



# Needs Assessment of the Gao Nursing School, Mali: Bottlenecks/Best Buy Analysis

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## Executive Summary

IntraHealth International has been actively working in underserved regions in Northern Mali to improve training, deployment and retention of quality health workers since 2001. USAID-funded activities in the northern regions include supporting the Prevention of Postpartum Haemorrhage Initiative and strengthening the Gao Nursing School (*Ecole des Infirmiers de Gao* or EIG), which is a private-sector nursing school that was created in 1999 to improve the number of health workers being trained and retained in the northern regions. IntraHealth International has succeeded in expanding the number of health workers trained in active management of the third stage of labor to reduce postpartum haemorrhage among women during childbirth. In regard to EIG, IntraHealth International's CapacityProject provided assistance in developing and disseminating a five-year strategic plan, reorganizing the board of directors to include a more diverse group of stakeholders and assisting in curriculum development including revising the pre-service curriculum for reproductive health/family planning and child survival and incorporating the 'Learning for Performance' approach<sup>1</sup>. The 'Learning for Performance' approach helps connect learning to specific job responsibilities and competencies resulting in a more focused and efficient training program. Additionally, the CapacityProject strengthened the availability and use of technology by supplying EIG with equipment to improve teaching and learning. IntraHealth International, through its current project, *CapacityPlus*, continues to support and strengthen the training provided at EIG to improve the number and quality of health workers produced.

In the fall of 2011, USAID/Mali requested that *CapacityPlus* complete a rapid needs assessment of EIG to determine key needs and recommendations for future investments. This report summarizes the results of the needs assessment which was completed in two stages. The first stage was conducted using the "Bottlenecks/Best Buys tool." This innovative tool, developed by *CapacityPlus* and used elsewhere in Africa, seeks to identify the barriers to optimal training and production of health workers. Five areas of potential bottlenecks are assessed when using this tool: infrastructure, equipment, curriculum, teaching, and management. For this assessment, the tool was used to guide in-depth interviews with three key personnel from EIG followed by a stakeholder meeting to further prioritize the bottlenecks for improving the quality of training at EIG. Solutions to bottlenecks were costed by using line items from the EIG's strategic plan and consulting with local service providers, such as electricity and construction company personnel. All costs are estimates. Ideally, the prioritized bottlenecks would have been considered in combination with costs to determine the 'best buys;' however, due to the time constraint, this step was not completed thus the priorities were determined irrespective of costs. For the second stage of the assessment, *CapacityPlus* staff determined key recommendations by taking into consideration the priorities identified by the stakeholders during the first stage of the assessment as well as USAID's funding priorities.

The findings from the first stage of the assessment show that at EIG the main bottlenecks articulated by stakeholders relate to infrastructure and equipment. One quarter of the school's budget is spent on electricity and water – neither of which is in regular supply. The infrequent and irregular supply of electricity limits students' and faculty's ability to use computers and other technology to improve their learning and teaching. Furthermore, many of the existing computers and other equipment do

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<sup>1</sup> CapacityProject. Learning for Performance: A Guide and Toolkit for Health Worker Training and Education Programs. Chapel Hill, NC: Capacity Project, IntraHealth International, Inc., 2007. Available at: <http://www.intrahealth.org/page/learning-for-performance>

not work because they short circuit during power surges. Other concerns related to infrastructure include the lack of sufficient demonstration rooms and classrooms as well as an under-stocked laboratory facility that is shared with the Polyclinic.

The stakeholders explained the importance of providing grants to students from impoverished homes and noted that the cost to complete the training program is a bottleneck to attracting and retaining qualified students. Due to the high prevalence of poverty in this region, many eligible students are unable to attend EIG because their families cannot afford the school fees and costs of living.

Another pressing bottleneck identified by stakeholders is the outdated curricula for the specific training programs offered at EIG. Some curricula have not been revised in nearly ten years which limits the schools ability to provide the most up-to-date and relevant information to the students. There is also a need to incorporate improved teaching methods into the curricula, such as the 'Learning for Performance' approach.

Stakeholders also raised issues of concern in regard to students' practical training. They noted that the lack of transportation available to take students to their practical trainings at health clinics is a major bottleneck. Furthermore, among the stakeholders the main concern related to teaching at EIG is the quality of supervision and training that students' receive during their practical training at local health facilities. The preceptors in the health facilities were described as lacking motivation to supervise and teach the students, especially in situations in which they do not receive payment for their efforts. In addition, the preceptors were further described as lacking teaching skills and unable to communicate knowledge effectively.

After identifying the key bottlenecks to providing quality training to students, the stakeholders discussed potential solutions and interventions to overcoming the bottlenecks. The prioritized solutions for addressing the key bottlenecks identified by the stakeholders include providing grants to students, purchasing and installing solar panels and digging a bore hole, revising the curricula, purchasing a bus and 4 x 4 for student transport and supervision, purchasing new computers and projectors.

## **Key Recommendations**

During the second stage of the needs assessment, *CapacityPlus* further reviewed the findings from the first stage of the assessment in the context of USAID priorities. The recommended investments put forth by *CapacityPlus* based on priority bottlenecks identified by stakeholders, their expertise in the field of pre-service training, and in consideration of USAID priorities are described below.

1. Provide grants for 40 students from impoverished families in Northern Mali
2. Purchase and install solar panels and updated technology for improved teaching and learning
3. Revise curricula and integrate the 'Learning for Performance' approach and gender-sensitive training.
4. Establish learning goals and a supervisory system for the practical training component of students' education including training preceptors in methods of teaching and supervision.

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## 1.0 Background

The Gao Nursing School/Ecole des Infirmiers de Gao (EIG) was set up to provide sustainable human resources for health in the three most northern regions of Mali – Timbuktu, Gao and Kidal.



**Figure 1: Map of Mali showing Gao in the north-east**

The school first opened in 1999 and had just 15 students – today it has a total of 302 enrolled students. Table 1 below shows the total number of new students who began their studies this school year distributed across five specialist training programs. All of the programs are three years in duration. The majority of students come from the northern regions of Mali but not necessarily from Gao itself.

**Table 1: The cohort of new students for academic year 2011-2012**

Program	Male students	Female students
Speciality Nursing Diploma in Public health (ISP)	13	32
Speciality Nurse-Midwife Diploma (IO)	0	13
Laboratory Technician/Pharmacy	2	3
State Registered Nurse	2	4
Midwifery	0	8
<b>Total</b>	<b>17</b>	<b>60</b>

Since 2006, USAID has been the school's main donor providing financial support for building and infrastructure, office and computer equipment as well as for scholarships to enable students from the northern regions of Mali to attend the institution. In August 2006, IntraHealth International's Capacity Project carried out an evaluation which noted that there were problems with the retention of teachers, clinical placements and a lack of resources for teaching and learning. Subsequently, Intrahealth International's "Learning for Performance" approach was implemented at EIG (Intrahealth International 2007). This, together with a revision of the reproductive health/family planning and child survival curricula, helped to address some of the shortfalls relating to teaching. However, as shown below, difficulties persist to this day due to significant structural, institutional and logistical

'bottlenecks' which constrain the school's ability to optimize the quality of teaching and learning. Addressing the bottlenecks would help maximize the quality and quantity of trained health workers and would facilitate the ultimate goal of improving the health of the population in one of the most disadvantaged areas of Mali.

## 2. 0 The Bottleneck tool and methodology

The 2006 World Health Report focused on the linkage between the health workforce and progress toward the Millennium Development Goals and other key global health objectives (World Health Organisation). The US Government (USG)'s goals for global health depend on having a skilled health workforce that can meet the health needs of the poor in low and middle-income countries.

Fulton et al (2011) estimate that the cost of training the 4 million health workers needed to meet the Millennium Development Goals (MDGs) will require a doubling of tertiary education budgets. Efforts are being made to tap into innovative financing, but even with an increase in funding, investments in scaling up will have to be as targeted and cost effective as possible. In many resource-poor settings, improving health worker training requires a selective assessment of strategic investments to ensure value for money.

The data and qualitative evidence presented here provide a summary of the most urgent bottlenecks that need to be addressed in order to improve the quality and quantity of health workers trained at the EIG. The needs assessment was conducted in two stages. During the first stage, data were collected using an innovative instrument developed by CapacityPlus. The Bottleneck/Best Buys tool was created to enable stakeholders of health institutions to identify factors limiting their potential to increase the number of health workers trained and the quality of their teaching. Already implemented in Uganda (Puckett and Tulenko 2011) and Kenya, the tool is a highly targeted approach for assessing bottlenecks and best buys in five categories: infrastructure, equipment and materials, curriculum, faculty and management.

The existing "Bottleneck/Best Buys tool" was modified with inputs from CapacityPlus, IntraHealth International/Mali and a consultant. A member of IntraHealth International/Mali was trained in the administration of the tool. He subsequently conducted interviews with three key senior members of staff at EIG whose identities and positions will be kept anonymous in order to protect their confidentiality. Each informant (all of whom were men) signed a consent form explaining the study, their right not to participate and how they could obtain further information. Where a building or equipment was said to be sub-standard, the interviewer inspected it and in some cases took a photograph. The interviewer also collected key reports and documents such as the '*Manuel des procédures administratives, financières et comptables*' (The manual of administrative, financial and accounting procedures). The results were analysed and are presented below. They include a ranking by each informant of the major problems relating to each of the five areas of interest, stating whether they present a small or significant barrier to the school's ability to produce quality health workers. Solutions for each bottleneck were determined as well as their estimated costs. The estimated costs are mainly from the line items in EIG's strategic plan and by consulting local service providers on the costs of specific solutions. The data were analysed and key bottlenecks were identified by IntraHealth International/Mali and the consultant. Subsequently, a stakeholder meeting was held (by conference call) with key informants from the school to discuss the priorities that emerged from the interviews. The key informants present during the stakeholder meeting included

one informant from the interviews and two informants who did not participate in the interviews. During this meeting, the bottlenecks and their proposed solutions were classified in order of priority, regardless of cost. The results of the stakeholder meeting are presented in Section 9.0 below.

The second stage of the assessment followed the completion of the data analysis and stakeholder meeting. For this stage, the IntraHealth International/Mali staff determined key recommendations for future investments in EIG based on the bottlenecks and their solutions that were prioritized during the first stage of the assessment, their expertise in the field of pre-service education, and USAID’s funding priorities. The outcome of the needs assessment is a list of four key recommendations of investments that would help to improve the quality of training provided to students at EIG.

The main limitation of this assessment is the lack of demographic diversity among the informants. No female staff members or students were asked to participate in the assessment. It is highly likely that there are certain gender issues that were not raised as concerns because of the demographics of our informants such as security issues, personal hygiene issues and policies around pregnancy and sexual harassment. The lack of student informants in the assessment eliminates our ability to present key concerns that this group has about the school’s challenges in providing quality training. Due to the limited amount of time that we had to complete this assessment and the significant amount of time it takes to conduct each interview, we were unable to interview more than three informants.

### 3.0 Infrastructure

#### Building and materials

EIG has recently done an inventory of its construction and equipment needs. Data were extracted from the document provided by the school administration and is outlined in Table 2 below.

**Table 2: Construction needs by type of building**

<b>Building</b>	<b>Current number</b>	<b>Additional number needed</b>
Classrooms	8	4
Demonstration rooms	2	2
Laboratories	1	0
Dormitories	2	0
Administrative Offices	5	2
Library	1	1
Toilets	3	3

Table 2 shows that the school needs to increase the number of classrooms by 50% and to double the number of demonstration rooms. There is also a need for additional administrative space, an extra library and twice the number of toilets. The increase in demand is related to the annual increase in the intake of students.

The main building and material-related problems identified during the interviews include the deterioration of the existing infrastructure and lack of space to accommodate the growing number

of students. Informants commented on the condition and lack of classroom, laboratory, and office space.

*The laboratory in which they work is not big enough - it needs to be bigger... and we need to increase the number of demonstration rooms because the number of pupils is increasing. (Informant 2)*

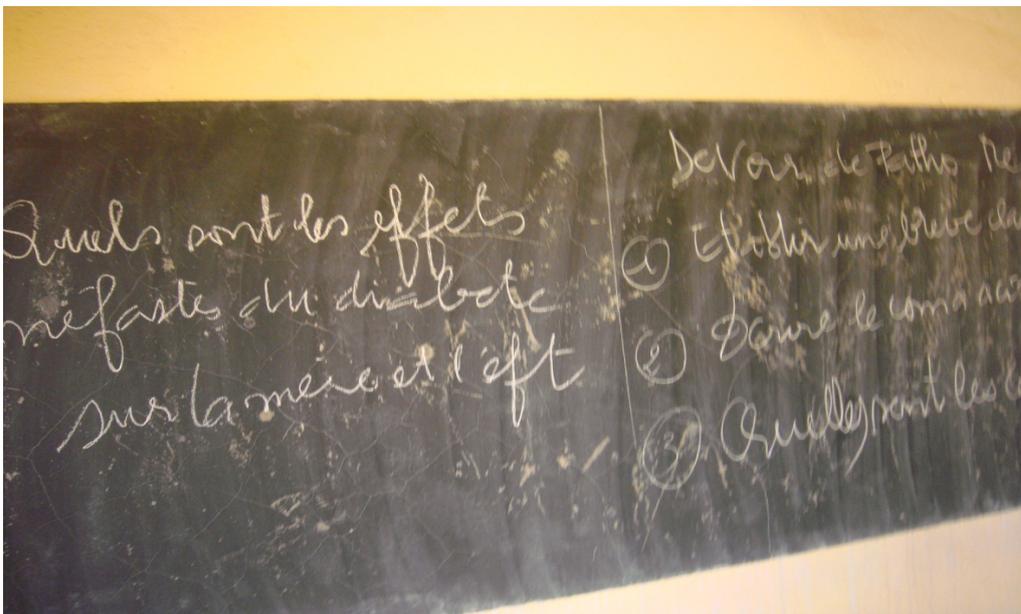
*We need to separate the area where we do photocopies and the office so things will work better. In my office we need to divide up the space to have a completely separate area for meetings. (Informant 1)*

Of major concern was the state of the toilets and the need for additional ones.

*The number of toilets is insufficient for the number of students we have. We have two toilets for 200 pupils and one for the staff. It is really not enough. (Informant 2)*

The teaching materials (blackboards, flipcharts, etc) within the buildings are also of poor quality and need renewing. For example, Figure 2 shows a blackboard in poor condition.

*When the teachers write on the blackboard, there are holes in it. We try and fill them up but they reappear. (Informant 2)*



**Figure 2: Blackboard in poor state of repair**

Gao is on the edge of the desert and prone to dust and sand storms which damage teaching materials and books, as is evident in Figure 3. The informants expressed a need for cupboards and better insulation on doors and windows to protect equipment from the dust.

*We would like to have built-in wardrobes so that the demonstration material can be kept out of the wind... In the library we need shelves to put documents on and doors and windows so that the wind does not come in. (Informant 1)*



**Figure 3: Library books unclassified and exposed to dust**

## **Student accommodation**

Approximately 20 students are housed in on-campus dormitories. Priority is given to those with no family in the town of Gao where the school is located, such as students from Kidal or Timbuktu. Students prefer to live in the school dormitories so they can better support each other and study together. The school accommodations are also cheaper than off-campus housing options, unless students are able to stay with family members living in Gao. Unfortunately, only 10% of those wishing to live on campus can actually be housed.

*They say that the study conditions are better (in the dormitories). It allows them to be together and to work better together than if they lived in town where they would be distracted. (Informant 2)*

*The students really want to live in the lodging but there are no grants so they have to pay their own way, do their own cooking, etc. Because of the parents' poverty they prefer to try and manage by staying with local families. (Informant 1)*

## **Electricity and water supplies**

Electricity and water supplies both in the school and in the student housing area pose enormous problems, being both insufficient and irregular. Although the water in both sites is clean, there is a problem with availability, particularly for the student housing which does not have its own supply.

*Sometimes there is not enough water in the student housing and there are power cuts.....*

*In the student housing there is no source of water. They have to tap into the school's water supply when they need water and this, itself, is irregular. (Informant 2)*

The lack of an affordable, regular electricity supply was also described by informants as a major problem.

*We have a serious problem in the fact that electricity costs far too much. It comprises 25% of our costs (with water). What we would like is our own borehole....we have frequent power cuts which has caused all the computer equipment to be burnt out, in spite of having stabilisers and all the other things we have done (to prevent this). The other point is that it is very hot during the months of April, May and June and it is very difficult to keep the students in school if we can't make the fans work because we have no electricity.*  
(Informant 1)

A cost-effective and environmentally friendly solution mentioned by one informant is to install solar panels to give the school its own electricity supply and put an end to its reliance on *Energie du Mali* (Mali's national electricity company).

*We have discussed this alternative with USAID and other people. We think that if we could have solar panels that this would be a sustainable solution for the school. It makes us independent and the sun is always available as we are in one of the hottest corners of the world – we never suffer from a lack of sunshine!* (Informant 1)

## **Fencing, security and access**

Although there are locks on the main door and the outside lamps are in working order, there is no night watchman, nor a wall or fence to protect the school<sup>2</sup>.

*We need to put barbed wire all around the school because thieves just jump over. For me, it is a question of security – we find people here in various disguises and sometimes we are afraid that they are coming to plant a bomb or something.* (Informant 1)

*We need locks on all the doors and windows and we need to increase the number of watchmen – we need to have watchmen during the day and at night.* (Informant 2)

In addition, there is a problem with the road accessing the school, which is also the route the students take to get to their practical training sites. Most students reach the school or training sites by foot or motorbike.

*The road accessing the school is a problem because each day the students fall over because of all the sand. It is a sand dune! We have asked the town council to do something and put some gravel down because there are always accidents on this route.* (Informant 1)

## **Practical training Sites**

Students in each of the training program have to do practical training throughout the school year (9 months), with rotations every trimester. The practical training typically occurs in the morning and the lectures are in the afternoon. Students are placed in the hospital in Gao, regional health centres

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<sup>2</sup> It should be noted that currently Gao is in an area of extreme insecurity with threats against Western interests from Al- Qaida in the Maghreb and others.

(CSREFs), community health centers (CSCOMs), private clinics and dispensaries run by the Catholic mission for their practical training. In regards to infrastructure, the main issue is that there are not enough facilities to place all of the students. Furthermore, the clinics are under-equipped making student training and patient treatment difficult. The quality of the practical training is further discussed in section 5.

*The CSREFs and the CSCOMs receive lots of students and they are totally underequipped. The personnel need to be trained with regard to the objectives of the training. There is a lot lacking. The same thing applies to the hospital - there is a need for in-service training. The same applies to the staff at the CSCOMs. They are very limited in terms of their pedagogical skills... At the hospital we have put in place a system where, for each student trained, the trainer gets CFA5000 (c. \$10). (Informant 1)*

## Ranking of infrastructure priorities

Table 3 below shows how the three informants ranked the different problems articulated in relation to infrastructure. '0' means that the problem has little influence on the school's ability to produce quality health workers, and '5' means that the problem has a strong influence and comprises a significant bottleneck to good performance.

The data presented in Table 3 indicates that the quantity and quality of classrooms were described as key issues by all three informants who marked it as having a strong influence on the functioning of the school. There was no other item which gained the consensus of all three informants. Nevertheless, the dire lack of electricity and water was scored highly by two, as was the lack of demonstration rooms and lack of laboratory space and equipment. The lack of a staff room seems to be the next priority for two informants. Other identified problems include the lack of toilets, of a conference room and of computing facilities, which were each cited by one informant as a key bottleneck. Interestingly, no one cited the infrastructure or equipment problems with the practical training sites as key concerns. It is possible that perhaps this was thought to be a problem which concerned outside partners and health structures rather than the school itself.

**Table 3: Informants' ranking of bottlenecks related to infrastructure**

Problem	Informant #1	Informant #2	Informant #3
Quantity and quality of classrooms	4	5	4
Lack of electricity and water	5	4	-
Lack of laboratory space and equipment	5	-	4
Lack of sufficient demonstration rooms	5	-	5
Lack of toilets	-	2	-
Lack of a staff room	-	3	3
Lack of a conference room	-	2	-
Lack of computing facilities	-	-	3

Note: '0' indicates that the bottleneck has little influence on the school's ability to produce quality health workers, and '5' indicates that the bottleneck has a strong influence on the school's ability to produce quality health workers. A '-' indicates that the informant did not list this item as a key bottleneck.

## 4.0 Equipment and materials

The Bottleneck/Best-buys tool includes a number of tables allowing for an inventory of the school's equipment ranging from tables and chairs to medical equipment. The tables were completed using data provided by the school administration.

### Existing equipment and future needs

Tables 4, 5, and 6 show that there is a severe lack of equipment and teaching materials at EIG. Table 4 shows that even basic classroom requirements such as chairs and tables are not sufficiently met. As portrayed in Figure 4, the laboratory has no reagents, even though it is supposed to provide opportunities for undertaking lab analyses. In fact, the laboratory, although owned by EIG, is shared with the Polyclinic in Gao and patients are sent there for testing. Students gain experience in the laboratory by providing services to these patients. EIG wishes to return the equipment to the Polyclinic and reequip the laboratory for sole use by EIG.



**Figure 4: Lack of laboratory equipment**

There was the reported lack of medical and library equipment. With only two stethoscopes, one otoscope and no ophthalmoscopes available, it is virtually impossible to teach students how to use these instruments. The inadequacy in medical and library equipment presents an extremely large barrier to the quality of learning. In addition, the library possesses just two reference books and no anatomical models (for example, to learn about physiology or the human skeleton). This, combined with the lack of opportunities for online learning, constitutes very serious barriers to successful training.

**Table 4: Equipment and materials needed for classrooms, offices and in the laboratory**

	Classrooms						Laboratory	
	Desks	Chairs	Tables	Blackboards	Flipcharts	Banner for Publicity	Reagents	Testing Equipment
<b>Existing</b>	5	130	150	10	1	0	0	1
<b>Additional # Needed</b>	2	100	200	5	3	4	All available	2

**Table 5: Computing and projection equipment needed**

	IT Capacity					Projection equipment		
	Computers	Internet Connections	Servers	Programmes	Web-site	Pro-jectors	Screens	Computer projector
<b>Existing</b>	17	1	0	1	0	2	1	1
<b>Additional # Needed</b>	20	2	2	2	1	5	5	5

**Table 6: Clinical and library equipment needed**

	Examination equipment					Library equipment		
	Stetho-scopes	Oto-scopes	Ophthal-moscopes	Reflex hammers	Lab coats	Text books	Reference books	Models
<b>Existing</b>	2	1	0	1	3	30	2	0
<b>Additional # Needed</b>	20	30	5	10	10	60	10	5

## Computer technology and office equipment

Table 6 shows that although there are 17 existing computers, 20 more are needed. However, it was repeatedly mentioned that much of the existing hardware does not work due to fluctuations in the electricity supply, which have caused irreparable problems due to short-circuiting. Additionally, the school does not have the necessary storage equipment to protect computers from the dust (see Figure 5). Teachers' and students' computer skills are very poor, largely because they do not have functional machines on which to practice their skills. In addition, internet connections are erratic and the band width is slow. Furthermore, there is insufficient projection equipment, making, for example, the use of PowerPoint presentations and other modern teaching methods very difficult.

*A lot of teachers are not computer literate or they have problems connecting to the internet. A lot could not prepare a lesson using internet materials...we have also noticed that when they do get to use the internet, the computers stop working because certain people do not know how to use a computer – they do any old thing and break them.*  
(Informant 2)

Regarding computer access by students, there was a similar problem of lack of ability to use computers and the internet. Even if access is improved, students' lack of knowledge and experience means that there is little desire to discover what information technology can offer. Even if students wanted to learn, they are unable to do so because of a lack of internet access and specific software.

*The majority of students have not been initiated into computer use – so there is not a sufficient desire among them to create a motivation to see what it could offer... computing is an obligatory part of their courses but because we don't have enough working computers we skip this bit. (Informant 1)*

*Many of the students don't know how to use a computer – many of them can't even use a keyboard, let alone know how to connect to the internet. (Informant 3)*

However, given the lack of knowledge about computers, not all of the informants were positive about the idea of increasing students' access to computers.

*Giving them (students) easy access to computers encourages bad use and will lead to a high chance that the computer will be damaged ... there are students who have seen a computer for the first time at the school. They come from the bush, so it is difficult for them ... (Informant 2)*

The findings show that the use of technology with regard to teaching and learning at EIG is severely hampered by three main factors: 1) lack of working computers, 2) lack of internet access and 3) lack of knowledge on the part of both the teachers and the students, which leads to poor use and creates hardware problems. These problems are of course compounded by the frequent outages of electricity. Solving the power problems and improving the number and functionality of the computer technology and equipment could significantly improve the limited knowledge and use of computers and internet by faculty and students for teaching and learning.



**Figure 5: Computing material exposed to dust**

In addition to problems relating to computer access and use, there is also an issue with making photocopies for students. Most teachers dictate the course on the blackboard, and the students copy the lesson into their notebooks. If there are hand-outs to photocopy, it is normally the students' responsibility to do this. This can be very costly, especially if they have to do it off-campus. The absence of a working photocopier, printer and paper for the students creates a significant barrier to learning and studying for exams.

*There are problems with the computers and with the lack of paper. For the most part, there is no budget to do photocopies for the teachers. To make photocopies, we need ink, a photocopier and paper. Photocopiers are only budgeted for the administration. (Informant 2)*

## Transport

As part of their training in community health, students are required to work with rural populations one time per year during the holidays. Students organize and pay for their own transportation because EIG has no means of transportation for students.

*Each pupil uses his/her own means of transport to get to the rural placements. Those who have a motorbike use that – those who don't go on foot. (Informant 1)*

In addition, one informant felt it necessary to have a means of transport to supervise the students and to facilitate staff business trips to Bamako. A second felt that available transportation would facilitate the student placements and their supervision.

*The best means of getting about in the field would be to have a vehicle – but a vehicle has a cost, for example, the gas. The school cannot afford this. (Informant 2)*

## Ranking of equipment and material priorities

The table 7 shows a fairly high degree of consensus with regard to the equipment and material priorities identified by the three informants. Materials for teaching and demonstration appear to be an important felt need along with computer equipment. However, it should be noted that the purchase of computer equipment alone will not solve the problem of the lack of IT use at EIG. It also depends upon a reliable supply of electricity and on improving knowledge of computer use among the staff and students.

**Table 7: Informants' ranking of bottlenecks related to equipment and materials**

<b>Problem</b>	<b>Informant#1</b>	<b>Informant #2</b>	<b>Informant #3</b>
Material for the teaching/ demonstration	5	2	5
Computing materials	5	4	4
Transport/vehicles	5	-	3
Laboratory materials	5	3	-
Office equipment	4	5	-

Note: '0' indicates that the bottleneck has little influence on the school's ability to produce quality health workers, and '5' indicates that the bottleneck has a strong influence on the school's ability to produce quality health workers. A '-' indicates that the informant did not list this item as a key bottleneck.

The inadequacy of office and laboratory equipment is also felt to be important. The fact that, as discussed above, there are no reagents is likely to significantly influence the training received by students in the laboratory technician program. In addition, the inability to make photocopies for student hand-outs is a barrier to effective studying, particularly if the only other method students have of recording information is by writing it by hand in their notebooks (given there is no internet access or opportunities to print). Transport to and from the practical training sites was described as a significant bottleneck by two informants.

## 5.0 Curriculum

The questionnaire collected information about curricula content, if and when it had last been updated and how it is delivered. Other information was collected about the practicum and inter-departmental collaboration.

### Curricula content, revision and delivery

The curricula for the Midwives and the State Registered Obstetric Nurses were last revised in 2005 (with the Capacity Project providing input for the parts relating to reproductive health/family planning and child health). The curricula for the other courses (Technician, Superior technician, and Laboratory technician) have not been updated since 2002 - that is to say for nearly 10 years.

The curriculum for each subject conforms to national norms, addresses the most relevant public health problems and involves community approaches. The strategies for addressing relevant health problems and involving the community were described as follows:

*When they have to do rural placements we contact members of the ASACO (management of committee of the CSCOM) who introduce the students to the population. They then do household visits. For example, nurses in the first cycle visit 30 families and those in the second cycle visit 50. That enables them to see how the people live and to understand their health problems. (Informant 3)*

*From the first year all the students do placements in the community to learn about community approaches to sensitization, how to organise a vaccination campaign, community diagnostics – then they have to do a report at the end. (Informant 1)*

None of the course curricula had any element addressing gender-based violence. This is quite a serious omission especially for students learning about family planning, given that, in Mali, many women use contraception covertly and can be beaten if their use is discovered (Castle et al 1999).

Within the curricula there are formal lessons, case studies, role play, individual reading and group work. There is no online learning integrated into any part of the curricula. Individual research was said to be a required part of the students' tasks, but this must be difficult without access to the internet and without decent and carefully classified reference books in the library. Courses take place during set hours with some evening or weekend study sessions possible for those who need it close to the exam period.

## Practical training placements

Placements for students' practical training are an important component of the programs offered at EIG. Beyond the infrastructure and equipment issues described in section 3, there are other concerns related to the quality of the practical training students receive. Preceptors for the practical training are not adequately trained in pedagogical techniques limiting their ability to effectively supervise and teach students. Furthermore, the preceptors are often unmotivated to mentor students, especially if they are not paid or are only paid a small amount.

*The clinic placement lasts three months and is evaluated by a placement tutor. Each trimester there is a rotation from one specialty (and thus from one tutor) to another.*  
(Informant 2)

## Student evaluation

There are some systems in place to evaluate students' performance in practical and classroom training. In many cases the students are 'de garde' (on night duty) in the health structures where school monitors are responsible for keeping track of student attendance at the practical training sites and to discuss the quality of the students' work with the assigned preceptors.

*There are theoretical evaluations and evaluations done with health centre staff. The monitors check up on the students' presence as between 10 and 11pm twice a week they come to the different centres to see that the students are there and to evaluate their performance with the clinic staff.* (Informant 3)

Evaluations for all five training programs consist of continuous evaluation and clinical evaluations carried out each term as well as a final exam. There are no online, group, or auto evaluations - suggesting that the evaluation methods may need to be updated with more modern techniques. With regard to written evaluations, the students do these in the form of exercises.

*After every 10 hours of studying a subject, the teacher gives a test – even outside these periods the students do exercises. As the exams approach, we give exercises outside the regular course hours...* (Informant 3)

## Twinning and exchanges

It is interesting that EIG has regional and international partners with whom learning exchanges and collaboration take place. One is with the *Institut Pratique de Santé Publique* (IPSP) in Niamey, Niger, and the other with a Paramedic training institution in Narbonne, France.

*We have organised trips to Narbonne in France where we participated in trainings and placements. The people from Narbonne sent us trainers who helped give practical training and demonstrations.* (Informant 1)

*We have a collaboration involving trainees with those of the IPSP in Niamey. We have done lots of training and exchanged students with them. There are certain subjects we have discussed that feature in the curricula of both schools.* (Informant 3)

It may be useful to capitalize on these international collaborations and to see what the French could contribute in terms of material assistance, particularly in terms of computerized learning materials in

French. It may be useful to share community approaches and best practice with colleagues in Niamey who are likely to be confronting the same public health problems. Greater shared expertise and experience would, of course, be facilitated by better computer and internet access.

## Inter-departmental exchange

There appears to be some consultation among the pool of teachers when developing curricula as well as gathering insight from retired or former teachers. Each course is assigned two teachers, and they work with teachers from other disciplines to develop the materials to go with a curriculum.

*We have different courses and for each one we identify pedagogical objectives, design evaluation frameworks and the course content. The development of the content is done in workshops, and we involve all the teachers of the different modules so that each course complements the others. (Informant 1)*

## Ranking of curricula priorities

Table 8 indicates that the priority bottlenecks identified by at least two informants are curricula revision and continuous education. In particular, informants noted a need to make sure that the curricula is revised to be in line with national norms so that the students will be well prepared for the national examinations set by the *Institut National pour la Formation en Sciences de la Santé* (INFSS). INFSS itself has reoriented its learning approach so that it is skill-based and informants believe that EIG needs to do the same. According to two informants, the methods of continuous evaluations need to be improved, because in their current state they are seen as a major barrier to providing quality training. A computerized approach to student evaluation with options for online learning is a potential solution for improving the current system. One informant identified the need for better exchange between the organizers of the five different courses offered. Other informants expressed a need to increase the impact of twinning and to improve the trimestral and practical training evaluations.

**Table 8: Informants' ranking of bottlenecks related to the curricula**

Problem	Informant #1	Informant #2	Informant #3
Curricula revision	5	-	4
Adaptation of the curricula to make it skill-based ( <i>L'approche par compétence</i> )	5	-	-
Continuous evaluation	-	5	5
Trimestral evaluation	-	4	-
Clinical evaluation	-	3	-
Need for collaboration between the courses	-	-	5
Improve twinning	-	-	3

Note: '0' indicates that the bottleneck has little influence on the school's ability to produce quality health workers, and '5' indicates that the bottleneck has a strong influence on the school's ability to produce quality health workers. A '-' indicates that the informant did not list this item as a key bottleneck.

## 6.0 Teaching

To assess the quality of teaching, information was collected on the number of existing teachers and the number needed (full- and part-time). Questions were also asked about teaching policies, such as maternity leave, teacher evaluation, and teacher turnover.

### Full-time versus part-time teachers

Table 9 shows the current staffing levels as well as the number of additional teachers needed. This refers to how many new staff will need to be recruited if/when funds become available. There is currently no active process of recruitment.

**Table 9: Number of existing and desired teachers by discipline**

Course	Full time		Part-time		Number needed	
	Male teachers	Female teachers	Male teachers	Female teachers	Full time	Part- time
Public health	4	2	11	3	3	1
Maternal and child health	4	3	10	5	2	0
Laboratory technician/Pharmacy	1	0	9	0	2	0
State registered Nurse	4	1	10	3	2	1
Midwifery	4	1	12	1	2	1
<b>Total</b>	<b>17</b>	<b>7</b>	<b>52</b>	<b>12</b>	<b>11</b>	<b>3</b>

Table 9 also indicates that the vast majority of staff are male and work part-time. Women generally prefer to work in regions that are not as far from major urban centers. The high percent of faculty who are part-time is likely due to the fact that most faculty t hold positions in other health facilities in the town – for example 60% are doctors or nurses at the CESREFs and 20% work at the CSCOMs. Previous studies of other nursing schools in Mali showed that where the balance of staffing is dominated by those who work part-time, it was very difficult to get coordination between the staff and to induce a sense of institutional affiliation (Castle 2011). In addition, referring to Table 1 above, the Public Health training program has approximately ten times the numbers of students as each of the other courses, and yet has more or less the same number of teachers. This indicates that teacher: pupil ratios may not be optimal and that future recruiting should better reflect student numbers.

The advantages of having more full time staff were recognised such as increased availability, easier management of programmes, and better assistance for students. However, given Gao's remote location, it is perhaps not easy to recruit staff and so EIG has to draw on part-time staff from surrounding health facilities.

*If you have full-time teachers you can teach courses in both the morning and the evening. With part-time teachers you can only give courses in the morning. In terms of costs, it is less costly to employ a full-time rather than a part time teacher. When she or he is full-time, she or he will give their utmost to make the pupils understand and to keep them up to date. (Informant 2)*

*We can better invest in these (full-time) teachers to improve their skills and we can better manage the teaching programmes and better help the students. It provides a degree of stability. (Informant 1)*

## **Teacher training and evaluation**

Each new part- or full-time recruit receives training in pedagogical methods for teaching.

*Their teacher training is a real concern for us. We have two modules here – one in pedagogical training and for the trainers in the school which follows national guidelines... we organize a training workshop for the teachers and also for the trainers (clinical preceptors) because for us they are all teachers. (Informant 1)*

*The pedagogical training lasts 45 days - there is a theoretical side and a practical side. In the practical bit we talk about themes to a class and we are supervised by the trainers. (Informant 3)*

The teachers appear to be evaluated by the local 'Academie' for teacher training, which is part of the Ministry of Education. The school has worked with the 'Academie' for the last five years. The 'Academie' evaluates the teachers with regard to their pedagogical skills. However, according to one informant, the evaluation of teachers appears to be somewhat irregular.

*I have never seen a teacher evaluated. I think that's bad. Normally at the end of the year you are called up and told about how many of your students have succeeded, about your teaching time (what has been done, what needs to be done), the results, what is good, what is bad...(they say) here are the results and here's what you need to do ! (Informant 3)*

## **Drop-out and turnover**

Thirty percent of male teachers leave EIG after just two years and 60% leave between three and five years. The problem of drop-out does not affect the female teachers as much as the male teachers. This could be because female teachers are often married to men who live in Gao, whereas male teachers are more likely to have family elsewhere.

*We have a lot of teachers who leave before the end of the second year because the employment market is very unstable. They go to other jobs which pay twice as much or they want to go and work as in the civil service. Most of the teachers are young and they leave as they want to go and specialize elsewhere. (Informant 1)*

It seems that there is no career development plan for staff at the school (either full time or part-time) which again might lead to motivational issues and to a lack of personal commitment, as well as an inability to identify goals and achievements. The lack of such a plan was believed to be associated with the high levels of drop-out and turnover at the school. However, it was deemed difficult to develop a career plan due to a lack of resources, but in reality a sufficient career development plan could be developed with limited resources. However, providing real opportunities for career advancement would indeed require financial investment.

*The school's resources do not allow for the development of a career plan. The teachers' salaries have not changed much even though the employment market has changed considerably. (Informant 1)*

Presumably, as teachers acquire more skills and advance up the career ladder, they will require salary increases, which the school is currently unable to provide. The lack of career plan (or career advancement opportunities) and other reasons for teacher drop-out are shown in Table 10 below (1=strongly related to drop-out, 2=weakly related to drop-out). This shows that a dissatisfaction with the salaries and a lack of research opportunities are also perceived to be reasons for staff disillusionment and ultimately for their leaving.

**Table 10: Reasons for staff drop-out**

Distance from family	Dissatisfaction with salary	Dispute with school	Poor performance	Dislike of teaching	Pregnancy/need to care for family member	Lack of career plan	No research opportunities
2	1	2	2	2	2	1	1

The administration is currently trying to address the dissatisfaction with salaries as a strategy to improve the retention of teachers. The salaries are, however, no lower than those of health care workers in the public sector or of civil servants. Nevertheless, there is a feeling that the staff should be better remunerated.

*For the teaching staff, most of their time is spent teaching, so under normal circumstances, they should be better paid than those who work in the clinics. (Informant 3)*

In addition, there is a scheme to pay overtime for those working over eight hours per day in order to better motivate teachers. As described above, most teachers also have jobs at the local health centres through which they can supplement their income. This also facilitates feedback between the school and the centres where the students do their placements. Nevertheless, it was felt that there is room for improved collaboration between teachers and clinic staff.

*The majority of the people who train staff in the local health centres also train at the school. So there is already a framework of collaboration but this could be improved as if the communication between the teachers and the staff in the field is good, then it helps performance. (Informant 3)*

In addition, it is worth noting that the school does have a policy about maternity leave for staff but not for students. A female faculty member who leaves to have a baby is able to take up her work after the birth of her child without any reduction of salary.

## Ranking of teaching priorities

Table 11 shows that the main perceived problem related to teaching is the lack of a career development plan. It is discussed above how this is closely related to staff motivation and retention. The perceived low levels of salary are also seen as a bottleneck to optimal teaching quality. In addition, the high proportion of part-time staff has, as shown above, serious consequences for the

performance of the school. It is directly related to a lack of staff investment and weakens teachers' sense of institutional belonging which affects staff motivation.

**Table 11: Informants' ranking of bottlenecks related to teaching**

Problem	Informant #1	Informant #2	Informant #3
Lack of career development plan	4	5	5
Low levels of salary	4	-	5
High proportion of temporary staff	3	4	-

Note: '0' indicates that the bottleneck has little influence on the school's ability to produce quality health workers, and '5' indicates that the bottleneck has a strong influence on the school's ability to produce quality health workers. A '-' indicates that the informant did not list this item as a key bottleneck.

## 7.0 Management

Regarding management, questions were asked about policies and procedures relating to teaching strategy and employment, including employment law, the payment and non-payment of fees as well as about the alumni association.

### Plans and procedures

Although the school has a Strategic Plan, which was updated in 2010, it does not have an institutional vision, an institutional mission, or a system of performance evaluation. There is however an organogram and job descriptions for each post as well as a financial management plan, but the latter needs significant revision. All need to be available online when the electricity and computer systems are fully functional.

*There is a manual for financial procedures but there are a lot of things that are not up to date. The roles and the tasks overlap. (Informant 1)*

There has never been an external evaluation of the school's financial procedures or of the training programme.

*We need an external evaluation to pave the way to sustainability. We can't continue as we are – we need to think about how the school will develop in the future. (Informant 1)*

There is a system in place for intervening with students who are at risk of failing their studies.

*After the evaluations we try and identify the weaker students who will be given the opportunity to do extra sessions – the monitors try and bring them up to the level of the other students. (Informant 2)*

There is no policy regarding students who get pregnant during their course. As stated above, there is also no policy around maternity leave for students. Pregnancy among students is considered a private affair, and they decide on their own whether or not to continue with their studies.

No policy or disciplinary system exists with regard to sexual harassment, and those interviewed claim the school has never had to deal with any cases.

### **Increasing accessibility for poor students.**

An important priority that was identified is the need to find a way for students from very poor families to be able to study at the school. The regions the school serves are among the poorest in Mali, and many families cannot afford school fees or students' living expenses. Providing grants for students from impoverished families to increase their ability to pursue their studies is a priority identified by informants.

### **Graduation and alumni**

There is no system to determine whether students have the means to pay their fees, despite the fact that graduation is contingent on the students having no outstanding debts with the school.

*Before being given their diplomas, the finance department confirms in writing that the students who have passed their exams do not owe the school any money. (Informant 1)*

*We tell the pupil when the deadline was for payment – you try and bring in the parents because if you just tell the pupil often they don't tell them. It is only when you suspend the student that the parents are aware – that is the system of harassment we use. (Informant 2)*

There is an alumni association, but the school does not make as much use of it as it could. There is the potential for having alumni teach and mentor current students, especially since many alumni become student supervisors during the practical training.

*If we have enough resources we help them organize workshops each year. That way we can get them together and list the difficulties with the courses, the problems with the site visits and with the teachers. We suggest other training they could do to advance their careers. (Informant 1)*

*The graduates are organized in an association and if we are able we organize 'scientific days' for them. We invite everyone and talk about problems that they have encountered in the field and see if we can integrate solutions to them into the curriculum. (Informant 2)*

### **External relations**

Regarding student recruitment, there is a test each student has to do together with a written test administered by the local 'Academie' (which, as described above, operates under the auspices of the Ministry of Education). Then the candidates have to do an interview during which the school determines their level of commitment and suitability.

Regarding teacher recruitment there is no formal system or publicity strategy for disseminating the announcement of vacant posts.

*The teachers bring their dossiers with the recruitment notice, they then do written and oral tests. For the recruitment of the part-time staff, we approach those who we know personally in the field. (Informant 1)*

A positive point is that the school feels well supported by national and international partners, which gives it both institutional pride and credibility.

*When we opened the school we went round the three northern regions with the Ministry of Education and local technical and financial partners, as well as the school's founders and the general administration. The Governor of Gao comes and visits us as well as Ministers and ambassadors. (Informant 1)*

Regarding future employers of the schools' graduates, the administration does not have any formal relationships, although they are occasionally asked by local Non-Governmental Organisations to find students who could work for them. Graduates from EIG generally do not have a difficult time finding employment, because the training of many students is covered financially by local communities, partners and NGOs. Additionally, graduates often succeed in finding a job because of the high quality of training offered at EIG compared to other schools.

*We don't have formal links to employers but the students get contracts with lots of different organisations. The NGOs come and ask us about potential recruits. (Informant 1)*

The informants also expressed interest in participating in study abroad opportunities to visit similar schools on the continent so that they can look at management and administration procedures and learn from them. In particular, they are interested in the application of computer technology for school administration and would like to visit another institution to see how computer technology has been successfully used in this way.

## Ranking of management priorities

Table 12 shows the management bottlenecks that the informants believe are the greatest threat to providing quality training of health workers including the need for external evaluations of the management and administration practices of the school. In addition, it was thought that offering graduates the chance to continue learning via in-service training would improve quality. Lastly, it was felt by one informant that the school's fees are high and that this might discourage applications or precipitate drop-out. A scholarship scheme for students from poor families may be a viable solution to this problem.

**Table 12: Informants' ranking of bottlenecks related to management**

<b>Problem</b>	<b>Informant #1</b>	<b>Informant #2</b>
Need for external evaluation	5	-
Need for 'life-long learning'/continuous training for graduates	5	-
Increase feeling of ownership of the school by the community	4	-
Address issue of high student fees	-	5

Note: Informant #3 declined to comment on management issues

Note: '0' indicates that the bottleneck has little influence on the school's ability to produce quality health workers, and '5' indicates that the bottleneck has a strong influence on the school's ability to produce quality health workers. A '-' indicates that the informant did not list this item as a key bottleneck.

## 8.0 Results of the stakeholders' prioritization meeting

Based on the findings from the interviews, an IntraHealth International/Mali staff member, together with the consultant, selected what they considered to be the most relevant bottlenecks that need to be addressed to improve the quality of the training provided at EIG. Estimated costs from the interviews were further refined based on experience and expertise of IntraHealth's staff members in this area. The findings from the interviews and identified bottlenecks were presented to three key stakeholders at EIG during a teleconference. Two of the stakeholders were not informants in the "Bottlenecks/Best Buys" interviews. The stakeholders present at the meeting discussed and added another four bottlenecks, making it a total of 22 priority bottlenecks. During the teleconference the stakeholders ranked the list of 22 bottlenecks by perceived priority. During the ranking exercise, the stakeholders considered where there was potential for greater cost-effectiveness. For example, by addressing the electricity problem, computer access is also facilitated. Additionally, the facilitators of the meeting presented the stakeholders with certain parameters as they determined their priorities. For example, they asked the stakeholders what they would prioritize if they had \$50,000 or \$100,000. The stakeholders' priorities remained the same even when placing parameters on costs. The results of the stakeholder meeting can be seen in Table 13 below. The items are grouped by category, and their ranking by the EIG stakeholders is shown in the left hand column. For example, concerning infrastructure, the lack of electricity and water was identified as the most pressing problem; regarding equipment, the lack of computers and projectors was seen as the most serious issue.

### Infrastructure

The lack of electricity and the high costs of utility bills were described as major barriers, which need to be addressed as they affect the students' ability to work. More importantly, they affect faculty and students' access to up-to-date learning materials via the computer, are barriers to successful online training and testing and severely curtail the sources of information to which they have access. In order to have an independent source of energy over which the school has control, it is suggested that they purchase solar panels. Additionally, an independent water supply could be established if they had a borehole. These seem like environmentally sound and cost-effective ways to address these problems.

The second priority under infrastructure includes the building of two new classrooms. This would provide a better learning environment, and, if staff is available, it would improve the student-teacher ratio. The third priority concerns equipment for the laboratory. As described above, the laboratory is ill-equipped and is a shared resource with the Polyclinic. It is hoped that if proper investments are made in materials, including reagents, the school can run an autonomous training programme for those studying to be laboratory technicians. The fourth priority relating to infrastructure is to build two new demonstration rooms to increase teaching effectiveness.

### Equipment

With regards to equipment, the main problem is again access to computer hardware, software and training. Each classroom should have a computer and projector locked in place, and teachers will then be able to teach with the aid of PowerPoint and other such programmes (once they have been trained). This will modernize learning substantially and make it more effective than the current method which involves the teacher dictating and the students writing in their exercise books. As described above, computer access will increase the possibilities for online learning, for accessing the latest information and for communicating with peers in other institutions.

The second priority in the equipment category pertains to the purchase of a bus to transport students to their placements in health centres and of a four-wheel drive vehicle to supervise their rural training. The school currently has one bus which is not sufficient. The third priority for equipment relates to increasing broadband width and the fourth to employing skilled IT personnel. The stakeholders articulated that if a computer technician is employed fulltime for two years, s/he can ensure that the computers are properly maintained and provide training in their use to both staff and students. In fifth position was the need for teaching equipment, including anatomical models for teaching anatomy. This was followed by the purchase of printers and photocopiers, improving the security of the computer room, purchasing a new server to increase connection speed and enhance accessibility and, lastly, buying tables, chairs and benches for the classrooms and the conference room.

### **Curriculum**

With regard to the curricula, there is a need for overall revision, including the need to integrate the 'Learning for Performance' approaches. This will necessitate regular trips to Gao by IntraHealth International/Mali staff, and these trips are reflected in the associated costs. In addition, the curricula revision can include online modules to enhance learning via the internet or with specialist software.

### **Teaching**

Concerning teaching, the number one priority relates to the need for pedagogical training for the health center professionals who supervise the students during their practical training. As described above, the health workers appear to be poorly motivated to assist students with practical learning and have little notion of the principles of teaching. It is recommended that the supervisors be given training to improve their teaching skills and thereby to improve the students' learning experience in the field.

The second priority under teaching concerns an urgent need to develop career plans for staff (thereby increasing the motivation and facilitating retention) and to revise the school's strategic plan. This would require IntraHealth's staff in Mali to visit Gao periodically, and the estimated costs reflect this. The third priority is to strengthen the alumni association and to provide resources for their '*Journées scientifiques*', during which they can discuss the community health issues that they encounter during their professional work and how these issues can be covered during pre-service training to better prepare students.

### **Management**

Finally, in relation to management, the first priority addresses the need to provide scholarships to students from poor families. Many of the home communities of potential students are extremely impoverished, and a great number cannot afford the fees despite being motivated to study. A scholarship program should cover the educational costs, housing and basic needs of students from poor backgrounds. It was noted by one stakeholder that without students, all other investments are not important. Ensuring that the most qualified students are able to attend EIG regardless of their economic status is vital to the success of the school as well as the quality of health workers produced and deployed to serve the communities in the northern regions.

Also under management, a need to computerize all the school's management and administrative documents, including the financial systems, student registration and staff payments as well as strategic plans was identified as a priority. The school staff also requested the possibility to visit other nursing schools in Africa to be able to learn about efficient and cost-effective management systems. Interest was expressed in sending two EIG staff on a study visit to a school in Tunisia. The fourth priority related to management is an external evaluation of the school's administration.

During the telephone conference the stakeholder were asked, regardless of category, which top five priorities they would want if they had to limit the number. They replied that, *in order of importance*, the key areas of concern to facilitate EIG's ability to train health workers relate to the need for:

1. Provide grants to students from impoverished families
2. Solar panels and a bore hole to solve the problems of irregular and costly electricity and water.
3. Revision of the curricula with the Learning for Performance approach.
4. Purchase of a bus and 4 x 4 for student transport and supervision.
5. Purchase of new computers and projectors.

## 9.0 Key Recommendations

CapacityPlus recognizes the importance of the bottlenecks identified by informants and stakeholders during the needs assessments. Several of the identified bottlenecks are related to the lack of facilities and resources at EIG such as classrooms and demonstration rooms, vehicles for transportation, and equipment/space for the laboratory. We recommend that EIG seek external funding from a source other than USAID for such interventions.

Based on the findings from the needs assessment and the expertise that CapacityPlus has in the area of improving pre-service education for health workers, we recommend that USAID consider investing in the priorities described below. Training supervisors of students' practical training was not among the top five priorities identified by the stakeholders; however, it was ranked as the top priority under the teaching category. Three of the top five priorities identified by the stakeholders relate to infrastructure and equipment. We would like to highlight the importance of investing in a diverse package of interventions that extends beyond infrastructure and equipment to include investments in multiple areas that will improve the school's functioning. It is for this reason that we recommend investing in the following priorities:

### Bottleneck #1: Lack of access to school by students from poor families

Due to the lack of financial assistance available to students, some qualified individuals are unable to apply and enroll in the training programs offered at EIG.

Solution: Provide grants for 40 students from impoverished backgrounds for 3 years of study (length of typical training cycle). Grants to students should cover the educational costs, housing and basic needs of students to allow the most qualified individuals to be trained as health workers. This opportunity would improve access to education for all individuals and potentially increase the number of health workers produced. Requiring grant recipients to

provide a certain number of years of service in the Northern regions after training is completed may improve retention of nurses and midwives in this area.

Estimated Costs:

Grants for 40 students for 3 years of study: 62,000,000 CFA (\$141,000 USD)

Bottleneck #2: Lack of electricity and teaching equipment

One quarter of the school's budget goes to electricity and water – neither of which is in regular supply. It is vital that the school has its own autonomous supply of electricity, and this can be achieved by installing solar panels. The lack of power is a major obstacle to the quality of teaching and learning, as there is little or no access to computers, or use of the internet. Additionally, a lack of functioning computers and projectors makes the students' studying very difficult.

Solution: Provide funding for solar panels and new teaching equipment such as computers and projectors. Investing in these solutions for this bottleneck will address several issues identified by EIG. Having an independent source of energy from solar panels will help to overcome the inconsistent electricity supply in Gao, which would decrease recurring electricity costs and improve the school's ability to use and maintain equipment such as computers and projectors. With adequate training, available teaching and learning materials have the potential to improve the quality of training that students receive. It is suggested that the school purchase ten new computers as well as ten projectors in order to have one for each classroom.

Estimated Costs:

Purchase and installation of solar panels: 32,000,000 CFA (\$73,000 USD)

Purchase of 10 computers and 10 projectors: 8,500,000 CFA (\$19,000 USD)

Bottleneck #3: Large parts of the curriculum are incomplete and outdated

The stakeholders identified the incomplete and outdated curricula for key programs such as Technician, Superior Technician, and Laboratory Technician as a key bottleneck that requires attention. Additionally, it was discovered that none of the curricula include training on gender-based violence. Health workers need to be able to adequately address issues of gender-based violence among their patients; however, dealing with sensitive issues such as gender-based violence requires adequate training.

Solution: There is a need for overall revision of key curricula, including the need to integrate the 'Learning for Performance' approach and gender-sensitive training. The proposed revision of the curricula should also take into account opportunities for online learning, which could occur if working computers are available.

Estimated Costs:

Revision of curriculum which includes technical assistance from CapacityPlus staff over one year: 20,000,000 CFA (\$45,000 USD)

#### Bottleneck #4: Lack of pedagogical experience among supervisors of practical training

As parts of their courses, students are required to complete practical training in local health facilities. The staff in these facilities are often not adequately skilled or motivated to supervise and instruct the students. Motivation is believed to be especially low when the staff are not compensated for their efforts.

Solution: Provide training to health centre personnel who supervise and instruct students during their practical training and establish learning goals and a system of supervision. The training would aim to improve the supervisors' teaching and supervisory skills and thereby improve the students' learning experience in the field.

Estimated Costs:

Training health center staff in pedagogy and establish learning goals and system for supervision: 10,000,000 CFA (\$23,000 USD)

## 10.0 Conclusion

The EIG can draw on the significant experience gained since its creation in 1999 to identify how best to provide high quality training to future health workers. The 'Bottleneck and Best Buys' exercise is an innovative way to enable key personnel to articulate these current gaps and constraints and to get "insiders' " perspective on the barriers to improve performance. It became clear that the main bottlenecks identified from this needs assessment are diverse and cover issues that range across all five of the categories assessed.

Given scarce key resources such as computers and regular electricity, the school has, nonetheless, been able to fulfil its mandate of providing teaching and learning to the best of its ability. The priorities recommended here will enable EIG to provide training opportunities for qualified individuals regardless of economic status, improve the learning environment by updating infrastructure and equipment, and improve 'hands-on' learning in the classroom and during practical training by investing in equipment and personnel. Hopefully, this will enable faculty, staff, alumni and students to feel more committed to the school and facilitate the training of high quality health workers, who are motivated to remain in positions in northern Mali.

**Table 13: Identified priorities for improving training at EIG**

Priority given by Stakeholders	Bottleneck	Recommended action for addressing the bottleneck	Estimated Cost (CFA)	Estimated Cost (\$)
	<b>Infrastructure</b>			
1	Lack of electricity and water	Purchase of solar panels and digging of bore-hole	32,000,000	73,000
2	Lack of classrooms	Construction of two new classrooms	28,000,000	64,000
3	Sharing of laboratory with the Polyclinic/lack of equipment	Creation and re-equipping of autonomous laboratory	45,000,000	102,000
4	Lack of demonstration rooms	Construction of two new demonstration rooms	20,000,000	45,000
	<b>Equipment</b>			
1	Lack of computers and projectors	Purchase of 10 computers and 10 projectors	8,500,000	19,000
2	Lack of vehicles for transporting students to training or to rural areas	Purchase of one bus and one 4x4	80,000,000	182,000
3	Slow internet access	Increase broadband width	5,000,000	11,000
4	Lack of trained IT personnel	Employment of a computer technician (who would also do training) for 2 years	7,500,000	17,000
5	Lack of classroom furniture	Purchase of tables, chairs and benches	10,000,000	23,000
6	Lack of teaching equipment	Purchase of teaching equipment such as new blackboards and mannequins	2,000,000	5,000
7	Lack of photocopiers and printers	Purchase of photocopiers and printers	2,000,000	5,000
8	Poor security of computer room	Improve the computer room and increase security	3,000,000	7,000
9	Lack of server	Purchase of new server	4,000,000	9,000
	<b>Curriculum</b>			
1	Large parts of the curriculum are incomplete and outdated	Revision of curriculum including adding AAP This will require technical assistance and trips to Gao over or one year	20,000,000	45,000
2	Lack of online training	Initiate online training as part of curriculum	2,000,000	5,000
	<b>Teaching</b>			
1	Lack of pedagogical experience among health centre personnel supervising practical training	Training of health centre staff in pedagogy and establishing of learning goals and supervision system.	10,000,000	23,000
2	Lack of key documents and strategies	Development of career plans, revision of strategic plan (necessitating trips to Gao)	5,000,000	11,000
3	Weak alumni association	Increase the capacity of the alumni association and improve	10,000,000	23,000

		the quality and frequency of the 'journées scientifiques'.		
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Priority given by Stakeholders	Bottleneck	Recommended action for addressing the bottleneck	Cost (CFA)	Cost (\$)
	<b>Management</b>			
1	Lack of access to school by students from poor families	Grants for 40 students from impoverished backgrounds for 3 years of study	62,000,000	141,000
2	Non-computerised management system	Computerize all management tasks and documents	10,000,000	23,000
3	No opportunity to visit other schools on the continent	Study visit for 2 staff to Tunisia	5,000,000	11,000
4	Lack of external evaluation	Carrying out of external evaluation	5,000,000	11,000
	<b>TOTAL</b>		430,500,000	978,000

Note: Exchange rate used: \$1=CFA440; Cost in US dollars is rounded to the nearest thousand

## 11.0 References

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