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THE LOGISTICS WORKBOOK

A COMPANION TO THE LOGISTICS HANDBOOK

JULY 2009

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USAID | DELIVER PROJECT, Task Order 1

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INTRODUCTION

Note: *The Logistics Workbook: A Companion to the Logistics Handbook* is intended to be used only in conjunction with *The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs*. You can obtain a copy of the handbook by contacting the USAID | DELIVER PROJECT at askdeliver@jsi.com.

Why did we create a workbook? During the past fifteen years, the DELIVER project has trained hundreds of professionals from around the world in the basic principles of logistics management. The challenge of our classroom-based training courses is that they can reach only a small group of people at one time. To try to reach a wider audience, we created a distance learning approach that includes the logistics handbook and workbook. (We may develop a computer-based course in the future.)

Why do you need the workbook? Can you just read the handbook? The handbook presents technical information, case studies, and theoretical application for anyone working in supply management. It can also be a resource for logistics information. By completing the exercises in the workbook, you will reinforce concepts learned while reading the handbook. You can also try out ideas from the handbook.

Why did we create a fictional country for the workbook? The country case study theme was added to make your learning more interactive and engaging. Although the workbook theme should be interesting, the material is practical, and the techniques are professional. We selected a case study theme because we do not want to represent only one country or region in the world as we might have if we used video or pictures. And, stories are timeless, as are the lessons in the workbook—the principles you learn will apply for years to come.

Do you complete the workbook on your own? You are encouraged to find a partner or two and work on the exercises together. Try them alone first, and then discuss your answers with your partner. Talking with someone else can improve your understanding.

What should you do if you do not understand a technical aspect of logistics or if you do not understand the answer to an exercise? USAID | DELIVER PROJECT will help you while you study on your own! Please contact us at askdeliver@jsi.com. A member of the USAID | DELIVER PROJECT team will help you with any questions.

What tools do you need to complete the workbook? You need a copy of the logistics handbook, a pen or pencil, and a calculator. Find a quiet place to work (either alone or with partners) where you will not be disturbed. This course is taught through role-playing in a fictional story, with many characters. Your role is to play the student logistician, a newly hired employee of Acme Pharmaceuticals. *(Read the corresponding chapter of the handbook first, then complete the exercises in the workbook for that chapter.)* All the technical information is in the handbook. Another way to complete the workbook is to read the entire handbook, then use the workbook to test yourself.

Information for the Student Logistician

Welcome to Acme Pharmaceutical's headquarters. I am the Acme chief. Several days ago, our logistics expert, Noah Tall, disappeared while on assignment in Neighboria, where he had been working to help managers of the Happy Babies nongovernmental organization (NGO) improve their logistics system.

When several Acme employees and I went to his hotel room at the Center City Lodge, we discovered that he had checked out. He left his briefcase and laptop computer, but not his clothes. We printed his files on Happy Babies. Although the hotel staff remembers Noah leaving the hotel, they do not know where he went.

Noah's files are almost complete. He has not, however, written a report to the NGO. I have written some important questions on the printouts. Please help us write Noah's report. Attached are his files, in date order. Please answer the questions that follow each memo.

This is the earliest memo we found:

Memo #1

To: Acme Chief
From: Noah Tall
Reference: My visit to Neighboria

I arrived in Neighboria to assist the Happy Babies NGO in logistics for contraceptives and other medical supplies. Everyone here seems committed to improving the availability of high-quality supplies.

While here, I will prepare regular progress reports for you to review.

I will be traveling throughout Neighboria during the next few weeks, and it may be difficult to contact me. Please send messages to me through the office of the Director of Happy Babies.

1. INTRODUCTION TO LOGISTICS

YOUR ASSIGNMENT

Before reading the memos and completing the assignments, read chapter 1 of *The Logistics Handbook.*

Memo #2

To: Acme Chief
From: Noah Tall
Reference: My visit to the Happy Babies NGO Clinic in Medville

Today, I visited Dr. Emily Lead, the director of the Happy Babies NGO clinic in Neigboria's fourth largest city, Medville. She took me on a tour of her facility. The clinic has a nice waiting area with many educational materials and several comfortable chairs.

Dr. Lead told me that they offer a wide variety of reproductive health services that focus on family planning. They also offer antenatal, pregnancy, and post-natal care, and sexually transmitted disease (STD) prevention and treatment, and immunizations.

There are four patient rooms, each set up a little differently. In the first room, Dr. Lead told me that they offer care to pregnant patients, including post-natal care (with immunizations) and pap smears. The room is equipped with a scale, exam table, autoclave, and equipment for gynecological exams. Latex gloves, KY jelly, and antiseptics are available, and there are dozens of pregnancy test kits stacked in a corner of the room.

Two of the patient rooms are set up for contraceptive counseling. In these rooms there are contraceptives and models for counseling. HIV/STD prevention cases are seen in these rooms, as well as testing for pregnancy. While one room has gloves available for examination, the other room has none.

Dr. Lead tells me that the nurses complain that they do not have enough gloves. To respect the privacy of the patients, the nurses do not want to enter a room to take gloves from one room to another.

Dr. Lead explains that they offer condoms, oral pills, vaginal foaming tablets, intrauterine devices (IUD), and injectable contraceptive methods. I asked her about progestin-only contraceptives for women who are breastfeeding. She told me that she ordered the mini-pill Ovrette, but received only the combined oral contraceptive (COC) pill Lo-Ovral.

In the last room, they diagnose and treat STDs. Latex gloves, drugs, STD test kits, and various antiseptics were available. I saw several test kits with expired items.

"We ordered too many pregnancy test kits from the hospital, " Dr. Lead told me, "and now I cannot afford to replace the STD test kits."

This clinic is not fulfilling all of the six rights.

YOUR ASSIGNMENT

1. For each of the six rights, state whether or not it is being followed at this clinic.
2. For each right that is not being followed, suggest how this situation could be improved.

YOUR ANSWERS

(Write your answers in the space below or on a separate sheet of paper.)

Memo # 3

To: Acme Chief
From: Noah Tall
Reference: My Visit to the Happy Babies NGO Central Office

Today, I visited the central office of the Happy Babies NGO. They operate 25 clinics in Neighboria, including Dr. Lead's clinic in Medville, and three hospital facilities. The largest hospital, located in Neighboria's capital, Center City, also houses the NGO's administrative office and the central warehouse. Happy Babies has 300 community outreach volunteers who receive supplies from the clinics. Head pharmacist Michael Rocher, is in charge of their medical supplies. He explained that his main goal is to "make sure that the products we need are available when they are needed." He explained that he and the pharmacists from the clinics meet once each year to determine our needs for future years. "Everything changes," he told me, "and we want to be flexible in our thinking, so we can respond appropriately."

I asked him if he was familiar with the activities of a logistics system. He immediately mentioned "quality control." He said it was very important that they receive good quality supplies. He said they inspect all supplies coming from manufacturers. He also mentioned that it is important to monitor the quality of supplies leaving their warehouse. "It would be wasteful to ship supplies that are about to expire to the clinics," he explained.

He said that an important logistics activity was to ensure that they did not have either too many or too few supplies. "We do not have the money or space to store large quantities, so we want to ensure that we are making an appropriate order."

We discussed the importance of monitoring the flow of supplies in the system. "I try to always know which facilities have supplies and where shortages may occur." He also noted that money is an important consideration. "Without money, we cannot buy our supplies."

We discussed the importance of other activities in a logistics system. To make our discussion easier to follow, I drew a picture of the relationship among the activities. "This makes sense." Pharmacist Rocher told me. "Now I understand how our new policy to distribute condoms to sexually active youth might affect our logistics system. The relationship is clear."

YOUR ASSIGNMENT

1. What activities did Noah and the head pharmacist discuss that support the six rights? Which activities are missing from the pharmacist's explanation and discussion?
2. What is the picture that Noah Tall drew? What is one reason that Pharmacist Rocher said the drawing helped him understand the new policy for condom distribution?

YOUR ANSWERS

Memo # 4

To: Acme Chief
From: Noah Tall
Reference: Key terms and comparisons

Since coming to Neighboria, I realize that some terms I use might not be clear. I need to help others understand special terms or meanings. For example, Dr. Lead told me that she was concerned about serving her patients. When I used the word "customer" she was confused. I told her why we also use the term "customer."

Head Pharmacist Rocher also told me that the term "lead-time" is one he has heard, but does not know what it means. I asked him to explain the ordering procedure for the hospitals, clinics, and community-based volunteers.

He told me the following:

- At the end of each quarter, the hospitals complete their reports.
- They usually mail their requests to him, and the mail takes about 10 days.
- It takes about five days for him to review the reports and (a) distribute the supplies.
- He usually sends the hospitals what they ask for, unless there is an error in their calculations.
- It takes about three days for the trucks to go from Center City to each hospital.
- The hospital pharmacies are usually quite busy, so it may take another two days for the hospital pharmacist to put the supplies on the shelves.
- Hospitals (b) distribute some supplies directly to customers who come for service, but most supplies (c) are distributed to the clinics.
- For the clinics, he told me that the nurses take their report to the hospital each month, and they use their personal transportation.
- The pharmacist at the hospital reviews their request, calculates their needs, and (d) distributes the supplies to take back to the clinic. The nurse can return to the clinic the same day. Most nurses, however, spend the night in town and return the next morning.
- At the clinic, the nurses immediately place the supplies in their cabinets.
- Clinic supplies are (e) distributed to customers and (f) are distributed to the community-based volunteers. There are 300 community-based volunteers helping the Happy Babies NGO.
- The community-based volunteers visit the clinic many times each month. They either walk or use public buses.
- Community-based volunteers request the supplies they need and the doctor or nurse in charge of the clinic (g) distributes them, with the supplies, all in less than one day.
- Volunteers supplies (h) are distributed to customers living in the community.

Using this information, I explained the term "lead time" to Pharmacist Rocher, and calculated the lead time for the hospitals and clinics.

He seemed confused about the term "pipeline." When I asked him what he meant by pipeline, he said that the pipeline included all the storerooms where supplies are kept. He left out an important part of the definition.

When I asked Pharmacist Rocher the number of service delivery points (SDP) for Happy Babies, he told me they have 25 clinics and also operate three hospitals. He asked me how many SDPs that would be.

YOUR ASSIGNMENT

After reading Noah's report, answer the following questions on the following blank pages:

1. Why does Noah Tall use the term "customer" instead of "patient"?
2. What is the lead-time for hospitals from the main office? What is the lead-time for clinics from hospitals? What is the lead-time for community-based volunteers from clinics?
3. Part of Pharmacist Rocher's definition of pipeline is missing. What is it?
4. Draw the pipeline for the Happy Babies' logistics system.
5. How many SDPs are there in the Happy Babies' logistics system?
6. Is the relationship a *push* system or a *pull* system for the following:
   - **a.** Between the central stores and the hospitals
   - **b.** Between the hospitals and the clinics
   - **c.** Between the clinics and the community-based volunteers
   - **d.** Between the community-based volunteers and their customers
7. Noah's memo uses the term "distribute" in his descriptions, but the term should be "issue" or "dispense," as appropriate. Please substitute the correct term for each of the following uses in memo #4:
   - **a.** distribute
   - **b.** distribute
   - **c.** are distributed
   - **d.** distributes
   - **e.** distributed
   - **f.** are distributed
   - **g.** distributes
   - **h.** are distributed
8. Is the Happy Babies logistics system integrated or vertical? Explain?

YOUR ANSWERS

YOUR ANSWERS

2. LOGISTICS MANAGEMENT INFORMATION SYSTEMS

YOUR ASSIGNMENT

Before continuing, read chapter 2 of *The Logistics Handbook.*

Memo # 5

To: Acme Chief
From: Noah Tall
Reference: Managing Information at the Happy Babies Clinics

Today, I visited a rural clinic for the Happy Babies NGO in Littleton. This clinic reports to the Southland Hospital of the NGO. During my conversation with Nurse Jane Assuagme, charge-nurse for the clinic, we talked about the forms she is required to complete. "We collect so much information," she told me, "I feel like I spend half of my time completing forms! Why does the hospital ask us to collect so much information?" First, I told her why we collect information. Then, I explained there were a number of decisions that could be made from the information. These decisions could affect her clinic, the Southland Hospital, or perhaps the entire Happy Babies NGO.

She also asked me what information is essential and what information is not. I told her that while much of the information she collects is quite useful, only three pieces of information form the essential data needed to run a logistics system.

Nurse Assuagme showed me the forms she must complete for the family planning section of the NGO. I am attaching a copy of each of the forms to this report. I have some suggestions for improving these forms. We can discuss them when I return.

Nurse Assuageme mentioned that she was recently trained in completing forms for community-based volunteers, who would begin working from her clinic in the coming months. She could not remember if she should complete one report for all volunteers and one report for the clinic or one report for both the volunteers and the clinic, combined. I explained the difference between the two methods of reporting and why the differences are important.

The nurse was confused about a new report she receives each month, the Feedback Report. She asked me why she got this report, with a list of the other clinics that report to the Southland Hospital. and what was she supposed to do with it. I explained the report. I am attaching a copy of her most recent feedback report.

Form #1

HAPPY BABIES NGO
FAMILY PLANNING SECTION

Name of Clinic:		Month:		Year:	

Method of Contraception	1st Visit					Revists									
Lo-Femenal	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
Ovrette	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
All Other Oral	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
Condom	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
DepoProvera® Injectables	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
Vaginal Tablet	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
CuT380a IUD	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
Pregnancy Test	ooooo	ooooo	ooooo	ooooo	ooooo										
	ooooo	ooooo	ooooo	ooooo	ooooo										
Other	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
Clients Counseled	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo
	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo	ooooo

Notes: Tick one circle for each unit dispensed to a client.

Form #2

HAPPY BABIES NGO

Item: _____ Commodity No.:_____

Max. Stock: _____ Unit of Issue: _____

Min. Stock: _____

Transaction				**Balance**	
Date	To/From	Quantity Received	Quantity Issued	Losses/ Adjustments	Quantity on Hand

Form #3

Happy Babies NGO

Facility Name: Section: Facility Location:

To (issue point) :

Please issue the stores listed below to (point of use) :

Code No.	Item Description	Unit of Issue	Quantity Required	Quantity Issued	Value	Remarks Purpose

Account No.: Date

Requisitioning Officer: Designation: Signature:

Issued by: Signature: Date

Received by: Designation: Signature:

MONTH:	YEAR:

Form #4

MONTH:	YEAR:

HAPPY BABIES NGO
FAMILY PLANNING SECTION

Clinic Location:	Hospital Location:

SERVICE STATISTICS

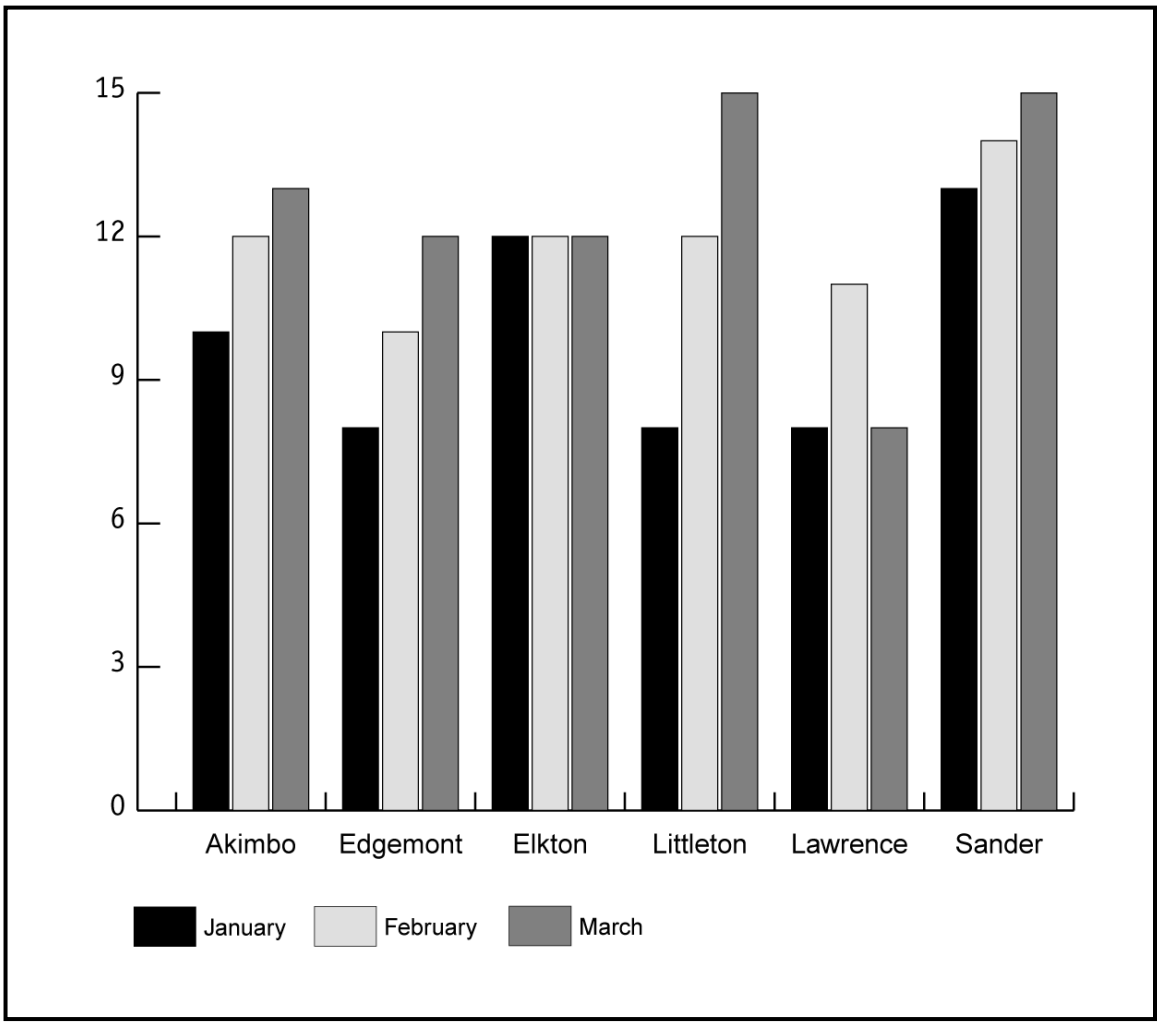
	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit							
Revisits							

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock							
Quantity received							
Quantity dispensed							
Stock on hand							

Completed by: _____ Title: _____ Date: _____

Quarterly Consumption of IUDs by Clinic, by Month, for Clinics Reporting to the Southland Hospital



YOUR ASSIGNMENT

Answer the following questions on this page and the following blank page:

1. What do you think Noah said when he explained why we collect information?
2. What types of decisions can be made using logistics information?
3. What three data items are essential for managing a logistics system?
4. For each of the attached forms, answer the following questions:
   - **a.** What type of form is it?
   - **b.** What is the purpose of the form?
   - **c.** What essential data should be included on the form?
   - **d.** What change(s) could you make to the form to make it more useful?
5. When the volunteer workers begin reporting to Nurse Assuagme, should she complete one report for the volunteers and one report for the clinic or one report for both the volunteers and clinic combined? Why is the answer important?
6. Why does the nurse receive the feedback report Quarterly Consumption of IUDs by Clinic by Month for Clinics Reporting to the Southland Hospital? What should she do, if anything? What could she learn from the report?

YOUR ANSWERS

YOUR ANSWERS

3. ASSESSING STOCK STATUS

YOUR ASSIGNMENT

Before you continue with your assignment, read chapter 3 of *The Logistics Handbook.*

Memo # 6

To: Acme Chief
From: Noah Tall
Reference: Assessing Stock Status

Head Pharmacist Rocher suggested that I accompany him on a supervisory visit to the Happy Babies Clinic in Smallville. Nurse Henderson met us when we arrived. She was glad to see Pharmacist Rocher and had several questions to ask him. I made notes about what I observed during their conversation.

***Nurse Henderson*:** I'm glad to see you Pharmacist Rocher. I am a recent graduate of the nursing program, and have been appointed to manage the clinic here in Smallville. When I arrived, my predecessor Nurse Rachett had already departed for her new posting at another clinic. My only source of information is an old manual I found in the desk. I read it, but I am not sure if the information is accurate. I am concerned because, starting next month, I will begin supervising community-based volunteers from the clinic. I want to make sure I do my calculations correctly.

***Pharmacist Rocher*:** I would be happy to help you. May I ask you some questions? Then, I can understand your concerns and help you.

***Nurse Henderson*:** That sounds great. I hope I know some of the answers to your questions!

***Pharmacist Rocher*:** Do not worry too much if you do not know the answer. I am here to help you. My first question is about assessing stock status. Can you tell me what "assessing stock status" means?

***Nurse Henderson*:** I think assessing stock status means knowing when to make an order.

***Pharmacist Rocher*:** Can you tell me what information is needed to assess stock status?

***Nurse Henderson*:** I need to know how much of each product I received this month and how much of each product I give to clients each month.

***Pharmacist Rocher*:** Where can you find that information? And, how do you calculate stock status using that information?

***Nurse Henderson*:** I can get all of the information I need by looking at the stock cards. To calculate the stock status, I divide the amount of stock I received by the amount of stock I dispensed to clients.

***Pharmacist Rocher*:** How many months of data should you use to make this calculation?

***Nurse Henderson*:** For the most accurate figure possible, I use all the data I have.

***Pharmacist Rocher*:** What would you do if you discovered that consumption was rising or falling rapidly?

***Nurse Henderson*:** Consumption that is rising or falling rapidly is called a "trend." If I see a trend, I would change the amount I order.

***Pharmacist Rocher*:** How would you change the amount?

***Nurse Henderson*:** If the trend is an increasing one, I order twice as much, and if the trend is a decreasing one, I order half as much.

***Pharmacist Rocher*:** Thank you for answering my questions. Let us review your answers, and I can show you how to improve the accuracy of your stock status assessment.

I watched Pharmacist Rocher correct the nurse for six errors. He offered her on-the-job training and Nurse Henderson was eager to learn the correct answers. I think she will be an excellent manager of supplies at this clinic, with Pharmacist Rocher's guidance. He is an effective supervisor who listens carefully.

After they reviewed the formulas, Pharmacist Rocher and Nurse Henderson worked together to assess her stock status for four of her contraceptive products. To make sure she understood what to do, they assessed the stock status each month for the past six months.

When there was only one month of data, I suggested they use only that month's data. I suggested that with two months of data, they use both months of data and divide by two. They agreed to continue this process, using all the available data and dividing by the number of months of available data, until they had six months of data.

I feel confident that Nurse Henderson understands how to assess stock status for her clinic.

I am attaching to my report a copy of the forms they used to assess her stock status.

Reports for Smallville:

Month: November | Year: 2000

HAPPY BABIES NGO
Family Planning Section

Monthly Planning Report

Clinic Location: Smallville | Hospital Location: Greenville

SERVICE STATISTICS

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit	1	3	8	6	0	2	20
Revisits	9	9	12	28	0	0	58

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock	43	388	812	89	100	10	40
Quantity Received	100	200	300	50	0	0	10
Quantity Dispensed	28	12	192	34	0	2	15
Stock on Hand	115	576	920	105	100	8	35

Completed by: E. Rachett Date: 3/12/01
Title: Nurse

Month: November | Year: 2000

HAPPY BABIES NGO
Family Planning Section

Monthly Planning Report

Clinic Location: Smallville | Hospital Location: Greenville

SERVICE STATISTICS

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit	2	3	6	6	0	0	17
Revisits	10	11	14	30	0	0	65

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock	115	576	920	105	100	8	35
Quantity Received	0	0	0	0	0	0	20
Quantity Dispensed	32	14	200	36	0	0	17
Stock on Hand	83	562	720	169	100	8	38

Completed by: E. Rachett Date: 5/1/01
Title: Nurse

MONTH: January	YEAR: 2001

HAPPY BABIES NGO
Family Planning Section

Monthly Planning Report

Clinic Location: Smallville	Hospital Location: Greenville

SERVICE STATISTICS

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit	5	1	6	3	0	1	14
Revisits	10	9	10	37	0	0	66

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock	83	562	720	169	100	8	38
Quantity Received	0	0	0	0	0	0	10
Quantity Dispensed	35	10	220	40	0	1	14
Stock on Hand	48	552	500	129	100	7	34

Completed by: E. Rachett Date: 2/2/01
Title: Nurse

Month: November	Year: 2000

HAPPY BABIES NGO
Family Planning Section

Monthly Planning Report

Clinic Location: Smallville	Hospital Location: Greenville

SERVICE STATISTICS

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit	2	3	4	2	0	3	15
Revisits	12	9	13	40	0	0	34

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock	48	552	500	129	100	7	34
Quantity Received	100	0	200	100	0	0	12
Quantity Dispensed	38	12	204	42	0	3	15
Stock on Hand	110	540	496	187	100	4	31

Completed by: E. Ratchett Date: 6/3/01
Title: Nurse

Month: November | Year: 2000

HAPPY BABIES NGO
Family Planning Section

Monthly Planning Report

Clinic Location: Smallville | Hospital Location: Greenvile

SERVICE STATISTICS

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit	10	3	7	6	0	0	26
Revisits	12	6	11	38	0	0	67

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock	110	540	496	187	100	4	31
Quantity Received	0	0	0	0	0	1	15
Quantity Dispensed	46	9	180	44	0	0	12
Stock on Hand	64	531	316	143	100	5	34

Completed by: R. Henderson Date: 4/3/01
Title: Nurse

Month: November | Year: 2000

HAPPY BABIES NGO
Family Planning Section

Monthly Planning Report

Clinic Location: Smallville | Hospital Location: Greenville

SERVICE STATISTICS

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	TOTAL
1st Visit	7	4	4	2	0	2	19
Revisits	11	10	8	45	0	0	72

INVENTORY CONTROL

	Lo-Femenal	Ovrette	Condom	Depo-Provera®	Vaginal Tablet	CuT380a IUD	Pregnancy Test
Beginning Stock	64	531	316	143	100	5	34
Quantity Received	0	0	0	0	0	0	10
Quantity Dispensed	51	14	144	47	0	2	13
Stock on Hand	24	517	172	96	100	3	21

Completed by: R. Henderson Date: 6/5/01
Title: Nurse

YOUR ASSIGNMENT

1. Please note what Pharmacist Rocher said to correct Nurse Henderson during the on-the-job training.

What Nurse Henderson said:	What Pharmacist Rocher said to correct her:
a. The purpose of assessing stock status is to know when to order.	
b. To assess stock status, I need to know how much of each product I received this month and how much of each product I give to clients each month.	
c. I can get all of the information I need by looking at the stock cards.	
d. To calculate the stock status, I divide the amount of stock I received by the amount of stock I dispensed to clients.	
e. I would use all of the data I have.	
f. If the trend is an increasing one, I order twice as much, and if the trend is a decreasing one, I order half as much.	

2. Fill in the tables below for the stock status assessments observed by Noah Tall:

Lo-Femenal				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000				
December 31, 2000				
January 31, 2001				
February 28, 2001				
March 31, 2001				
April 30, 2001				

Ovrette				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000				
December 31, 2000				
January 31, 2001				
February 28, 2001				
March 31, 2001				
April 30, 2001				

Condoms				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000				
December 31, 2000				
January 31, 2001				
February 28, 2001				
March 31, 2001				
April 30, 2001				

Depo-Provera®				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000				
December 31, 2000				
January 31, 2001				
February 28, 2001				
March 31, 2001				
April 30, 2001				

Memo # 7

To: Acme Chief
From: Noah Tall
Reference: Assessing stock status at the Happy Babies Hospital in Greenville

After our visit to the clinic in Smallville, Pharmacist Rocher and I visited the Happy Babies Hospital in Greenville. The Smallville clinic sends its reports to this hospital. At the hospital, we met the hospital's pharmacist, Mrs. Linda Lamaison.

Pharmacist Rocher explained that Mrs. Lamaison supervises eight clinics from the Greenville Hospital. (He also told me that the Center City Hospital supervises 11 clinics, while the Southland Hospital supervises the remaining six.) Because the area around Greenville is more urban, Mrs. Lamaison clinics supervise only 86 of the nearly 300 total community-based volunteers.

Pharmacist Rocher asked Mrs. Lamaison if she could tell us about the stock status within her facilities. She showed us three summary worksheets she had prepared for the previous six months using a computerized spreadsheet: one each for the community-based volunteers, her clinics, and the hospital pharmacy.

I was concerned that it would be difficult for Pharmacist Rocher and Mrs. Lamaison to decide what data to use when assessing stock status. However, Mrs. Lamaison quickly assessed the stock status for all three levels and the entire group. She demonstrated her skills most effectively when she used the consumption data from all levels to assess the hospital storeroom's stock. "After all," she noted, "the hospital storeroom supplies not only our clinic, but all the clinics and volunteers that come for supplies." Her logistics' skills were impressive.

Attached you will find the condom reports she shared with me.

Condom Consumption by Month:

Month	Volunteers	Clinics	Hospital Clinic	TOTAL
November 2000	2,320	1,625	385	4,330
December 2000	2,265	1,645	425	4,335
January 2001	2,410	1,685	430	4,525
February 2001	2,395	1,800	375	4,570
March 2001	2,450	1,815	410	4,675
April 2001	2,390	1,820	410	4,620
TOTAL	14,240	10,390	2,435	27,055

Condom Stock on Hand by Month:

Month	Volunteers	Clinics (incl. hospital)	Hospital Storeroom	TOTAL
November 2000	4,710	4,600	13,300	22,610
December 2000	4,570	4,800	13,200	22,570
January 2001	4,830	4,900	13,400	23,130
February 2001	4,730	5,200	13,500	23,430
March 2001	4,200	5,400	13,200	22,800
April 2001	3,900	5,900	12,300	22,100
TOTAL	26,940	30,800	78,900	136,840

Hospital Condom Issues by Month:

Month	Quantity Issued
November 2000	6,500
December 2000	5,300
January 2001	4,800
February 2001	4,900
March 2001	5,400
April 2001	6,200
TOTAL	33,100

YOUR ASSIGNMENT

1. Complete the following table to assess the condom stock status at the end of April. Be sure to use the appropriate data.

Level	Stock on Hand	Average Monthly Consumption	No. of Months of Stock on Hand
Volunteers			
Clinics			
Hospital Storeroom			
Entire Area			

2. Complete the following table, based on your assessment of stock status for each level and the entire area.

Level	Order Interval	Situation: Understocked/ Adequately Stocked/ Overstocked
Volunteers	Monthly	
Clinics	Monthly	
Hospital Storerooms	Quarterly	
Entire Area	Monthly/Quarterly	

3. Which assessment of stock status is preferred— only the stock status of the hospital storeroom or the stock status of the entire area? Why?

4. MAXIMUM-MINIMUM INVENTORY CONTROL SYSTEMS

YOUR ASSIGNMENT

Before continuing, read chapter 4 of *The Logistics Handbook.*

Memo # 8

To: Acme Chief
From: Noah Tall
Reference: Inventory Control for Happy Babies

As I am sure you know from my previous reports, Pharmacist Rocher is very knowledgeable about logistics. When it comes to inventory control, however, Pharmacist Rocher explained that while he knows how the system works, he does not know how it was designed or why it works. We sat down together and discussed inventory control.

First, I asked him if he could explain the purpose of an inventory control system. Pharmacist Rocher demonstrated that he knows what he is talking about. I supplied ideas that he left out, and he proposed some insightful new ideas.

I asked him if he had ever heard of a "maximum-minimum inventory control" system. He said he had, and he explained how ordering is done, in general. Using his explanation, we reviewed seven key statements about inventory control.

1. Our goal is to have neither too much nor too little.
2. Every month or quarter, we review our stock, determine how much stock we have used during the period, and place an order, if necessary.
3. If we are ever really low, and it is not the end of the month or quarter, an urgent order is placed.
4. When we review our stock levels, we are usually just about at the point when an order is needed.
5. We make our orders small to avoid the risk of having expired products or too many products on hand.
6. Our system is designed to account for most unexpected circumstances.
7. Our system is designed to make sure that we do not run out of stock while we are waiting for our order to arrive.

Pharmacist Rocher nodded as we spoke, and he quickly remembered each of the key statements.

Next, we talked about placing orders in a max-min system. I showed him the following consumption (dispensed-to-user) data from Smallville for pregnancy test kits. I asked him, for a system with a three-month maximum, what quantity should be ordered at the end of April if the stock on hand on April 30 was 21 kits.

Month	Number of Pregnancy Test Kits Used
November	13
December	17
January	14
February	15
March	12
April	13

We started talking about setting max and min levels. He said he wanted to check to see if the lead times we had previously discussed were correct, so he asked the staff at each level to send him some information about how they were ordering. These are their replies:

1. "As a community-based volunteer, I have been instructed to provide a report monthly. Every month I take my report to the clinic. At the same time, I pick up supplies, the amount of which is rapidly increasing, because I am getting so many new clients. Usually, I can do this all in one day. If I am ever concerned about running out of supplies at any time, I can pick up supplies in just a couple of hours."
2. "As a clinic nurse, I take my report to the hospital once a month. Like most of my fellow nurses, I can get private transport to the hospital, but I have no place to carry the supplies in the car. Because we all go to the hospital at the same time, it takes the hospital pharmacist about three days to calculate the order and prepare the shipment. They use pick-up trucks to deliver the supplies, but the truck often breaks down. Last month it took almost 20 days to deliver the supplies to my clinic. This month, it only took seven days. If I need supplies in an emergency, I can usually arrange transportation to and from the hospital. It takes, at most, two days to travel to the hospital and return home with the supplies."
3. Pharmacist Rocher also told me about orders to the central stores. "Every quarter, the hospitals complete their reports and mail them to me. It takes about 10 days for the mail to arrive from the hospitals. I review the reports and pack up the supplies, which takes about five days. The supplies are delivered to the hospitals in one of our big trucks, which usually takes about three days. The hospital pharmacist should take no more than two days to put the supplies on the shelves. If a hospital needed supplies in a hurry, they call me and I can send them a truck in about three days.

I told Pharmacist Rocher that, with this information, I could show him how to calculate the max and min levels.

When we were finished, Pharmacist Rocher said, "This is wonderful. I cannot imagine having a logistics system without an inventory control system." To challenge him, I asked him to name several advantages of a max-min system, which he did with ease.

YOUR ASSIGNMENT

Answer the following questions below and on the following blank page:

1. What did M. Rocher say were the purposes of an inventory control system?

2. Following are the statements made by Pharmacist Rocher. Write down the appropriate inventory control term for each statement in the table:

Statement	Term
a. Our goal is to have neither too much nor too little.	
b. Every month or quarter, we review our stock, determine how much stock we have used during the period, and place an order if necessary.	
c. If we are ever really low, and it is not the end of the month or quarter, an urgent order is placed.	
d. When we review our stock levels, we are usually just about at the point where an order is needed.	
e. We make our orders small enough so we do not risk having expired products, or too many products on hand.	
f. Our system is designed to account for most unexpected circumstances.	
g. Our system is designed to make sure that we do not run out of stock while we are waiting for our order to arrive.	

3. If Pharmacist Rocher correctly calculated the quantity to order, what would that quantity be?

4. If a forced-ordering maximum-minimum system is used, what max and min levels did Noah Tall recommend for each level of the system? What emergency order points did he recommend for each level? (Do not give a range of answers, e.g., 1–4 months maximum. Give only one answer, e.g., 4 months.)

5. List some of the advantages Pharmacist Rocher would have mentioned.

YOUR ANSWERS

Memo # 9

To: Acme Chief
From: Noah Tall
Reference: Lowering Max-Min Levels for Happy Babies

Pharmacist Rocher and I reviewed the maximum and minimum levels for the Happy Babies NGO. He said he understood how to determine these levels. He seemed a bit concerned about the high levels, and asked me if we could reduce the levels. Specifically, he asked me the following questions.

1. What would happen to the max and min levels if hospitals faxed in their reports instead of mailing them?
2. What are the advantages of using a delivery truck system from the central stores to the hospitals? What are the disadvantages?
3. Could we reduce the max and min levels if the hospitals ordered monthly? What are the implications of doing this?
4. Now we are using a forced-ordering system. Would the max-min levels change if we moved to a standard system? How would the levels change?
5. We currently manage seven contraceptive items. What max-min system can we use if we add about 20 AIDS and STI drugs to our logistics system?
6. If the community-based volunteers change to a continuous review system, would the max-min levels change? How?

YOUR ASSIGNMENT

1. How did Noah Tall respond to the previous questions?

YOUR ANSWERS

YOUR ANSWERS

5. CONTRACEPTIVE STORAGE

YOUR ASSIGNMENT

Before you continue with your assignment, be certain you know the information in chapter 5 of *The Logistics Handbook.*

Memo # 10

To: Acme Chief
From: Noah Tall
Reference: Storage Conditions for Happy Babies

At the various facilities I visited, I noted a variety of storage conditions. In all cases, both good and bad storage practices were being followed. Rather than describe each of them, I am adding an attachment to this report, including photos of the supply cabinet at the Happy Babies clinic in Littleton, the storeroom at the Greenville Hospital, and the central stores in Center City. Please review these at your convenience.

After the visits, I sat down with Pharmacist Rocher and discussed what I had seen. He told me that he was concerned about maintaining product quality. In the past year, he said he had heard that sticky condoms were discovered in a rural clinic. He described the actions of the nurse, and I assured him that they had taken the appropriate action.

Pharmacist Rocher also mentioned that some inner boxes of Lo-Femenal arrived without any markings. We reviewed the actions they took and, again, I assured him that they were correct. Pharmacist Rocher has a good sense of what is appropriate action to take for quality assurance.

We discussed other quality issues, including a recent case when Depo-Provera® had been left in the sun at the airport for three days. We talked about what to do with this product, which he had kept in quarantine in his warehouse for the past two months.

I asked Pharmacist Rocher if "routine visual inspection" was part of their physical inventory. I defined the term. He said that it was not, and he asked me when these inspections should be conducted. I suggested some appropriate times for conducting a visual inspection, such as during a physical inventory. When I asked him how often he conducts a physical inventory, he said that they did this annually. We discussed other times to conduct a physical inventory. He assured me that this valuable information would be given to all staff immediately. We also discussed how visual inspection fits with other types of inspection.

YOUR ASSIGNMENT

1. What actions were appropriate for the sticky condoms?
2. What actions were appropriate for the unlabeled Lo-Femenal pills?
3. What actions were appropriate for the Depo-Provera® left in the sun?
4. Would Noah define "routine visual inspection" as walking around the storage area to look at the boxes? Why or why not?
5. When should routine visual inspections take place and how do they fit in with other inspections?
6. When should a physical inventory be taken, other than once a year?
7. Please review the attached photos and describe the good and bad storage practices.

YOUR ANSWERS

YOUR ANSWERS

PHOTO# 1 Central Stores

PHOTO# 2 Hospital Storeroom

PHOTO# 3 Clinic Shelves

Memo # 11

To: Acme Chief
From: Noah Tall
Reference: Storage Space at the Central Stores

Pharmacist Rocher mentioned his concern that storage space at the central stores may be insufficient to meet the future needs of Happy Babies. He asked me to help him determine if the current space for the contraceptive section is adequate. I told him that I would be happy to assist.

First, we measured the current space. It is 5 meters long and 3 meters wide, or 15 meters^2 of floor space.

Next, we estimated the number of each type of product they are currently offering. We estimated that the largest amount that would ever be stored, by product, are the following:

- 75,000 cycles of combined oral pills (currently Lo-Femenal)
- 20,000 cycles of progestin-only oral pills (currently Ovrette)
- 275,000 condoms (currently Blue-Gold condoms from USAID)
- 60,000 vials of Depo-Provera®
- 500 IUDs

This was based on current consumption, estimated future consumption, and the need to maintain a nine-month buffer stock on hand, given the lead time between Happy Babies and its supplier, primarily USAID, but now including UNFPA.

I explained that we would need the carton sizes to prepare our estimates. He gave me the following dimensions:

- Lo-Femenal—0.04 m3/carton of 1,200 cycles from USAID
- Ovrette—0.04 m3/carton of 1,200 cycles from USAID
- Condoms—0.11m3/carton of 6,000 pieces from USAID
- Depo-Provera®—0.14 m3/carton of 4,000 vials from UNFPA
- IUDs—0.7 m3/carton of 350 pieces from UNFPA

Using this information, we calculated the estimated total space required for storing and processing this level of products.

YOUR ASSIGNMENT

1. Does central stores have enough space to store this quantity of supplies? What is the total amount of floor space needed?

YOUR ANSWERS

6. CONTRACEPTIVE FORECASTING

YOUR ASSIGNMENT

Before proceeding, read chapter 6 of *The Logistics Handbook.*

Memo # 12

To: Acme Chief
From: Noah Tall
Reference: Forecasting for Happy Babies

Pharmacist Rocher and I discussed the short-term needs for Happy Babies. He began by noting that the purpose of the forecast was to estimate the number of users they would have during the next 12 months.

He said that they are concerned about the budget for the forecast, and have decided to order the full amount forecasted immediately. We discussed some of the disadvantages of placing the full order for a single shipment.

I asked him how he arrived at his forecasted quantities. He said he collected logistics, service statistics, and population data, and used all three data sources to prepare the final forecast. I asked him to describe the strengths and weaknesses of the data sources.

We spent only a little time talking about non-contraceptive products, because we focused on contraceptive products. He said he thought forecasts for non-contraceptives could be made in the same way as contraceptive products. I disagreed with him, and we discussed how these forecasts differ.

We also talked about forecasting for HIV/AIDS. We discussed the challenges of collecting data to make these types of forecasts. Pharmacist Rocher mentioned youth as an important target group, making these forecasts special, but he was unable to name any other groups that they would consider. I named several for him, and he recognized that he would need to include additional groups.

Finally, we outlined the process for forecasting. Pharmacist Rocher remembered seeing a list of steps in a book. He tried to recite the list in order. I was impressed that he remembered all of the steps, even if he needed to be reminded of the order. This is what he said:

- We must take into account our planned program changes. I plan to increase our information, education, and communication (IEC) campaigns in new ways that will attract new users.
- I have to draw a graph of past and current consumption.
- I should review my forecast often.
- I need to adjust the data for stockouts and percent reporting.
- From past consumption, I can extrapolate the future consumption.
- Each forecast must be reconciled against the others.
- Of course, I should collect as much data as I can from all sources.

YOUR ASSIGNMENT

1. Pharmacist Rocher's note on the purpose of forecasting does not seem correct. What was left out?
2. What are the disadvantages of placing the full order for a single shipment?
3. Name one strength and one weakness for each data source for forecasting.
4. Why did Noah disagree with Pharmacist Rocher when he said that forecasts for non-contraceptives could be made in the same way as contraceptive products?
5. What other target groups should Pharmacist Rocher consider in his HIV/AIDS forecasts? What makes them different from one another? What makes them different from family planning condom users?
6. What is the correct order of the steps Pharmacist Rocher mentioned?

YOUR ANSWERS

YOUR ANSWERS

YOUR ANSWERS

7. LOGISTICS SYSTEM ASSESSMENT

YOUR ASSIGNMENT

You have almost completed your assignment. Before you complete this last section, read chapter 7 in *The Logistics Handbook.*

Memo # 13

To: Acme Chief
From: Noah Tall
Reference: My initial assessment of Happy Babies

While writing my report for the visit to Happy Babies, I found my initial assessment. I realized that, while I knew something about logistics, I was just learning to be a good consultant. Happy Babies was a very different place then.

The first visit was very confusing. I remember taking a long time to write down what I thought was the purpose of the assessment visit. I am glad that the visit resulted in so many improvements, both for Happy Babies and myself.

My job was easier because some important people at Happy Babies showed their interest in making improvements. This is a quote from my original report:

In my initial assessment, I found the staff at Happy Babies to be very interested in logistics. There are several people at the central offices that want to see more done to improve the logistics system. Dr. Diallo, Dr. Lopez, Dr. Smith, and Dr. Chang all seem to be anxious to see the logistics system improved. I hope they can help us. I visited as many sites as possible, but I am having trouble gathering the information I need. There does not seem to be enough time.

I know now that I would have decided differently how to gather information about the system.

The following sample from my report shows how my consultant skills needed to be strengthened:

The list of questions I developed is not resulting in the answers I need. I rephrased the questions, but people do not always understand. For example, the storerooms at the warehouses are poorly organized. I told one of the hospital pharmacists that he should monitor the shelf life better and pay better attention to his 'maxes' and 'mins.' He did not seem to know what I was saying, and he got upset with me. When I tried to show him what to do, he refused to answer any additional questions. I have collected so much data, but I do not know how to organize it.

With my current consulting skills, this would never happen. And, with my knowledge of logistics, I could easily organize the data.

I also smile when I remember the challenges they had in completing forms at the clinic level. That was an important learning experience for the managers of Happy Babies and me. This is what I said:

I have spent a great deal of time with the clinic nurses and their forms. The forms are very difficult to fill out. Frequently, the nurses do not fill them. I have only seen a few forms, but

enough to know that the nurses' math skills are unsatisfactory. Their stock cards do not match what is on the shelves. I have tried to help them, but they do not have time to listen. Their reports have a lot of mistakes. It would be better if they could easily check their math on the forms, but I do not have experience designing forms. I wonder if they are telling me the truth about what is going on. Their answers definitely do not match what I see on their shelves.

I could have written a better initial report if I had used some logistics indicators to describe these problems. For example, I could have said, "Only 60 percent of clinic reports were received by the hospital within five days of the beginning of the following period." I could have used or created other indicators.

Then, I remembered some of the problems at the time. The nurses were discouraged with their jobs. There was a shortage of spare parts for the hospital trucks; supplies were not being delivered. Many community-based volunteers were unable to come to the clinics. Some clinic nurses were able to borrow a motorcycle or get someone in their village to drive them to the hospital to pick up supplies, but the transportation system was not working well. I am glad I included this important information in my report.

The ordering system was very confusing. This is how I described it:

At some of the clinics, the nurses told me that they expect the pharmacist at the hospital to decide the quantity of supplies to send them. But, when I talked to the pharmacist, she told me she expected the clinics to send their reports with their request for supplies. It is not surprising that many clinics have stockouts. When I asked the clinics and hospitals how much stock they should keep, they said they should have enough to last an entire year because purchases are made annually. I was surprised when I heard this, but now I understand why some clinics have so much stock and some have none at all. Volunteers report that they do not understand how or why they receive the quantities they are issued. In talking to senior Happy Babies managers, I now know they have no system for inventory control.

Some of the problems I cleared up immediately with a little explanation. Some problems required an improved system design and training. As before, if I had used some logistics indicators to describe this situation, I could have helped the managers understand the strengths and weaknesses of their system more clearly.

At the time of the visit, the hospital storerooms were not much better prepared in logistics than the clinics. This is what I said about them at the time:

The hospital storerooms are no better than the clinics. Storage conditions are poor. The storerooms have evidence of rodents, and in one clinic there are old soda bottles lying around. Some of the products are expired, and these are mixed in with the good products. The rooms are dirty, and few items are labeled. Unfortunately, none of the pharmacists have been trained in logistics. They all had some training in how to complete forms, but that's all. However, they do a good job managing the reports. They are able to attach reports from all clinics to their report.

I remember trying to list the problems with the system. Then, I remember writing the recommendations and preparing the implementation plan. I am glad that the managers at Happy Babies were interested in adopting my recommendations, with some modifications that helped my plan fit their scheduling and funding cycles.

While there are still some logistics concerns for Happy Babies, I feel this visit demonstrates that Happy Babies continues to serve its customers well.

YOUR ASSIGNMENT

1. Why did Noah assess the logistics system?
2. How could Noah have eased his workload?
3. What consulting skills needed improvement during the initial visit?
4. How could Noah have organized his data better?
5. How could Noah have improved his approach when he interviewed the nurses?
6. What is one indicator Noah could have used to describe the problems he encountered with the forms? What steps could he take to solve the problems with the forms?
7. Was Noah's memory about the shortage of spare parts and transportation challenges important? How?
8. Noah noted that for the problems he encountered, there were two solutions, one of them short-term. What was the problem and how was he able to easily correct it? What was the second problem that needed a long-term solution?
9. What is one indicator Noah could have used to describe the inventory control problems he encountered?
10. How could the hospital pharmacists improve storeroom conditions?
11. What were the major problems Noah identified for Happy Babies?
12. For the two most important problems, make recommendations. Be sure to include all the elements of a proper recommendation (define or state the problem, state the consequences of the problem, etc.).
13. Create an implementation plan to correct the problem that staff cannot complete the forms, and the forms may be inappropriately designed. Begin by writing the problem statement and a recommendation. Be sure to include all of the elements of a proper implementation plan (list the activity to be undertaken, give an indicator/measurement of completion/success, etc.).
14. Describe Noah's role in providing assistance. What skills did he use? What could Noah have done differently in this assessment?

YOUR ANSWERS

YOUR ANSWERS

What happened to Noah?

Memo #: 14

To: Acme Chief
From: Noah Tall
Reference: My "disappearance"

I just returned to the Center City Lodge. The staff there were very concerned because you had reported me missing. After many hours of long, hard work in Neighboria, I spent the weekend in the home village of Dr. Lead. Her village sits on the edge of Lake Green, which Neighboria shares with the country Kaamanland. Dr. Lead was right when she told me that the Friendly Inn would offer the perfect opportunity to analyze the Happy Babies NGO logistics system while relaxing. I am sorry to have alarmed you.

I understand that you have printouts of my earlier memos. The notes below should provide the missing details from those memos.

YOUR ASSIGNMENT

As you can see from the memo above, Noah has contacted us. I knew that it was foolish to worry. Noah is, however, one of Acme's very best logisticians, and I am happy that he is well.

Please compare your answers to Noah's answers. If you have any questions, email them to Noah at the following address: askdeliver@jsi.com. I am certain that you have done well on these exercises. I look forward to being able to send you on your own assignments. Until then, remember,

"No product? No program."

ANSWERS

Answers for Memo #1

There are no questions for Memo #1.

Answers for Memo #2

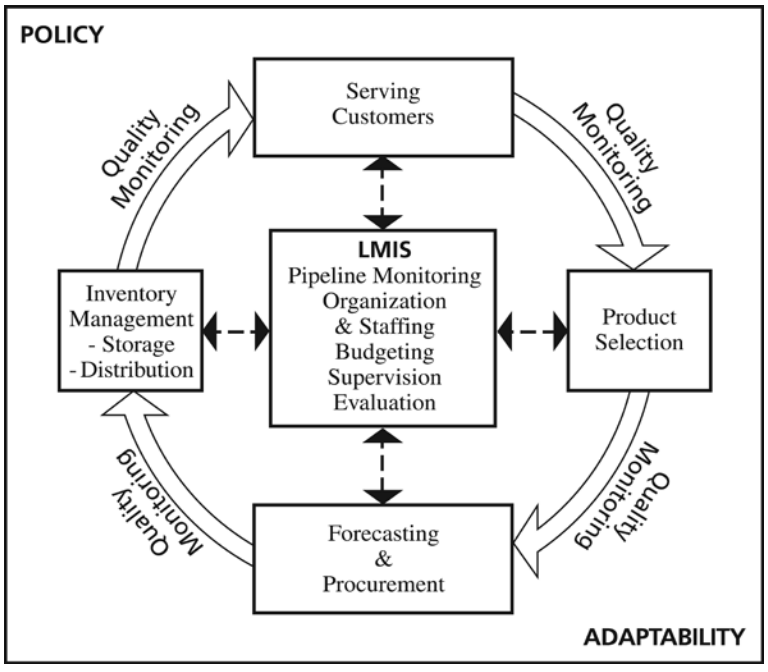
1.
- Right goods—No
- Right quantity—No
- Right condition or quality—No
- Right place—No
- Right time—No
- Right cost—No

2.
- Wrong goods—Lo-Ovral was received instead of Ovrette. The Lo-Ovral should be returned and an order should be placed for Ovrette.
- Wrong quantity—There are too many pregnancy test kits. The quantity to be ordered should be checked.
- Wrong condition or quality—Expired testing kit items are unusable and, therefore, the wrong quality. New products should be ordered.
- Wrong place—Gloves are not available where they are needed. The gloves should be redistributed.
- Wrong time—Gloves were not available when they were needed. If they are in the right place, the problem of the wrong time will be eliminated.
- Wrong cost—Cost may not be a problem. Unneeded pregnancy test kits should be returned, and the funds used to buy additional STD testing kits.

Answers for Memo #3

1. The pharmacist mentioned forecasting, quality control, inventory control, and pipeline monitoring. He also mentioned budgeting. The influence of adaptability was mentioned.

The following were not mentioned: serving customers, product selection, and procurement, staffing, supervision, and evaluation. Perhaps most important, management of information was not discussed. The influence of policy was not discussed.



2. Noah drew the logistics cycle.

One example of how the new policy will affect the logistics system is the need for the logistics system to respond to this policy by selecting the appropriate condom (or choosing the same condom distributed for other reasons); forecasting the demand this change in policy would create; and then purchasing, storing, and distributing the additional condoms to the new customer group.

Answers for Memo #4

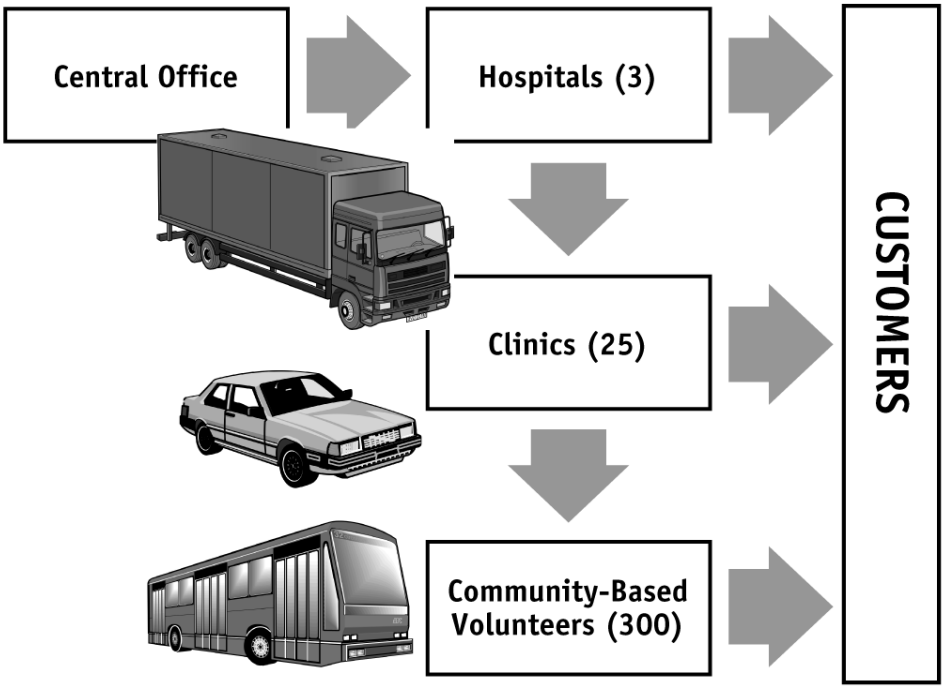
1. The term "customer" is used in business. As health care reform takes place in many programs, it is becoming more important for us to think of our patients as the consumers of our services and, therefore, our customers.

2. The lead times are as follows:

- **a.** Central office to hospitals: It takes 10 days for reports to be filled out and sent by mail to the central office. In this case, we would add 10 days to the lead-time. It takes Pharmacist Rocher about five days to review the report and pack up the supplies, so another five days are added to the lead-time. It takes about three days for the supplies to reach the hospital, so another three days are added. (For the hospital in Center City, the supplies should arrive in less than one day, because the hospital and central offices are located in the same building. However, we add three days to the lead-time because we want to consider the hospital that is farthest away as the one to determine the lead-time.) After received, the supplies are not "ready for use" until they are placed on the shelves. It may take the hospital pharmacist as much as two days to make the supplies ready, so another two days are added to the lead-time. Therefore, the lead-time from the central office to the hospitals is 10 + 5 + 3 + 2= 20 days.
- **b.** Hospitals to clinics: Because the nurses bring their reports with them, only the transport time from the clinic to the hospital is added to the lead-time. This is probably only a few hours. The order is reviewed and the need is calculated immediately. In some cases, the nurses return the same day and put the supplies back on the shelves for use. So the lead time could be as short as one day. But in most cases, the lead-time is two days, because many nurses spend the night in town. Therefore, the lead-time is about two days from the hospitals to the clinics.
- **c.** Clinics to community-based volunteers: The lead-time is, at most, one day, because the volunteers can probably complete the report, visit the clinic, pick up their supplies, and return home. Most volunteer programs use a satchel or small box for storage and use few forms for recording stock. This means that the stock they receive is immediately available for use. Therefore, the lead-time is about one day.

3. The definition did not include the transportation links.

4. The pipeline would look like the following:



5. There are 328 SDPs because customers can receive supplies at any of the 300 community-based volunteer, 25 clinics, or three hospitals (total 328). None of these is strictly a warehouse.

6. The answers are the following:

- **a.** This is a pull system because the hospitals determine how much they need. Pharmacist Rocher reviews the order, but he usually sends them what they request.
- **b.** This is a push system, because the hospital decides how much the clinics need. The clinics still must turn in reports of their activity, because the hospitals use this information to make their decisions.
- **c.** This is a pull system, because the community-based volunteers decide how much they need.
- **d.** This should be a pull system—the customer decides how much they need for contraceptives. On the other hand, if this were for a medication (for example, an antibiotic), it would be a push system. The doctor would provide a quantity of drugs necessary to treat a particular illness.

7. The answers are the following:
- **a.** distribute—issue
- **b.** distribute—dispense
- **c.** are distributed—are issued
- **d.** distributes—issues
- **e.** distributed—dispensed
- **f.** are distributed—are issued
- **g.** distributes—issues
- **h.** are distributed—are dispensed

8. The Happy Babies logistics system is integrated, because they deliver supplies across several programs, including family planning, EPI/vaccines, and reproductive health.

Answers for Memo # 5

1. The purpose of collecting information is to make decisions.

2. Decisions that can be made using data include—
- **a.** Determine how long current supplies will last and decide if an order is needed now.
- **b.** Determine where supplies are located within the pipeline and decide how to move them from higher to lower levels.
- **c.** Analyze consumption patterns and decide how to allocate resources.
- **d.** Analyze the level of losses from the system and decide if action is needed.
- **e.** Analyze the pipeline for smooth flow and decide how to eliminate bottlenecks.
- **f.** Analyze expiration of supplies and decide how to maximize their useful life (shelf life).

3. Stock on hand, losses and adjustments, and rate of consumption.

4. By form:
- **a.** This is a consumption record called a "tick sheet." It contains dispensed-to-user data, so it contains all of the information needed for a consumption record. A row for clients referred (for sterilization, for example) might be helpful for clinical, not logistics, reasons.
- **b.** This is a stockkeeping record called a "bin card" or "stock card" or it may be called an "inventory control card." It contains the stock on hand and a column for losses/adjustments, so it contains all of the information needed for a stockkeeping record. (The rate of consumption might also be included to help calculate the months of supply

on hand.) A reference number (to a specific transaction record) might be helpful. A signature column would be useful if more than one person is in charge of the stores.

c. This is a transaction record called a "requisition and issue voucher." It does not and need not, contain any essential data. However, by reporting current stock on hand, the issuer might be better able to judge if the quantity ordered is reasonable. If the date was added for the date received, the lead time could be calculated from the form.

d. This is a report of the "simple report" type. It does not include losses/adjustments, as it should, because reports should include all three essential data items. The form could also be self-balancing if losses/adjustments were included. Titles, such as "Inventory Control Card," should be added to each form for easy identification.

5. It is preferable for the nurse to send in one report summarizing the volunteers' work and one report for the clinic. This will enable the hospital supervisor to determine if the clinic has sufficient stock or not. In a combined report, the clinic may be out of stock while the volunteers may be storing all of the stock. If possible, a separate report should also be prepared for each volunteer, but, as this may be too time consuming, an aggregate of all volunteers should be adequate.

6. This feedback report informs lower-level personnel about their performance. For some types of feedback reports, she should correct errors in her work. In other cases, like the one shown, she can compare her performance to that of other clinics. This report, for example, shows that her performance during the January–March quarter is comparable to that of the other clinics reporting to Southland. Her most recent month's consumption exceeds that of other clinics. The rate of increase from January to March exceeds all clinics reporting to Southland. She should be congratulated and encouraged to continue her success.

Answers for Memo #6

1. Corrections during on-the-job training:

What Nurse Henderson said:	What Pharmacist Rocher said to correct her:
a. The purpose of assessing stock status is to know when to order.	The purpose of assessing stock status is to know how long current supplies will last.
b. To assess stock status, I need to know how much of each product I received this month and how much of each product I give to clients each month.	To assess stock status, you need to know your current stock on hand and your average monthly consumption.
c. I can get all of the information I need by looking at the stock cards.	To get the stock on hand, you will need to look at your stock cards. To get your consumption, you will have to look at your consumption records. Because this is all noted in your monthly report, you can also use the monthly reports.
d. To calculate the stock status, I divide the amount of stock I received by the amount of stock I dispensed to clients.	To calculate the stock status, divide the current stock on hand by the average monthly consumption.
e. I would use all of the data I have.	You would use the data from the most recent six months if you already have that many months of data.
f. If the trend is an increasing one, I order twice as much, and if the trend is a decreasing one, I order half as much.	If you see an increase or decrease over an entire six-month period, calculate the AMC using only the most recent three months. By dividing the stock on hand by the average monthly consumption, the quantity to be ordered will increase or decrease, as appropriate.

2. Stock status assessments:

Lo-Femenal				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000	115	28	(28 ÷1) = 28	4.1
December 31, 2000	83	32	((28+32) ÷2) =30	2.8
January 31, 2001	48	35	((28+32+35)÷3)=32	1.5
February 28, 2001	110	38	33	3.3
March 31, 2001	64	46	36	1.8
April 30, 2001	24	51	45 (use 3-month average)	0.5 (use 3-month average)

Ovrette				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000	576	12	12	48
December 31, 2000	562	14	13	43.2
January 31, 2001	552	10	12	46
February 28, 2001	540	12	12	45
March 31, 2001	531	9	11	48.3
April 30, 2001	517	14	12	43.1 (use 6-month average)

Condoms				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000	920	192	192	4.8
December 31, 2000	720	200	196	3.7
January 31, 2001	500	220	204	2.5
February 28, 2001	496	204	204	2.4
March 31, 2001	316	180	199	1.6
April 30, 2001	172	144	190	0.9 (use 6-month average)

Depo-Provera®				
Date	**Stock on hand**	**Consumption this month**	**Average monthly consumption**	**Months of stock on hand**
November 30, 2000	105	34	34	3.1
December 31, 2000	169	36	35	4.8
January 31, 2001	129	40	37	3.5
February 28, 2001	187	42	38	4.9
March 31, 2001	143	44	39	3.7
April 30, 2001	96	47	44	2.2 (use 3-month average)

Answers for Memo #7

1.

Level	Stock on Hand	Average Monthly Consumption	No. of Months of Stock on Hand
Volunteers	**3,900**	**2,373**	**1.6**
Clinics	**5,900**	**1,812**	**3.3**
Hospital Storeroom	**12,300**	**4,509**	**2.7**
Entire Area	**22,100**	**4,509**	**4.9**

For volunteers, the calculation is the total stock on hand for volunteers, divided by the AMC for volunteers. Because there is no trend in the data, all six months are used. Therefore, the formula is 3,900 ÷ 2,373 = 1.64, which is rounded to 1.6 months of stock on hand.

For clinics, there is a rising trend, so the calculation is the total stock on hand for clinics divided by the AMC for clinics, for the past three months only. Therefore, the formula is 5,900 ÷ 1,812 = 3.26, which is rounded to 3.3 months of stock. (If you incorrectly used six months of data, the formula would be 5,900 ÷ 1,732 = 3.4 months of stock. In this case, the difference of 0.1 months of stock is not significant.)

For the hospital storeroom, the correct answer is to divide stock on hand for the storeroom by the AMC for all of the facilities it serves. Because the hospital storeroom serves all of the clinics and the volunteers, including its own clinic, the formula is 12,300 ÷ 4,509 = 2.73, which is rounded to 2.7 months of stock. (You may incorrectly have used the issues data instead of the consumption data. In this case, the formula would use the last six months of issues in the absence of a trend and would be 12,300 ÷ 5,517 = 2.23, which would be rounded to 2.2 months of stock. This difference of half a month's stock could result in an unnecessary panic. A second incorrect answer would be to divide the stock on hand in the storeroom by only the AMC for the hospital clinic. In this case, the formula would be 12,300 ÷ 406 = 30.3 months of stock. This is incorrect because the storeroom must be able to supply not only the hospital clinic, but also the other clinics and the volunteers.)

For the entire area, the correct answer is to divide the stock on hand of all facilities by the AMC for all facilities. In this case, the formula would be 22,100 ÷ 4,509 = 4.90, which would be rounded to 4.9 months of stock on hand. (As with the storeroom, it would be incorrect to use the issues data, because we want to analyze the customer demand for condoms.)

2.

Level	Order Interval	Situation: Understocked/ Adequately Stocked/ Overstocked
Volunteers	Monthly	Adequately stocked
Clinics	Monthly	Overstocked
Hospital Storerooms	Quarterly	Understocked*
Entire Area	Monthly/Quarterly	Understocked††

* This would be especially true if you used the issues data, which would suggest that an urgent order might be needed.

†† If volunteers and clinics order monthly and hospitals quarterly, they should have 1 + 1 + 3 months of stock to last until the next order, at a minimum. Therefore 4.9 months may be a little low.

(In chapter 4 of the handbook, the discussion of inventory control systems discusses the need to keep a buffer or safety stock.)

3. If you only know the hospital's stock level or the entire area's stock level, it is preferable to calculate only the hospital's stock level, because the stock assessment for the entire area does not tell you the locations of the stock. For this example, perhaps too much stock is being kept at the clinics and more should be kept at the hospital. We would not know this if we could not distinguish between the clinics and the hospital. At least with the hospital-only calculation, we could tell how well that facility is doing. In the worst case, the area assessment may look good, but there may be a stockout at one level that would be masked by using the area-wide information.

Answers for Memo # 8

1. An inventory control system should provide information about when to order, how much to order, and how to maintain an appropriate stock level of all products to avoid shortages and oversupply.

2. The table should be completed as follows:

Statement	Term
a. Our goal is to have neither too much nor too little.	**Max-min inventory control system**
b. Every month or quarter, we review our stock, determine how much stock we have used during the period, and place an order if necessary.	**Review period stock**
c. If we are ever really low, and it is not the end of the month or quarter, an urgent order is placed.	**Emergency order point**
d. When we review our stock levels, we are usually just about at the point where an order is needed.	**Minimum**
e. We make our orders small enough so we do not risk having expired products, or too many products on hand.	**Maximum**
f. Our system is designed to account for most unexpected circumstances.	**Safety stock**
g. Our system is designed to make sure that we do not run out of stock while we are waiting for our order to arrive.	**Lead time stock**

AMC = 84 ÷ 6 = 14
AMC x 3 = 42
Quantity to order = 42 - 21 - 0 = 21

4.

a. For the volunteer, we start by setting the minimum. To do this we need the lead-time stock and the buffer stock. From this description, the lead-time is one day. We have no specific information about the buffer stock other than that consumption seems to be increasing rapidly. We can, however, set the buffer stock level using the review period, which we know is monthly because the volunteer reports monthly. The buffer stock should, therefore, be at least half a month, based on our general guideline. The minimum would then be at least half a month, plus one day. Because we work in numbers of months and because it is difficult to make calculations based on partial months, the minimum should be set at one month. The maximum is at least the min—one month—plus the review period of one month. The max, therefore, would be two months. The emergency order point would be one day, which is used only when there is genuine possibility of a stockout.

b. For the clinic, the lead-time is somewhere between 10 days (3 + 7) or 23 days (3 + 20). If the nurses could carry the supplies in their own vehicles, the lead-time could be as short as one day. Where storage space is available and conditions are good, and where funds are available for supplies, we recommend using the longest lead-time, in this case, 23 days. In the absence of any additional information, the buffer stock should be at least half of the review period of one month, in this case, 15 days. The total lead-time and buffer stock would give us a minimum of 38 days. We could state this as one month or two months. This requires individual judgement, but we recommend a minimum of two months. Because, while the lead-time estimate may be high, the buffer stock estimate may seem low. After all, this is exactly what the buffer stock should help us avoid—stocking out when transportation is unreliable. Therefore, the minimum would be two months. The maximum would be three months (two months minimum + one month review period.) The emergency order point would be three days.

c. For the hospital, the lead-time is about 20 days (10 + 5 + 3 + 2 = 20). The buffer stock would be about 45 days (half of the quarterly review period of 90 days). The total is 65 days. In this case, the system appears to be dependable (there are only three hospitals, one next to the central store, and this makes deliveries to the other two hospitals reliable when good, plentiful transport is available). We recommend setting the minimum to two months. The maximum would be five months (2 + 3).

5. The advantages of a max-min inventory control system are—

- avoids overstocking
- avoids understocking and stockouts
- minimizes wastage of product
- simplifies inventory control decision making
- ensures consistent stock levels to aid in forecasting
- simplifies supervision in a system when everyone uses the same decision rules
- simplifies training of storekeepers to follow one rule
- reduces work for storekeepers with only one, simple rule to follow
- increases confidence of storekeepers and service providers that stockouts will not occur, minimizing the likelihood that some facilities will hoard (over order) supplies.

Answers for Memo # 9

1. If hospitals fax in their reports, the lead time would be reduced from 20 days to only 10 days. The buffer stock would remain at 45 days. The total is 55 days, which is similar to the two-month minimum we recommended when the forms were mailed in. We can conclude that while faxing would be more efficient, it would not greatly affect the min and max levels.

2. If there were a delivery truck system from the central stores to the hospitals, the lead time would be reduced from 20 days to zero days. The min would be equal to the safety stock of 45 days. Because we were told there is reliable transportation available at the central level, we might be able to reduce the safety stock to one month and the minimum to one month. The max would be four months. This depends largely on your confidence in the system—the more confident you are that deliveries will be made on time, and that the number of other uncertainties will be reduced, the more comfortable you might be with a one-month safety stock. If you were still uncertain of your system, particularly if the program is still rapidly expanding, the more cautious two-month safety stock would be recommended.

3. If hospitals order monthly, the min and max would be reduced. The lead-time would still be 20 days, but the buffer stock would be reduced from 45 to 15 days, for a minimum of 35 days. We could, under ideal conditions, reduce this to one month. The maximum would be two months, because the review period would be one. The implication is that you would collect a report monthly (more paperwork). You would also need to calculate the order quantity monthly and have good transportation that was always available. Time spent managing orders/issues/receipts would also increase.

4. If there was a move to a standard system, max-min levels would increase at all levels by one review period, because the review period stock is added to the buffer stock. In this case, volunteers would have a minimum of two months, because the formula would be a lead-time of one day plus a buffer of 15 days, plus 30 days for the review period, or at least 46 days. The maximum would be three months. At the clinic level, the min would increase by one month, to three months, and the maximum would be four months. At the hospital level, the minimum would increase by three months, as would the max. The result would be a minimum of five months and a maximum of eight months.

5. When managing the 27 items, a forced-ordering system would work because all 27 items could be ordered each time an order is placed. This may, however, put a strain on the workers, because 27 separate calcula-

tions must be made to place the order. It may not make sense to order very small quantities that you need to replace. If, however, you move to a continuous review system, you would probably find that you would place 27 separate orders, which means you need good delivery of orders (fax or mail) and good, reliable transportation. A standard system would work well, as long as the items have a long shelf life. But, with a standard system, the buffer stocks are higher.

6. The formulas for a continuous review system are the same as for a forced-ordering system, so the max-min levels would not change. What does change is that the volunteer might come to the clinic monthly, some less often, and some more often. Volunteers would still need to report in at least monthly if the reports are kept at the clinic.

Answers for Memo # 10

1. The sticky condoms should be disposed of properly. The unaffected condoms could be distributed as usual, if it appears the other packages were not affected and the packages were still sealed.

2. The unlabeled inner boxes should be labeled, even with a marker, using the information on the outside boxes or from the cycles. The information should include the product name, manufacturer, and date of expiration. In some systems, the lot number should also be written.

3. Any product stored outside for an undetermined time should probably be discarded. If shaking the vials produce the proper milky appearance of the product, and if the product was sealed in its own packaging (i.e., inner and outer boxes), it may be distributed. If the quantity of products is very large, it may be sampled for lab testing, assuming there is also sufficient shelf life remaining. Disposal is the best option.

4. Noah would not have defined routine visual inspection as "walking around the storage area looking at the boxes." He would also have mentioned looking at individual products (e.g., condoms) for obvious problems of product quality (e.g., discolored or smelly condoms).

5. Routine visual inspection should take place when you receive products from the manufacturer, your warehouse or clinic receives supplies, you conduct a physical inventory, you receive complaints about products from lower levels or customers, your supplies are about to expire, or your supplies show signs of damage. Routine visual inspection "fits in" with other types

of inspection, such as physical inventory, as a quick check on products before they are stored or shipped to another level or given to a customer. Products that do not pass your inspection should not be sent on or dispensed.

6. Physical inventory should be conducted when products are received, records do not agree with the quantities on the shelf, expiration dates are near, supplies show signs of damage, you receive complaints from lower levels, and you suspect theft or mishandling.

7. Some of the positive and negative storage conditions found in the *central stores* photograph include the following:

Poor
- boxes stacked too high
- boxes improperly stacked
- no space between stacks
- stacks against wall
- some items not palletized
- no markings showing
- open to rain and sun
- no insulation in roof
- items co-mingled

Good
- ventilation
- pallets
- looks like a solidly built building with concrete floor
- well lit
- looks clean (floor)
- looks spacious
- fire extinguisher

Some of the positive and negative storage conditions found in the *hospital storeroom* photograph include the following:

Poor
- not well organized
- boxes look like they could be up against the wall
- chemical fluids could be stored in the same place as medical supplies
- boxes in corner stacked so high they could fall

Good
- products seem to be labeled
- the fan could be used for ventilation
- the box on the ladder is not on the floor
- one of the stacks of cases are facing the same way

Some of the positive and negative storage conditions found with the *clinic* shelves photograph include the following:

Poor
- not all boxes labeled with expiration dates
- pesticides stored with the contraceptives
- other materials mixed with the contraceptives
- not following FEFO, pills to expire last on top
- roach droppings seen on one of the boxes

Good
- secure shelves
- looks clean
- some boxes labeled with expiration dates
- steel cabinet protects against termites

Answers for Memo # 11

Item	Units	Cartons (÷ number of units/carton)	Volume (x m^3/carton)	Maximum Height (÷2.5 m max)	Handling Space (x 2)
Lo-Femenal	75,000	62.50	2.50	1.00	2.00
Ovrette	20,000	16.67	0.67	0.27	0.54
Condom	275,000	45.83	5.04	2.02	4.04
Depo-Provera®	60,000	15.00	2.10	0.84	1.68
IUD	500	1.43	1.00	0.40	0.80
				Total:	9.06

- Therefore, the needed space for the FP section of the stores would be 9.06 m^2 and there are 15m^2 of space available. The current space should be adequate for the near-future needs of Happy Babies for storing FP products.

Answers for Memo # 12

1. The quantities of each product that will be used by these users is important, not just the number of users.

2. The disadvantages are that the manufacturing, shipping, and delivery for a single, large shipment may not be best for the manufacturer. Another is that the pipeline may be overstocked at the central level or at other levels. The products may expire before they reach the users.

3. Strengths and weaknesses:

a. Strengths

- Logistics data, when based on complete dispensed-to-user data and free of stockouts, are an excellent reflection of the previous years' consumption. Past performance is a strong baseline from which to project future performance.
- Service statistics often receive strong support from program managers and staff as a measure of service impact. Consequently, service statistics forecasts may receive more careful attention from service providers.
- Demographic data, when based on rigorous surveying methods, provides a good snapshot of current practices.

b. Weaknesses

- Logistics data, when dispensed-to-user information is not available, means using issues data. Issues data can result in an overestimate or underestimate of actual consumption. Reporting may be incomplete or delayed due to a lack of all reports, missing reports, or stockouts.
- Service statistics forecasts, which count either as visits or customers, assume a standard dispensing protocol that may not be realistic. Service statistics are often poorly defined, creating difficulty in converting the number of visits to the quantities dispensed.
- Demographic data are based on surveys and censuses that may be out of date and are always months, if not years, old by the time they are available. Adjusting these data can be difficult. Converting the number of users to the quantities they will need is based on ill-defined couple-years of protection (CYP) factors.

4. Forecasts for non-contraceptives can be very different from forecasts for contraceptives for some of the following reasons:

a. Because drugs are rarely in full supply, there are often large numbers of stockouts that are difficult to predict. Because the supply is limited, the consumption is also limited, so a forecast based on past usage will not reflect real customer needs.

b. Because drugs may have more than one use, unlike contraceptives, forecasts must take into account the multiple uses of each drug and the ability of one drug to substitute for another, especially antibiotics.

c. Drugs generally have shorter shelf lives than contraceptives and it may be more difficult to order the needed amount and ensure they will be dispensed to customers before they expire.

d. Because drugs are normally not donated, government budgets may limit the quantity that is ultimately purchased. If future usage is limited to available funding, the forecast must be adjusted to account for this limitation.

e. Some drugs require special storage, such as cold storage, while contraceptives usually do not. The forecast must be adjusted if the available cold storage space is very limited.

f. Contraceptive usage rates are steadier than drug usage rates, which may fluctuate greatly due to factors such as epidemics. It is more difficult, though not impossible, to forecast needs when usage fluctuates greatly.

5. Commercial sex workers (CSW or sex workers), the military, men who have sex with men (MSM), injection drug users (IDU), and students should be considered. Unlike contraceptives for family planning, where targets are women who are expected to participate at a fairly steady rate in acts requiring a condom (the CYP factor for condoms suggests two times per week), condom use for the other groups may vary widely. For example, sex workers will need condoms more often (up to 10 sex acts or more per day) than students.

6. The correct order is—

a. "Of course, I should collect as much data as I can from all sources."

b. "I need to adjust the data for stockouts and percent reporting."

c. "I need to draw a graph of past and current consumption."

d. "From past consumption, I can extrapolate the future consumption."

e. "We must take into account our planned program changes. We plan to increase our IEC campaigns in new ways that will attract new users."

f. "Each forecast must be reconciled against the others."

g. "I should review my forecast often."

Answers for Memo # 13

1. Noah's logistics system assessment determined the system's strengths and weaknesses, presented the results of the assessment to the senior managers and policymakers of Happy Babies, presented his recommendations to reduce or eliminate the weaknesses, and proposed a plan to implement the recommendations.

2. To reduce his workload, he could have asked the interested doctors to help him narrow the scope of the assessment by suggesting focus areas for the visit.

3. Noah should have avoided accusing the pharmacist of doing something wrong. He should also have asked all his questions before trying to provide instruction on the correct way to complete a task. Noah should not use technical terms that might not be understood.

4. To organize the data better, Noah should use the composite indicators to help him divide the information into categories.

5. Rather than trying to determine if the nurses are lying, he should ask them to show him how they are completing the forms. If they are not completing the forms, he should ask them why.

6. Indicators that Noah could have used would be—

- **a.** Percentage of forms completed on time (already mentioned).
- **b.** Percentage of forms that are mathematically correct.
- **c.** Percentage of reports where reported stock on hand matches actual stock on hand.

To ensure that his suppositions are correct, Noah should conduct a physical inventory with the nurse and call her attention to any discrepancies, as they arise. It is unlikely that all the forms are either missing or incorrect.

7. Yes, the problem of transport is an important issue. Without adequate transport, the pipeline will not flow.

8. The short-term solution would be to clarify if the system is a pull system or a push system. This is probably a question of communication. The second problem is that the inventory control system does not seem to work well. A 12-month maximum at all facilities would be unrealistic for this system.

9. Indicators Noah could have used to describe problems in inventory control could include—
- **a.** Percentage of clinics understocked/adequately stocked/overstocked.
- **b.** Percentage of hospitals understocked/adequately stocked/overstocked.
- **c.** Number and duration of stockouts at clinics.

10. The pharmacists should follow the storage guidelines.
- **a.** Clean storerooms (especially for the removal of any food), and rearrange the products according to expiration date (FEFO).
- **b.** Place expired products in another area.
- **c.** Open and check unlabeled items for labels on inner boxes.
- **d.** Use cats or poisons to eliminate the rodents. (A better solution would be to provide better security for the storeroom, although it is difficult to secure every opening.)

11. The major problems for Happy Babies are—
- **a.** Unclear guidance on push/pull.
- **b.** Lack of an inventory control system.
- **c.** Lack of training for nurses to complete the forms (or the forms must be improved to make them easier to complete).
- **d.** Substandard storage conditions, especially at the hospitals.
- **e.** Inadequate general logistics training for hospital pharmacists.

12. Some sample recommendations:

Warehousing Procedures

Problem:

Storage conditions throughout the Happy Babies logistics system are inadequate for ensuring the quality of contraceptive supplies, resulting in wastage due to deteriorated, damaged, or stolen products.

Recommendations:

- **a.** As soon as possible, Chief Pharmacist Rocher, should ask for technical assistance to draft a set of storage guidelines for dissemination to all storage facilities, and, for the long-term, incorporate these guidelines into training for all future pharmacists and clinic staff.
- **b.** Happy Babies staff should survey storage conditions at all facilities to determine the need for shelving and storage space or storage repairs, at all levels.

Human Resources

Problem:
There is an adequate number of staff to manage the logistics activities. However, none of the staff is trained to perform their logistics responsibilities, namely, recording and reporting of LMIS data.

Recommendation:
Happy Babies should seek funding and technical assistance to review current forms and reporting procedures. They should develop a standard logistics procedure manual to be followed by all staff with assigned responsibilities for LMIS data collection and other logistics activities. Following the development of the manual, in-service training in logistics should be planned and implemented for all appropriate staff throughout the system, including supervisors and managers.

Transportation

Problem:
Transport between hospitals and clinics are unreliable and, in some cases, the lack of spare parts for the trucks has caused clinics to run short of supplies.

Recommendation:
During the coming six months, Happy Babies should perform a cost analysis for routine maintenance and spares to be purchased in advance to ensure timely and adequate delivery of contraceptives at all levels. A budget should be prepared to cover the transport expenses. If needed, technical assistance from a donor should be requested to help complete the cost analysis and budget preparation activities.

13. Implementation Strategy
Example: Human Resources

Problem:
There is an adequate number of staff to manage the logistics activities. However, none of the staff is trained to perform their logistics responsibilities, namely, recording and reporting of LMIS data.

Recommendation:
Happy Babies should seek funding and technical assistance to review current forms and reporting procedures. They should develop a standard logistics procedure manual to be followed by all staff with assigned responsibilities for LMIS data collection and other logistics activities. Following the development of the manual, in-service training in logistics should be planned and implemented for all appropriate staff throughout the system, including supervisors and managers.

Implementation Strategy:

Activity	Responsible Parties	Proposed Dates	Resources Required
1. Present logistics system development workshop.	Happy Babies, donors, outside logistics consultant	January	Funding for workshop and technical assistance
2. Develop draft forms and procedures manual.	Happy Babies, donor, outside logistics consultant	February–March	Funding for technical assistance
3. Assess training needs, identify potential trainers, and develop training strategy.	Happy Babies, outside logistics consultant	February	Funding for technical assistance
4. Present and finalize forms and procedures manual.	Happy Babies, donor, outside logistics consultant	March	Funding for technical assistance
5. Print forms and manual.	Happy Babies	April	Funding for printing costs
6. Select and train trainers, and develop training curricula and materials.	Happy Babies, training team, outside logistics consultant	April-May	Funding for TOT workshops, and printing of curricula and materials
7. Train and implement system in selected (sample) hospital and its clinics.	Training team, outside logistics consultant	June	Funding for workshops and trainer costs; funding for technical assistance; workshop venues
8. Evaluate training and revisions, as required.	Training team, outside logistics consultants	November	Funding for training team, per-diem and transportation, technical assistance
9. Implement training and system for the other hospitals and clinics.	Training team	December	Funding for workshops and trainer costs, workshop venue.
10. Evaluate training and system impact.	Training team, outside logistics consultants	May (next calendar year)	Funding for training team and per-diem, and transport and technical assistance

14. Noah made some good decisions:

- Used his technical skills in logistics to make appropriate recommendations for implementing changes to the Happy Babies NGO logistics system.
- Did a good job collecting data at the service delivery points in storage, LMIS, and inventory control.

Noah needed to improve some areas:

- Did not use indicators that might have improved his ability to demonstrate the scope of the problems he was describing.
- Did not communicate appropriately with one of the hospital pharmacists, resulting in ineffective data gathering.
- While aware of stakeholders at the central level who were interested in logistics improvements, he did not collaborate with them to make more effective use of his time.

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