key activities under this task order included a national supply chain assessment in Rwanda. The results from this activity also served as pilot data for refining the NSCA 2.0 tool and supporting materials further. A final report and supporting annexes were completed for this activity. Once approved, the report and raw datasets were uploaded to the Development Experience Clearinghouse (DEC) or development data library (DDL), as appropriate.
- 4) **Pilot the NSCA 2.0 tool in an assessment in Zambia:** This task order also included a national supply chain assessment in Zambia. The results from this activity were also used as pilot data to continue refinement of the NSCA 2.0 tool and supporting materials. A final report and supporting annexes were completed for this activity. Once approved, the report and raw datasets were uploaded to the DEC or DDL, as appropriate.
- 5) **Initial Dissemination Activities:** Dissemination was a focus of this task order as well. Dissemination primarily focused on the development of a dissemination plan, partially implemented by Axios and partially planning potential USAID dissemination activities after the task order ended. Dissemination activities completed by Axios before the end of the Task Order included: completing a training in Washington, DC from April 9-12, 2018 (65 participants), preparing a train the trainer package of materials for ongoing use to increase awareness and uptake of the NSCA 2.0 toolkit, and developing

a presentation template to support both initial outbrief presentations and more comprehensive final presentations. Axios also prepared a frequently-asked-questions document for inclusion on the NSCA 2.0 website that GHSC-PSM will develop.

6) **Task Order Reports:** Lastly, annual and final task order related reports were uploaded to the DEC.

7)

ACHIEVEMENTS

Over the course of the Task Order, the NSCA was improved in a number of ways. The NSCA 1.0 was an internally available resource used to guide the completion of national supply chain assessments. The NSCA 2.0 is a publicly available, updated tool. The NSCA 2.0 is different from the NSCA 1.0 in the following key ways: Introduction of binary responses for more objective and quantitative scoring of capability maturity, addition of 4 new modules to the CMM with greater focus on cross-cutting and systems components, greater user-friendliness for data collectors, automated analysis of results, and a clear sampling approach. A more detailed description of the differences between NSCA 1.0 and NSCA 2.0 can be found in the implementation guide, located on the NSCA toolkit webpage. To achieve this outcome, a number of deliverables were achieved. These deliverables fall into the following categories:

- Administrative Related
- NSCA 2.0 Toolkit
- NSCA Pilot Activities
- Reports
- Dissemination Activities

Tables 1 – 5 below outline the deliverables assigned/achieved within each category over the course of the task order. The first table, administrative related deliverables focuses on

| TABLE 1. ADMINISTRATIVE RELATED DELIVERABLES | | |
|--|--|-------------------|
| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
| 1 | Task Order Performance Monitoring Plan | October 2016 |
| 2 | Monthly Financial Reports | Submitted Monthly |
| 4 | Branding and Marking Plan | September 2016 |

| TABLE 2. NSCA 2.0 TOOLKIT DELIVERABLES | | |
|--|-----------------------------|---------------------------------|
| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
| 1 | Stakeholder Workshops | September 2016 February 2017 |
| 2 | Stakeholder Workshop Report | October 2016 March 2017 |

| TABLE 2. NSCA 2.0 TOOLKIT DELIVERABLES | | |
|--|---|---------------|
| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
| 3 | Updated Theoretical Framework Report | January 2017 |
| 4 | Updated Methodology Report | February 2017 |
| 5 | Report on Proposed Updates to Data Collection Instruments, Analytic Tools, and/or Reporting Templates | February 2017 |
| 6 | Finalize Initial Documentation List of Required Elements | July 2017 |
| 7 | Revised NSCA 2.0 Package* | November 2018 |
| 8 | Initial Documentation Package* | October 2018 |

*Items included in the NSCA 2.0 package and the initial documentation package are noted in Table 6 below.

| TABLE 3. NSCA PILOT ACTIVITIES | | |
|--------------------------------|--|---|
| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
| 1 | NSCA 1.0: Jamaica Pilot Activity* | August 2016 |
| 2 | NSCA 2.0: Rwanda Pilot Activity Final Report and Annexes | May 2018 |
| 3 | NSCA 2.0: Zambia Pilot Activity Final Report and Annexes | July 2018 (Report) November 2018 (Annexes) |
| 4 | NSCA 2.0: Submit Rwanda Pilot Final Report to the DEC | July 2018 |
| 5 | NSCA 2.0: Submit Zambia Pilot Final Report to the DEC | July 2018 |
| 6 | NSCA 2.0: Submit Rwanda Pilot Dataset to the DDL** | September 2018 |
| 7 | NSCA 2.0: Submit Zambia Pilot Dataset to the DDL** | September 2018 |
| 8 | NSCA 2.0: Pilot Lessons Learned Report | August 2017 |

*The Jamaica assessment acted as both an additional pilot of NSCA 1.0 and as a hands-on training for the project to become familiar with the NSCA

**The task order indicates that the datasets will be uploaded to BI&A; the client subsequently requested to instead upload the datasets to the DDL

TABLE 4. TASK ORDER REPORTING DELIVERABLES

| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
|---|--------------------------------------|---------------|
| 1 | Annual Report (Year 1) | Not Completed |
| 2 | Annual Report (Year 2) | December 2018 |
| 3 | Final Report | December 2018 |
| 4 | Upload Annual Report to DEC (Year 1) | Not Completed |
| 5 | Upload Annual Report to DEC (Year 2) | December 2018 |
| 6 | Upload Final Report to DEC | December 2018 |

TABLE 5. DISSEMINATION DELIVERABLES

| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
|---|---|---------------------|
| 1 | Develop Dissemination and Training Plan | June 2018 |
| 2 | NSCA 2.0 Training Session(s) | April 2018 |
| 3 | NSCA Training Report | July 2018 |
| 4 | Training Package | November 2018 |
| 5 | FAQ Page Content for NSCA Website | November 2018 |
| 6 | Implement Dissemination Plan* | April 2018 – Future |

*The dissemination plan outlined both near and long-term dissemination activities. The date achieved for item aligns with all elements of dissemination assigned to Axios within the plan were completed.

TABLE 6. INITIAL DOCUMENTATION/NSCA 2.0 PACKAGE COMPONENTS

| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
|---|--|----------------|
| | Overview of NSCA | |
| 1 | Brief Overview: National Supply Chain Assessment | September 2018 |

TABLE 6. INITIAL DOCUMENTATION/NSCA 2.0 PACKAGE COMPONENTS

| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
|----|--|----------------|
| 2 | Training of Trainers (TOT) Training Package | November 2018 |
| | Training and Supply Chain Mapping Resources for the NSCA Toolkit | |
| 3 | National Supply Chain Assessment (NSCA): Supply Chain Mapping Workshop | June 2018 |
| 4 | National Supply Chain Assessment (NSCA): Data Collection Training | July 2018 |
| 5 | List of Support Resources for Data Collection Training | November 2018 |
| 6 | Glossary | August 2018 |
| 7 | How to Conduct KPI and Capability Interviews | October 2018 |
| | Planning Tools for an NSCA | |
| 8 | Implementation Guide | November 2018 |
| 9 | Data Use Policy for the National Supply Chain Assessment (NSCA) | June 2018 |
| 10 | Instructions for Using the Sampling Template | June 2018 |
| 11 | Sampling Template | June 2018 |
| | Data Collection Tools for an NSCA (CMM) | |
| 12 | CMM Master Questionnaire | June 2018 |
| 13 | Guidance on Updating the SurveyCTO Code for the Capability Maturity Model (CMM) Survey | September 2018 |
| 14 | CMM SurveyCTO Code | June 2018 |
| 15 | Capability Maturity Module Questionnaire for All Levels | June 2018 |
| | Data Collection Tools (KPI-General) | |
| 16 | Key Performance Indicators | August 2018 |
| | Data Collection Tools (KPI-Central) | |

TABLE 6. INITIAL DOCUMENTATION/NSCA 2.0 PACKAGE COMPONENTS

| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
|----|--|----------------|
| 17 | KPI SurveyCTO Code – Central | September 2018 |
| 18 | Guidance on Updating the SurveyCTO Code for the Key Performance Indicator (KPI) Data Collection Central Tool | September 2018 |
| 19 | KPI Data Collection Form for Data Collected at Central Levels Only | October 2018 |
| | Data Collection Tools (KPI-Non-Central) | |
| 20 | KPI SurveyCTO Code - Non-Central | November 2018 |
| 21 | Guidance on Updating the SurveyCTO Code for the Key Performance Indicator (KPI) Data Collection Non-Central Tool | September 2018 |
| 22 | KPI Data Collection Form for Data Collected at SDPs, Referral Hospitals, and Warehouses | November 2018 |
| | Analysis Tools for NSCA (CMM) | |
| 23 | Data Analysis Plan for the Capability Maturity Model (CMM) Survey | October 2018 |
| 24 | Capability Maturity Model Survey Analysis Template | September 2018 |
| 25 | Instructions for using the CMM Survey Analysis Template for scoring capability maturity model results | September 2018 |
| 26 | CMM Codebook | September 2018 |
| | Analysis Tools for NSCA (KPI-General) | |
| 27 | Data Analysis Plan for Key Performance Indicators | November 2018 |
| | Analysis Tools for NSCA (KPI-Central) | |
| 28 | Central KPI Analysis Template | October 2018 |
| 29 | Instructions for Using the KPI Central Analysis Template for Calculating Key Performance Indicators | October 2018 |
| 30 | KPI Central Codebook | October 2018 |
| | Analysis Tools for NSCA (KPI-Non-Central) | |
| 31 | KPI Non-Central Analysis Template | November 2018 |
| 32 | Instructions for Using the KPI Non-Central Analysis Template for Calculating Key Performance Indicators | November 2018 |

TABLE 6. INITIAL DOCUMENTATION/NSCA 2.0 PACKAGE COMPONENTS

| # | DELIVERABLE DESCRIPTION | DATE ACHIEVED |
|----|---|---------------|
| 33 | KPI Non-Central Codebook | November 2018 |
| | Analysis Tools for NSCA (KPI & CMM) | |
| 34 | KPI/CMM Mapping for Results Analysis | October 2018 |
| | Dissemination Tools for NSCA | |
| 35 | National Supply Chain Assessment Outbrief and Final Presentation Template | June 2018 |
| 36 | National Supply Chain Assessment Brief – Template | April 2018 |
| 37 | NSCA Brief Example – Healthland Supply Chain Brief | April 2018 |
| 38 | Final Report Template | April 2018 |

MAJOR ACTIVITIES

In this section, key activities or events in the Task Order timeline are described in Table 7. During 2016, the project completed early briefings with SCMS and USAID, planned and executed a supply chain assessment in Jamaica, and prepared for the Rwanda assessment; the Rwanda assessment also served as a pilot for the NSCA 2.0. The key outcomes from the early briefings with SCMS and USAID included sharing a thorough review of NSCA 1.0, gaining an understanding of the tool’s potential, and outlining desired improvements for the tool. The purpose of the Jamaica assessment was to support the MOH and stakeholders in Jamaica to obtain a better understanding of the current state of the ARV and condom supply chains. The goal was to ultimately prioritize critical areas for strengthening the Jamaica supply chain. This assessment was implemented jointly with SCMS, and therefore also served as a transition and hand-off of the NSCA tool to the project. After the hand-off, the project worked with stakeholders to update the NSCA 1.0 to NSCA 2.0 tool.

As the project took the lead on updating the NSCA 2.0 tool and supporting documentation, a key priority was to seek stakeholder inputs to the design of NSCA 2.0. Towards that end, the project held two 2-day stakeholder workshops for this purpose in September 2016 and February 2017.

In 2017, the updates to the NSCA tool were completed and the tool was subsequently piloted and refined in 2017. Assessments, which also served as pilots for NSCA 2.0, were completed in both Rwanda and Zambia. For the Rwanda assessment, the Axios team was comprised of Zachary Gwa, Ben Johns, Andrew Ssemugenyi, Stephen Kadde, and Henrietta Bosa; USAID and PSM personnel also supported the effort. For the Zambia assessment, the Axios team was comprised of Zachary Gwa, Ben Johns, Andrew Ssemugenyi, Stephen Kadde and Timothy Kasule. Again, USAID and PSM personnel also supported the effort. After the pilot activity completed, reports were completed and the NSCA 2.0 tool was further refined.

In 2018, refinement of the NSCA 2.0 toolkit components continued. Additionally, dissemination activities commenced, including a 4-day training with 65 participants in Washington, DC. All remaining deliverables under the task order were completed and cleared. The Task Order came to a close at the end of calendar year 2018.

| TABLE 7. SUMMARY OF MAJOR ACTIVITIES FOR TASK ORDER AID-OAA-TO-00013 | | | | | | | | | | | | |
|--|-----------------------------------|--------------------|------|----|------|----|----|----|------|----|----|----|
| # | Description | When | 2016 | | 2017 | | | | 2018 | | | |
| | | | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 1 | Task Order Awarded | July 2016 | | | | | | | | | | |
| 2 | Briefings with SCMS, USAID, Axios | July – August 2016 | | | | | | | | | | |
| 3 | Planning for Jamaica Assessment | July – August 2016 | | | | | | | | | | |
| 4 | Jamaica Assessment | August 2016 | | | | | | | | | | |
| 5 | Stakeholder Workshop #1 | September 2016 | | | | | | | | | | |

TABLE 7. SUMMARY OF MAJOR ACTIVITIES FOR TASK ORDER AID-OAA-TO-00013

| | | | 2016 | | 2017 | | | | 2018 | | | |
|----|--|-------------------------------|------|----|------|----|----|----|------|----|----|----|
| | | | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 6 | Update NSCA 1.0 Tool to NSCA 2.0 | December 2016-February 2017 | | | | | | | | | | |
| 7 | Planning for Rwanda Assessment | December 2016 – February 2017 | | | | | | | | | | |
| 8 | Stakeholder Workshop #2 | February 2017 | | | | | | | | | | |
| 9 | Rwanda Pilot Assessment Activity | April – May 2017 | | | | | | | | | | |
| | Planning for Zambia Assessment | April – May 2017 | | | | | | | | | | |
| 10 | Zambia Assessment | June-July 2017 | | | | | | | | | | |
| 11 | Refine NSCA 2.0 Tools | July 2017 – November 2018 | | | | | | | | | | |
| 12 | Complete Remaining Task Order Deliverables | July 2017 – November 2018 | | | | | | | | | | |
| 13 | Close Task Order | November 2018 | | | | | | | | | | |

FUNDS OBLIGATED AND DISBURSED

A total of \$1,423,000 funds was obligated for this Task Order (AID-OAA-TO-16-00013) between July 2016 to November 2018. The Task Order ceiling is \$1,496,582. Table 8. provides a brief overview of funds disbursed over the life of the Task Order.

| TABLE 8. FUNDS OBLIGATED FOR TASK ORDER AID-OAA-TO-16-00013 | | | | | |
|---|---------------------|----------------------------|--------------|-----------------------|-----------------------------|
| # | MODIFICATION NUMBER | DESCRIPTION | DATE | FUNDS OBLIGATED (USD) | TOTAL FUNDS OBLIGATED (USD) |
| 1 | N/A* | | Jul 29, 2016 | \$950,000 | \$950,000 |
| 2 | Modification #1 | Minor Clause Changes | Feb 3, 2017 | \$0 | \$950,000 |
| 3 | Modification #2 | Changed Fixed Fee Payment | May 9, 2017 | \$0 | \$950,000 |
| 4 | Modification #3 | Increased Obligated Amount | Jun 6, 2017 | \$50,000 | \$1,000,000 |
| 5 | Modification #4 | Increased Obligated Amount | Jan 2, 2018 | \$223,000 | \$1,223,000 |
| 6 | Modification #5 | Increased Obligated Amount | May 18, 2018 | \$150,000 | \$1,373,000 |
| 7 | Modification #6 | Increased Obligated Amount | Aug 10, 2018 | \$50,000 | \$1,423,000 |

*Initial funds disbursement

PROBLEMS ENCOUNTERED AND HOW THEY WERE RECTIFIED

During the course of any project, unexpected challenges arise. This section briefly describes key challenges and how they were rectified by the project. Challenges fell into two key categories: challenges with updating the tool itself and process challenges. Each is described below.

Three key challenges emerged during the tool update process. The first challenge related to assigning maturity scores to response options for each item in a clear and methodical way. Coordinating the effort across a number of team members opened the process to some variation in how scores were applied. To mitigate this challenge, the team of experts agreed on operational definitions, classifications, tagging, and weighting of questions. Specific to tagging questions, the assignment of a tag to each question was initially done by consensus of the technical team. The tagging was then reviewed independently by two external experts. Any items where the two experts disagreed on the tag were brought back to the team for further discussion until consensus on a final tag was reached. In order to avoid bias, the tagging and the review were performed before any assessment results were available. Once the Rwanda analysis was completed, the technical team completed another review of the tags assigned to questions; the tags were re-assessed for relevance and appropriateness in light of the Rwanda analysis. Finally, external experts were asked to review the tool and provide feedback on the scoring values applied.

A second challenge relates to pilot implementation with the draft tool. While the first NSCA 2.0 pilot activity was underway, a number of modifications were made to the tool. These modifications took place during active data collection. In order to mitigate any concerns in subsequent pilot activities, the tool was reviewed and agreed upon for use in advance of the second pilot, and no modifications were made to the tool during the second pilot activity.

A third key challenge involved the length of the data collection tool. The project identified that the tool was too lengthy and took measures to shorten the tool. However, the process of shortening the tool resulted in a scoring challenge, namely that the deletions resulted in some items having response options that did not reflect each capability maturity level. Also, some levels or modules ended up with no questions remaining. Upon recognizing the challenge, the project ensured item representation for each level and module as well as response options reflecting all capability maturity levels.

Challenges also existed for the project implementation process. A key challenge that impeded efficient workflow was a relatively high level of turnover on the project. Over the task order, four key personnel left the project for varying reasons. A brief summary of each loss and the course of action taken to ensure that key personnel responsibilities were undertaken in timely manner follows in Table 9. While the project filled this critical role as quickly as possible in each instance of turnover, the shift in personnel did create delays and opportunities for the introduction of error. For example, not all contract requirements were clearly conveyed during the transition and some historical knowledge of what sub-items were agreed to as a part of each deliverable was lost. The project worked to identify these gaps and ensure that all required deliverables were completed and of good quality.

| TABLE 9. STAFFING TURNOVER SUMMARY | | |
|---|---|-------------------------|
| CHALLENGE | RESPONSE2 | DATE |
| Necessary to terminate employment for Amos Sam Abbenyi | <ul style="list-style-type: none"> • Informed the contracting officer (CO) • Initiated candidate search to replace the role • After 3 months, Axios was successful in identifying a new Supply Chain Technical Advisor • Simon Conesa joined the team in Dec 2016 | September 2016 |
| New supply chain technical advisor experienced a medical challenge that impeded work ability | <ul style="list-style-type: none"> • Rwanda assessment postponed by one month to begin in April 2017 • When it was clear that the medical issue would not resolve in time for postponed Rwanda assessment, Axios engaged Zachary Gwa to take his place as Acting SCTA for the Rwanda assessment • No replacement candidate for the SCTA was identified. Instead, consultants were utilized to fill the gaps left when the SCTA departed. Michael Cohen was also engaged as a consultant to support and work with Simon Conesa to overcome challenges • Simon Conesa left the project as the medical challenge persisted and he was unable to continue in the role at that time. | February-May 2017 |
| Task Order Director left the project | <ul style="list-style-type: none"> • Axios notified USAID that Furhana Wehelie was no longer with the project • A search was undertaken for a new candidate to fill the role. Amy Meyers took on the interim task order director role approximately one month after Furhana left the role vacant | August – September 2017 |
| Interim Task Order Director left the project for a permanent full-time professional opportunity | <ul style="list-style-type: none"> • Axios notified USAID that Amy Myers was leaving the project • Axios identified a candidate for the task order director role prior to Amy's departure, allowing for a smooth transition for the new person, Dr. Kelly Earp, into the task order director role. | March 2017 |

In addition to the staffing challenges related to key personnel, Axios, as a Small Business experienced in supply chain technical assistance and operations, lacked significant depth of subject matter experts specific to the development and implementation of supply chain assessments. To mitigate this challenge, Axios engaged STTA from a number of SMEs to provide additional support, guidance, and expertise throughout the project. These SME's included personnel engaged through subcontracts with Abt Associates, Medical Assess Uganda Limited, other Axios group companies, as well as a number of individual consultants. The USAID and PSM personnel also provided team members to support the pilot activities in Rwanda and Zambia.

Some administrative challenges existed as well. On-time financial reporting, which had been a challenge in Year 1, was achieved at an early stage in Year 2 due to Axios' appointment of a new individual to take

on those responsibilities. From September 2017 forward, all reports were completed on-time and met the contractual quarterly reporting requirements.

FUTURE CONSIDERATIONS

The NSCA 2.0 toolkit is not intended to be a static product. As the tool is implemented, USAID intends to receive feedback on how to improve the tool during future update activities. Several key areas have already been identified as topics for consideration in future iterations. One key area that may be improved upon further includes scoring. Some examples where scoring may be improved include: 1) improving the scoring so that any dependent CMM question may not have a higher score than the initial “trigger” question, 2) further standardization of the scoring process and underlying rationale, 3) consider approaches to weighting questions or responses. Additionally, the wording of some questions could be improved to allow for less interpretation by the respondent. For data collection processes, a potential improvement may be improving the ability to capture data from electronic logistics management information systems; additional guidance and data analysis tools could be developed to support this activity. Analytically, updating the tool further to support root cause analysis may also be desirable; for example, adding more descriptive questions that will support root cause analysis.