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Supply Chain Management Newsletter

A staff person in Zimbabwe repackages female condoms.

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USAID | DELIVER PROJECT Releases New Edition of *The Logistics Handbook*

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Transport Management: A Self-Learning Guide for Local Transport Managers of Public Health Services

Without reliable transportation systems, supply chains that deliver critical drugs and medical supplies quickly come to a halt. To help local managers of public health services, the USAID | DELIVER PROJECT, in collaboration with Transaid, published a self-directed course on managing sustainable, cost-effective transport management systems. See the full article below.

Estimating Vehicle Life: The Importance of Driver Training and Maintenance Procedures for the Economic Life of Vehicle Assets

Understanding the optimal life of vehicles and defining a clear replacement policy are critical to fleet management. Based on 15 years of working with transport systems in the developing world, Transaid created a vehicle life estimator, which can serve as a guideline for establishing replacement policies. The estimator

can be used with the recently published transport management guide, *Transport Management: A Self-Learning Guide for Local Transport Managers of Public Health Services*. See the full article below.

Female Condom Repackaging Cuts Cost in Zimbabwe

Zimbabwe's Delivery Team Topping Up (DTTU) distributes contraceptives, test kits, antimalarial drugs, and other health products to each of the country's 1,600 public health facilities. DTTU is a warehouse on wheels—staff perform physical counts of all the commodities they deliver to make sure each facility is properly stocked.

A delivery team does a physical count of female condoms at a health facility during a delivery run.

Because of the way the manufacturer packaged one of the system's 24 commodities—the female condom—DTTU staff were spending additional time to count thousands of individual pieces. This led to a significant number of stock data errors and a loss of product because recounting made the condoms dirty. Occasionally, team leaders would even skip the physical counts, relying instead on estimations.

To correct these problems, the Zimbabwe National Family Planning Council, with help from the USAID | DELIVER PROJECT (the project), repackaged 1.7 million female condoms into units of 20 condoms each. Having the manufacturer package the female condoms into smaller inner units would have added 3.5 cents to the cost of each condom ; by doing it locally, the project was able to cut the cost to 1.3 cents. The repackaging effort also realized cost savings by reducing the time DTTU teams spent at health facilities and reducing loss of product. This, in addition to having error-free data, made the effort well worth it.

> "The repackaged female condoms are helping a lot, especially when it comes to physical counts. It is smart because there is no handling of the actual pieces. The program should be continued."
>
> —Sister Chiunye, Mashonaland Central Province

The female condoms come from the manufacturer in cartons of 1,000 pieces. During delivery runs, teams carry out physical counts at each service delivery point (SDP), counting up to 500 female condoms at each facility because the boxes contain individual pieces. The amount of stock delivered to SDPs ranges from as little as 20 pieces to as many as 12,000 pieces per delivery run. On average, a delivery team covers 100 SDPs in two to three districts during a single delivery run, which can last up to 20 working days ; this means that a team visits approximately five SDPs each day. Prior to the recent repackaging, the physical counts of female condoms yielded significant errors because of the many single pieces that had to be counted. It also resulted in a significant increase in time spent at SDPs and, through the continuous handling of the pieces, some of the commodities became dirty.

Dealing with the many individual female condoms meant that the delivery runs were delayed; physical counts were prone to errors; commodities ended up dirty due to increased handling and sometimes had to be discarded; and team leaders occasionally would skip the physical counts, relying instead on estimates, which compromised average monthly consumption (AMC) and stock on hand (SOH) data quality.

Female condoms are repackaged into packs of 20. Once repackaged, the 50 packs, totalling 1,000 pieces, are put back in the carton, and the carton is sealed with packing tape.

The answer to all of these problems was to repackage the boxes of condoms so each carton would contain smaller units that could be counted easily and quickly. The cost of having the manufacturer change the way it packages the female condoms—adding 3.5 cents to each unit—spurred the project to undertake its own repackaging effort. With 40 people, it took three weeks to repackage all 1.7 million female condoms.

The project procured plain, clear, low-density polyethylene (LDPE) bags to repackage the female condoms into bags of 20 pieces, so each carton of 1,000 pieces would have 50 inner bags. Because the expiration date and batch number was not visible simply by looking at a piece (you have to open a sleeve to see these details), the project printed labels for each inner bag showing the product name, expiration date, and batch number. The large-size labels, placed inside the plastic bags, were clearly visible to the user. Once repackaged into units of 20, with labels in place, the plastic bags were tied and returned to the carton, and the carton was sealed with packing tape. At the end of the process, each carton still had 1,000 pieces, but this time in bags of 20 each.

For quality control, cartons were sampled during the repackaging process. In addition, each staff member had to note his or her initials discreetly on the corner of the carton. This would ensure accountability in case an SDP or a delivery team received feedback that a certain carton did not contain the right amount of product—an effective incentive for staff to perform well. It would also serve as a performance measure for managers to assess whether to hire a certain worker in the future. Each staff member repackaged three cartons a day, totaling 3,000 pieces.

Repackaging 1.7 million female condoms into units of 20 required 85,000 plastic bags and labels. Each bag cost U.S.$0.015, for a total of U.S.$1,275, and the total cost of the labels was approximately U.S.$8,500. Wages for the 40 staff who carried out the repackaging came to U.S.$12,000, bringing the cost of the entire effort to about U.S.$21,775—approximately U.S.$0.01280 for each female condom. This was the first time the program undertook such a repackaging exercise, so there may well be room for reducing costs further by looking at quantity discounts and increasing the number of pieces that can be packed in a day.

DTTU deliveries are done every quarter, and by repackaging the female condoms, it is possible for each of the 13 teams to save about three days of delivery time in a year. With per diem, fuel, and vehicle wear and tear, this translates into approximately U.S.$10,000 in savings. If we consider the benefits of having error-free data for quantification, reduced loss of product due to zero handling, better ability to practice first-to-expire-first-out rule (FEFO) with more clearly labeled products, and increased motivation for team leaders when doing physical counts for all commodities, the repackaging benefits far outweigh the cost of maintaining the status quo.

The female condom repackaging effort reduced the time team leaders spent at an SDP during a delivery run, increased the accuracy of stock counts and AMC calculations, made it easier for health facilities to practice FEFO in dispensing female condoms, eliminated repeated handling of pieces, and helped motivate team leaders to do complete physical counts. It also increased the accuracy of data collected for female condoms and was a successful and cost-effective alternative to asking the manufacturer to repackage the product. With the low cost and demonstrable advantages of this intervention, the project recommends that repackaging female condoms continues in the future.

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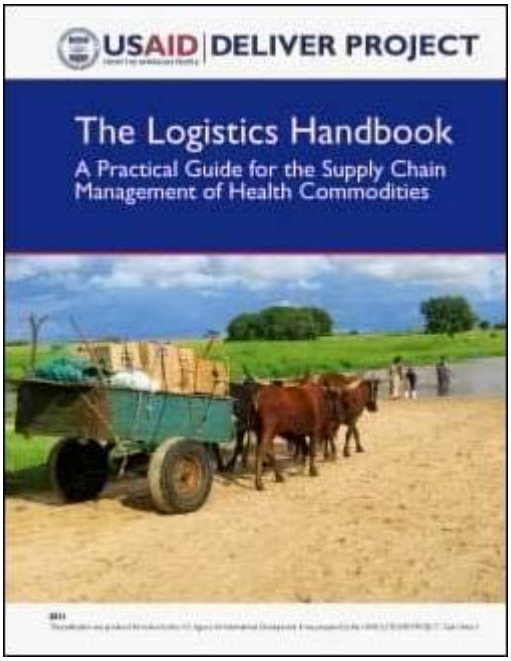

Since its original release 13 years ago, *The Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities*, has been considered a top training publication for public health logisticians. The USAID | DELIVER PROJECT has released a new edition of the handbook, comprehensively updated with new sections on product selection, procurement, and system design as well as resources and tools.

The original handbook was released in 1998 by the USAID | DELIVER PROJECT's predecessor project, the Family Planning Logistics Management project, when trainer Barry Chovitz, with help from Barbara Felling and Walter Proper, converted the curriculum for a logistics management training course into a textbook to make the information accessible to a wider audience. In 2004, Barbara Felling updated the handbook to reflect the latest project knowledge. In 2010, a team of USAID | DELIVER PROJECT technical advisors and staff solicited input from all technical teams to revise the handbook significantly.

The Logistics Handbook explains the major aspects of supply chain management with a focus on public health. The new handbook features—

- new sections on product selection, procurement, and system design
- revised sections on monitoring and evaluation, quantification, and storage and distribution
- updated resources, including both project and partner-produced tools
- new real-life country examples from all USAID | DELIVER PROJECT areas.

Compared with the earlier edition, the new handbook takes a more holistic and adaptive approach to public health logistics, contextualizing logistics within the broader health system. It is less prescriptive than the previous one; recommendations are more refined, and rather than dictating what to do, the handbook presents important considerations and describes a range of options so users can make well-informed decisions, based on technical knowledge as well as country context and policy and budgetary factors.

For example, the logistics management information systems (LMIS) chapter of the old version of the handbook taught that consumption data are found in consumption records. The new version explains about consumption records, but it also describes alternative ways to collect information about consumption, namely calculating consumption based on stock on hand (using information from stockcards) or estimating consumption based on lowest-level issues data. From country experiences over the years, technical advisors have learned that, while consumption data is the gold standard, it may not always be available; in these cases, it is important to have other options and to use the best available data to determine consumption.

While the old handbook instructed users to track losses and adjustments (and forms were designed to capture losses and adjustments in a single column), the new version advocates that, as a best practice, losses and adjustments should be tracked separately. The causes of losses, such as expiry or theft, are different

from the impetus for adjustments (administrative movements of stock), so different corrective actions must be applied. Tracking loss rate separately also makes it possible to use this rate as a benchmark for performance. The handbook acknowledges that it can be challenging to collect loss and adjustment data at all, let alone segregated in two separate columns on a stockcard. Losses should be tracked, but a system designer needs to assess staff capacity and resources to determine the feasibility of collecting these data.

The new handbook describes three types of max-min inventory control systems (ICSs) and presents the advantages and disadvantages of each one. It also provides examples of countries that are implementing different types of systems and discusses the factors influencing selection of an appropriate max-min system, such as number of products in the program, types of products managed, transportation available, level of training, scope of supervision, and availability of storage space. The handbook provides an example of a logistics system with particular characteristics and walks the reader through selection of the most appropriate ICS for each level.

These are just a few examples of the revised handbook's nuanced and thought-provoking changes. The handbook is useful for program managers who design, manage, and assess logistics systems for health programs. Policymakers, system stakeholders, and anyone working in logistics will also find it helpful as an overview and overall approach to supply chain management.

You can find the newly revised handbook on the USAID | DELIVER PROJECT website at http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/LogiHand.pdf.

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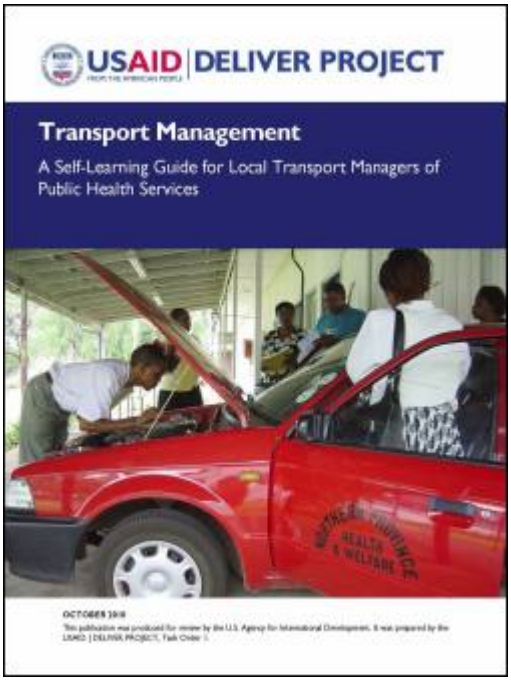

The guide includes training modules on operational management, financial management, fleet management, health and safety, human resources, monitoring and evaluation, situational analysis, outsourcing, and policy; it also includes a transport assessment tool. Health programs can use the transport assessment tool to review the performance of a transport system that manages health commodities. This tool includes questions on numerous components related directly and indirectly to transport. The answers to these questions can be used to document a system's strengths and weaknesses to identify opportunities for improvement.

The transport management guide is available on the USAID | DELIVER PROJECT's website at http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/TMS_Guide.pdf.

Estimating Vehicle Life: The Importance of Driver Training and Maintenance Procedures for the Economic Life of Vehicle Assets

Understanding the optimal life of vehicles and defining a clear replacement policy are critical to fleet management. Based on 15 years of working with transport systems in the developing world, Transaid created a vehicle life estimator, which can serve as a guideline for establishing replacement policies. The estimator can be used with the recently published transport management guide, *Transport Management: A Self-Learning Guide for Local Transport Managers of Public Health Services*.

The vehicle life estimator considers the optimal life of certain types of motorized vehicles (typically trucks and 4x4s) in different operating environments, factoring in the impact of driver experience and training and regular vehicle maintenance and servicing. Optimal life can be defined as the period between the time the vehicle enters service and the time when it should be replaced because it is no longer economically useful.

> . . . One vehicle, which was worth no more than U.S.$1,500, was repaired at a cost of U.S.$8,000 and took two years to repair. This vehicle should have been written off.
>
> —Excerpt from a Report on Fleet Vehicle Replacement Costs (from *Transport Management: A Self-Learning Guide for Local Transport Managers of Public Health Services*)

Modern trucks in industrialized countries typically operate for five years, in some cases accruing up to a million kilometers, and then being sold to second, and possibly third, users, before they reach the end of their economically useful lives. This type of vehicle life tends to be spent on relatively smooth, paved roads, usually driven by well-trained and competent drivers, in an environment that is not hostile to the vehicle. The end point tends to be determined by the need to renew or refurbish major driveline components because of catastrophic failure or escalating repair and maintenance costs.

Compare this to vehicle use in a developing country, and it is clear that the two operating environments are very different. Often, vehicles in developing countries (particularly trucks in the private sector) have already completed one economic life on another continent; they may already be reaching or have reached component life expiry and are now facing use in a hostile environment, with poor-quality, often unpaved roads, and untrained drivers with limited skills and experience. Vehicle wear in these environments is not limited to just the driveline; severe wear of brake components, suspension units, and chassis and axle assemblies is common and can accelerate quickly if the vehicle was not designed to be used in this way. Regular close scrutiny of the vehicle is therefore essential, and the life expectancy of the vehicle should be determined, constantly reviewed, and adhered to if cost and human impact is to be minimized.

The Transaid Vehicle Life Estimator is a guide to optimum heavy vehicle life and gives an indication of a likely life expectancy given particular circumstances, such as little or no maintenance and no driver training, or a well-maintained vehicle driven by an experienced and trained driver. The kilometer range of a vehicle's economic life can vary widely and must be tempered with criteria that can be determined only by analysis at a local operational level.

TRANSAID VEHICLE LIFE ESTIMATOR

Experience of Driver: Inexperienced and Untrained

Operating Environment	Maintenance and Servicing	Estimated Economic Vehicle Life (kms)*
Easy	Regular Maintenance and Servicing	175,000
Easy	Intermittent Maintenance and Servicing	125,000
Easy	No Maintenance or Servicing	100,000
Medium	Regular Maintenance and Servicing	150,000
Medium	Intermittent Maintenance and Servicing	100,000
Medium	No Maintenance or Servicing	75,000
Tough	Regular Maintenance and Servicing	125,000
Tough	Intermittent Maintenance and Servicing	75,000
Tough	No Maintenance or Servicing	50,000

Experience of Driver: Experienced and Trained

Operating Environment	Maintenance and Servicing	Estimated Economic Vehicle Life (kms)*
Easy	Regular Maintenance and Servicing	250,000
Easy	Intermittent Maintenance and Servicing	175,000
Easy	No Maintenance or Servicing	125,000
Medium	Regular Maintenance and Servicing	225,000
Medium	Intermittent Maintenance and Servicing	150,000
Medium	No Maintenance or Servicing	100,000
Tough	Regular Maintenance and Servicing	200,000
Tough	Intermittent Maintenance and Servicing	125,000
Tough	No Maintenance or Servicing	75,000

*These figures are based on Transaid's experience operating in Africa over the last 15 years.

Clearly, the estimated economic vehicle life in developing countries is significantly less than one would expect for a vehicle operating in industrialized countries. It is useful to note that the Red Cross Standard Replacement Policy (SRP) sets the replacement of vehicles at five years or 150,000 kilometers, whichever comes first. The World Food Programme (WFP), World Vision International (WVI), and the International Federation of Red Cross and Red Crescent Societies (IFRC) also follow this SRP.**

Each operating environment is different and will place different demands on a vehicle. Therefore, Transaid's Vehicle Life Estimator for developing counties must be considered a general tool that should be adapted for each local operating environment. Aspects that can affect the decision on vehicle life that must also be considered when reviewing Transaid's guide include:

1. Is the vehicle new and purposely designed for the operating environment it will encounter daily?
2. Is the vehicle an import from a developed country that has already achieved its economic life, and has few modifications to suit the more arduous conditions to be undertaken now?

3. Does the maintenance regime of regular maintenance include safety inspections and defect clearance at a time interval of weeks, as opposed to months?
4. Is the driver part of the maintenance regime, taking an active role in discovering defects on a daily basis via walk-around inspection, then passing these defects on to a trained mechanic for rectification?
5. Are operating environments particularly dusty and sandy, as this will wear components very quickly and cause premature major unit failures as well as increase the frequency of filter changes?
6. If vehicles are expected to wade through water and mud regularly, severe component wear and brake degradation is to be expected. Has this been assessed in determining economic life?
7. Engine oil life is now typically related to amount of fuel burned, at around 36,000 liters, before engine oil needs to be changed. Is this frequency adhered to or similar to that used? Irregular oil changes will accelerate component wear rapidly.
8. Does operation of the vehicle involve arduous hill climbs and descents, resulting in accelerated driveline wear and brake deterioration?
9. Is the vehicle fitted with an endurance brake (i.e., Jacobs Brake or similar) to reduce wear and tear on foundation brakes? Does the driver use this endurance brake correctly?
10. Are additional fuel, oil, and air filters fitted and maintained to ensure that elements hostile to the drivetrain, such as dust and water, are kept outside of it, minimizing the risk of major component failure?

If any of the above issues are applicable or cause for concern, the estimator table must be adapted and the life expectancy reduced by, for example moving the guide's Operating Environment down one sector,from Easy to Medium or Medium to Tough. This way, vehicle operation can be tailored to local needs. Although the list of issues for consideration is not exhaustive, it highlights some of the key points that influence vehicle life. It is also useful in determining specifications for purchasing a vehicle—a slightly better vehicle, secondhand or otherwise, bought at a higher price can prove to be a better value and result in a safer operation as a whole.

While there are pockets of fleet management excellence in developing counties, where perhaps the economics of the work undertaken allows investment in custom-made equipment, such examples are usually the exception. Given that transport is a commodity the world over, often the cheapest operation wins the transport contract. This is where economic expediency overtakes the best intentions, and the cheapest, unmaintained truck, driven by an untrained driver, will often get the delivery. By building on the knowledge of those making these value judgments, and by truly understanding the difference between cost and value, vehicle condition can be improved and driver skills enhanced—the outcome being the often-unmeasured benefits of transport reliability, and more important, saving human lives.

Transaid's Transport Management System (TMS) and supporting manual, originally developed in 1996, can help ministries of health and other organizations manage sustainable, cost-effective vehicle fleets to implement public health programs. In October 2010, Transaid and the USAID | DELIVER PROJECT published a TMS guide for self-directed learning. A pdf version of this guide can be found on the USAID | DELIVER PROJECT website at

http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/TMS_Guide.pdf

Operating conditions are unavoidable, but organizations can do much to improve driver ability and maintenance regimes to increase the operating life of their vehicles, reduce costs, and ultimately provide better service to beneficiaries.

Based in the United Kingdom, Transaid is an international charitable organization that works to reduce poverty and improve livelihoods across Africa and the developing world by creating better transport systems. To find out more about Transaid, please visit www.transaid.org.

**Alfonso Pedraza Martinez and Luk N. Van Wassenhove, 2009*, Vehicle Replacement in the International Committee of the Red Cross*, 2-3.

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