በኢትዮጵያ ፌደራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የኢትዮጵያ ገቢዎችና ጉምሩክ ባለሥልጣን
THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN REVENUES AND CUSTOMS AUTHORITY

ቁጥር 3.1/2o6/10
Ref. No.

ቀን 22 በኔ 2020
Date

ለከፍተኛ ግብር ከፋዮች ቅ/ጽ/ቤት

ለምስራቅ መካከለኛ ግብር ከፋዮች /ቅ/ጽ/ቤት

ለምዕራብ መካከለኛ ግብር ከፋዮች /ቅ/ጽ/ቤት

ለሐዋሳ ቅ/ጽ/ቤት

ለአዳማ ቅ/ጽ/ቤት

ለጅማ ቅ/ጽ/ቤት

ለባህርዳር ቅ/ጽ/ቤት

ለኮምቦልቻ ቅ/ጽ/ቤት

ለመቀሌ ቅ/ጽ/ቤት

ድሬዳዋ ቅ/ጽ/ቤት

የኢትዮጵያ ገቢዎችና ጉምሩክ ባለስልጣን

ጉዳዩ:-በጤና ሙያ የሰለጠኑ የወጪ መጋራት ተጠቃሚዎች ለአገልግሎት ሲቀርቡ
ማቅረብ የሚኖርባቸውን መረጃ እስመልክቶ ማብራሪያ መስጠትን ይመለከታል፡

የወጪ መጋራት ግዴታቸውን በአገልግሎት መወጣት የሚኖርባቸው የጤና ባለሙያዎች በከፍተኛ
ትምህርት የወጪ መጋራት ደንብ ቁጥር 154/2000 የአፈጻጸም መመሪያ ቁጥር 02/2009 አንቀጽ
6.9 መሠረት ግዴታቸውን ስለመወጣታቸውየሚያረጋግጥ ማስረጃ ከጤና ጥበቃ ሚኒስቴር/ ከክልል/
የከተማ አስተዳድር ጤና ቢሮ ሲያቀርቡ ክሊራንስ እንደሚያገኙ ይታወቃል፡፡ የመቀሌ ቅ/ጽ/ቤት
በጤና ሙ-ያ የሰለጠኑ የወጪ መጋራት ተጠቃሚዎች ግዴታቸውን በአገልግሎት ለመወጣት ውል
የገቡ ነገር ግን ግዴታቸውን በከፊል በአገልግሎት ተወጥተው ቀሪውን በከፍያ ለመወጣት ሲመጡ
በጤና ጥበቃ ሚኒስቴር በኩል ተሰልቶ የሚመጣው ሂሳብ ጥቅል በመሆኑ ጥቅል ክፍያውን
በመከበል አገልግሎት እየሰጠ ስለሆነ አሰራሩ ትክክል ስለመሆኑ ማብራሪያ እንዲሰጥበት በቁጥር
ቀ65/ፈ.12-9/2688 በ15/02/2010 በተጻፈ ደብዳቤ ጠይቋል፡፡

በዚህ መሠረት የሆኪሞች የኮስት ሞዴል መመሪያ የጤና ጥበቃ ሚኒስቴር እንዲልክ ከባለስልጣኑ በቁጥር 3.5.0/63/10 በ16/04/2010 በተጻፈ ደብዳቤ ተጠይቆ ሚኒስቴር መስሪያ ቤቱ በቁጥር መግ1/2/39/258 በ28/05/2010 ዓ.ም የመመሪያውን ቅጅ ልኮልናል፡፡

በክፍተኛ ትምህርት የወጪ መጋራት ክፍያ አሰባሰብ አፈጻጸም መመሪያ ቁጥር 71/2004 የትምህርት ሚኒስቴር እና የጤና ጥበቃ ሚኒስቴር ተግባርና ኃላፊነት በተገለጸበት አንቀጽ 4(2) (ለ) በአገልግሎት ተዋውለው ግዴታቸውን ያልተወጡ ተጠቃሚዎች ክፍያ ለመፈጸም ሲቀርቡ የሚከፍሉትን የክፍያ መጠን አስልተው ለባለስልጣኑ መላክ እንደሚኖርባቸው ተመልክቷል፡፡ ሆኖም የሆኪሞች የወጪ መጋራትን በተመለከተ የጤና ጥበቃ ሚኒስቴር ከላከው መመሪያ በጥናት ተደግፈው ከቀረቡ አማራጮች ውስጥ Class Size ከግምት ውስጥ ሳይገባ በተማሪ ቁጥሮ ብቻ የተመሠረተው አማራጭ እንደተገበር በሚል ሁሉም ዩኒቨርሲቲዎች የተዘጋጀውን ሞዴል በመጠቀም እያንዳንዱ የትምህርት ክፍል ለትምህርት መስኩ የሚወጣውን ወጪ በማስላት እንዲዘጋጅና ለባለስልጣኑ መ/ቤታችን የየፕሮግራሙን ወጪ እንዲያሳውቅ፣ ተማሪዎች ሲመረቁም በሞዴሉ መሠረት የወጣውን ጠቅላላ ወጪ እና በወጪ መጋራት መመሪያ መሠረት የሚጋሩትን ወጪ፣ የሚገልጽ መረጃ እንዲሰት እንዲሁም የባለስልጣኑ መ/ቤታችንም ተማሪዎቹ በገባት ውስታ መሠረት ግዴታቸውን የማይፈጽሙ ተጠቃሚዎ ሲከፍሉ በሞዴሉ መሠረት የተሰላውን ጠቅላላ ወጪ፣ መቀጫና ወለድን ሳይጨምር ብር 284,786.20 (ሁለት መቶ ሰማንያ አራት ሺህ ሰባት መቶ ሰማንያ ስድስት ብር ከ20/100) እና በደንቡ የተቀመጠውን ቅጣት እንዲከፍሉ እንዲደረግ በሚል በቁጥር 7/ም-259/1797 በ30/10/2001 ዓ.ም የኢፌዴሪ ትምህርት ሚኒስቴር ለአፈጻጸም የተላለፈ ስለሆነ በዚህ መመሪት ተፈጻሚ ሊደረግ ይገባል፡፡

ስለሆነም በጤና ጥበቃ ሚኒስቴር በክልል/ በከተማ አስተዳድር ጤና ቢሮ ተሰልቶ የሚቀርበው የሆኪሞች ኮስት ሞዴል (የወጪ መጋራት) ዋና ተከፋይ ብር 284,786.20 (ሁለት መቶ ሰማንያ አራት ሺህ ሰባት መቶ ሰማንያ ስድስት ብር ከ20/100) ከፍተኛ የመንግስት የትምህርት ተቋማት ማለትም ዩኒቨርሲቲዎች በወጪ መጋራት ውል ላይ አካተው እንዲልኩ የሚጠበቅ ሆኖ ከዩኒቨርሲቲዎች በማይላክበት ጊዜ ከጤና ጥበቃ ሚኒስቴር ወይም ከክልል/ከተማ አስተዳድር ጤና ቢሮ የሚላከውን መረጃ መሠረት በማድረግ እንግሎት ሊሰጥ ይገባል፡፡በመሆኑም በወጪ መጋራት መመሪያ ቁጥር 02/2009 አንቀጽ 6.11 መሠረት መንግስት በመደበው ቦታ አገልግሎት መስጠት ያልቻለ ተጠቃሚ ወይም የተወሰነ አገልግሎት ሰቶ ያቋረጠ ተጠቃሚ ያገለገለበት ዘመን ታስቦ ቀሪው ክፍያ ላይ ቅጣት ታስቦ እንዲሁም በኮስት ሞዴል ስሌት መሠረው ውስጥ ወለድ ያልተካተተ በመሆኑ ዋናው ክፍያ ለዘገየበት ጊዜ ወለድ መሠላት ያለበት መሆኑ ታውቆ
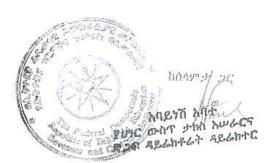
እንዲፈጸም የሚመለከታቸው ሀላፊዎችና ሰራተኞች እንዲያውቁትና በዚህ መሠረት ስለመፈጸሙ ተገቢው ክትትልና ድጋፍ እንዲደረግ እናሳስባለን::

በግልባጭ የደረሰው የታክስ አስተዳደር ማጣጣምና የክልሎች ድጋፍ ዳይሬክቶሬት ለሚመለከታቸው የክልል/ከተማ አስተዳደር ገቢ ሰብሳቢ አካላት እንዲተላለፍ እና አፈጻጸሙ ላይ ተገቢው ድጋፍና ክትትል እንዲደረግ እናሳስባለን::ለግንዛቤ እንዲረዳ ትምህርት ሚኒስቴር ለከፍተኛ ትምህርት ተቋማት የሳከውን የኮስት ሞዴል ጥናት ከነመሸኛው 28 ገጽ ቅጅ አያይዘን ልክናል::

የኢ.ፌ.ዴሪ ትምህርት ሚኒስቴርም ዩኒቨርሲቲዎች ለእያንዳንዱ የህክምና ተማሪ በኮስት ሞዴል ጥናት ስሌት መሠረት ተማሪው የሚጠበቅበትን የወጪ መጋራት ወጪ መጠን በውሉ ላይ ተከቶ እንዲሰጥ እንዲያደርግ የደብዳቤው ግልባጭ ተመዝግቦለታል::

ክሰላምታ ጋር

አባይነሽ አበተ
የህገር ውስጥ ታክስ አሠራርና
ድጋፍ ዳይሬክቶሬት ዳይሬክተር

ግልባጭ//

❖ ለህገር ውስጥ ታክስ ዘርፍ
❖ ለደንበኞች አገልግሎት ዳይሬክቶሬት
❖ ለኦዲት አሰራርና ድጋፍ ዳይሬክቶሬት
❖ ታክስ አስተዳደር ማጣጣምና የክልሎች ድጋፍ ዳይሬክቶሬት (ከአባሪ ጋር)
   የኢትዮጵያ ገቢዎችና ጉምሩክ ባለስልጣን
❖ ለኢፌዴሪ ትምህርት ሚኒስቴር (አዲስ አበባ)
❖ ለጤና ጥበቃ ሚኒስቴር (አዲስ አበባ)

የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ
ሪፐብሊክ
የጤና ጥበቃ ሚኒስቴር

Federal Democratic Republic of
Ethiopia
Ministry of Health

ቀን _____
Date
ቁጥር _____
Ref No

ለኢትዮጵያ ገቢዎችና ጉምሩክ ባለሥልጣን
አዲስ አበባ፤

ጉዳዩ:- የሐኪሞች የክስት ሞዴል መመሪያን ስለ መላክ፤

በትምህርት ሚኒስቴር ተዘጋጅቶ የተላለፈልን የሐኪሞች የክስት ሞዴል መመሪያ
እንዲላክላችሁ በ16/4/2010 ዓ.ም በቁጥር3.5.0/63/10 በተጻፈ ደብዳቤ መጠየቃችሁ
ይታወሳል፡፡

ስለሆነም በጥያቄአችሁ መሠረት የሐኪሞችን የክስት ሞዴል መመሪያ ፎቶ ኮፒ ከዚህ ጋር
አባሪ አድርገን የላክን መሆኑን እያገለጽን፣ በመሠሪያ ቤታን የወጣ ክስት ሞዴል የሌለ
መሆኑን እንገልጻለን፡፡

ከሰላምታ ጋር

ግልባጭ

➢ ለሰው ሀብት አስተዳደር ቡድን
ጤና ጥበቃ፤

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ADDIS ABABA

የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የትምህርት ሚኒስቴር
The Federal Democratic Republic of Ethiopia
Ministry of Education

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ለዐሥማያ ዩኒቨርሲቲ
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ለመቀሌ ዩኒቨርሲቲ
ለጠዳምላሁ ዩኒቨርሲቲ
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ለአዲስ አበባ ዩኒቨርሲቲ
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ለደብረ ብርሃን ዩኒቨርሲቲ
ለደብረ ማርቆስ ዩኒቨርሲቲ
ለዲላ ዩኒቨርሲቲ
ለባህርዳር ዩኒቨርሲቲ
ለጎንደር ዩኒቨርሲቲ
ለጅማ ዩኒቨርሲቲ
ለአምቦ ዩኒቨርሲቲቱዲሲ
ለ ወሰሰ ዩኒቨርሲቲ
ለ ዓርባምንፅ ዩኒቨርሲቲ
ለ እስላምዑዩኒቨርሲቲ

ባ ሉ በ ት

በ15/04/2001 በቁጥር 7/ም 194/2748/2001 Tuition cost of a Medical Doctor በሚል ርዕስ ከትምህርት ሚኒስቴር፣ በጠ/ ጥበቃ ሚኒስቴርና በአዲስ አበባ ዩኒቨርሲቲ በ.ጋራ የተጠናውን ጥናት ዘመሳ አስተያየት ካላችሁ በ15 ቀን ውስጥ እንድትሰጡበት ከዚ�க ጋን እንዲተገበር ተርኩሳር መተላለፉ ይታወሳል።

ከዚህ መሠረት ከባህርዳርና ከአዲስ አበባ ዩኒቨርሲቲ በስተቀር ሌሎቻችሁ አስተያየት ስላላሳችሁ በደማህነት በጥናቱ ላይ የተኮመጠጠ ሞዴል ተጠቢነት እንዳገኘና አተገባሪቹሁት ነው የሚል እንገት አለን።

 በጥም ከሌይ ከተጠቀሱት ዩኒቨርሲቲዎችና ከጤና ጥበቃ የመጣው አስተያየት የጥናት ቡድኑ ከምሆት ውስጥ በማስገባት የተወሰደው ዳታ ከአዲስ አበባ ብቻ ብቻ ቢሆንም የተዘጋጀውን ጥዴል አሠራረች ቡ እንደሆነ፣ ጥናቱ እንደገ እንዲመረምረው ተደርጓል።

ከመሆኑም ለጥናቱ እያንዳንዱ ዩኒቨርሲቲ የራሱን ዳታ በማስገባት ተጨዋጠል ወጪ ለመስጠታ እንደሚችል፣ ሞዴሉ በህክምና ትምህርት ወጪ ላይ ቢጣክርም ለሁሉም የከፍተኛ ትምህርትን ሥልጠና የሚልጠና መስኮች ሊያገለግል እንደሚችል በባለሙያዎች ተረጋግጧል።

በሌላ ከኩል ከጠቆላ ወጪ,ው ውስጥ የከፈታል ወጪ፣ በምን ታሳቢ ይሰላ የሚልሰውና በጥናቱ ከተረቱት አግራሙች ማለትም Class size ከጊም ት ውስጥ ገብት ወይም ሳይገባ በሚለው ላይ የትምህርት ሚኒስቴር ውላኔ እንዲልጥበት የጥናት ቡድኑ ሃሳብ አቅርቧል።

በመሆኑም:-

1ኛ. የተዘጋጀውን ሞዴል በመጠቀም እያንዳ...ፍ ...ቻ የትምህርት ክፍል ለትምህርት... መመሪ የሚመጣውን ወጪ፣ በማስላት እንዲያዘጋጅና ለባ.ይዎችን ...ምሪክ ባለ/ሥልጣኗ ዴፓ
...ፍ የ...ላ... ...ን ...

መልስ ሲጻፍልን የዚ.ኚ ፁጥ ደብዳቤ ...
In replying, please quote our Ref. No. Document...

የኢትዮጵያ ፌደራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የትምህርት ሚኒስቴር
The Federal Democratic Republic of Ethiopia
Ministry of Education

የማንኮምራፌመን ወጪ፣ እንዲያላዉት፣ ተማሪዎች ሲመረቱም በሞዴሉ መሠረት
የሚባላቸዉን በትላላ ወጭ እና በወጪ መጋሪ መሠረት የሚጋሪትን ወጪ
የሚገልጽ መረጃ እንዲሰዉ፣

2ኛ. በየናቱ መሠረት በተማሪ አጠቃላይ ወጪ ላይ የሚታሰበዉ የትምሀል ወጪ ከመደበኛዉ
ወጪ፣ እንት ፐርስንት መሆኑ እንዳለበት የተለየዉ አማራጮች ቀርበዋል። ሞዴሉን
ለመጠቀም ግን ተለዋዉ አማራ እስኪሰጥ ደረስ በ3ኛዉ የትምህርት ዘርና ልማት
ፐሮግራም ለስፋተኛ ትምህርት የተቀመጠዉን የመደበኛ የህፃታል ወጪ ምጣኔ ከግማሽ
ፐሮግራም ለስፋተኛ ትምህርት የተቀመጠዉን 20% ታስቦ እንዲያደርጉ፣
ዉስጥ በማልገብት የህፃታል ወጪ፣ መጠን የመደበኛዉን 20% ታስቦ እንዲያደርጉ፣

3ኛ. በአጠቃላይ ወጪ ላይ ተዐዕና በፐረዉም በሞዴል ከተረዉ አማራጮች ዉስጥ Class
size ከግማሽ ዉስጥ ላይገባ በተማሪ ቁጥር ላይ ዙሪ የተመዉረተዉ አማራጭ
እንዲተገበር የወስናል።

በመሆኑም እያንዳንዱ ዩኒቨርስቲ በዚህ ሞዴል መሠረት በመማሪ ሳ ያ ይሉ፣ ያዉረዉ በዕም
የተመረቱ የተማሪዎች ወጪን እንዲያስና ለዚህዎችና ጉምሩክ እንዲያስተላልፍ የባጋዎችና
ገሞዴል ባልሥልጣን በተለደ በገበት ዉለታ መሠረት ግዴታቸዉን የሚያፈልመዉ ተጠበቀዉያች
ባሀናሉ በሞዴል መሠረት የተለሳዉን በቀላላ ወጪና በደግቦ የተቀመጠዉን ቁጥሬ እንዲደፍሉ
እንዲደረግ ዝዋዝዉ እናሳ ገበ፣

ከሠላምታ ጋር

[signature]

ጂደፍና ገደለ አደፍና (ደ/ር)
ሚኒስትር ዲኤታ

ግልባጭ፣

ዘና ቀበደ ሚኒስቴር
ለ ጉ ደይ ዘ ኪዎችና ጉምሩክ ባለስሣጣን
አዲ ስ አበባ
ለሚኒስትር ንዋ ለስፋተኛ ትምህርት/
ትምህርት ሚኒስቴር

ለስፋተኛ ትምህርት ስትራቴቢ ማዕከል
አዲስ አበባ

ለስፋተኛ ት/ገ/ለ/ማ/ወም/ሪ
ትምህርት ሚኒስቴር

DETERMINING THE FULL TUITION COST OF A
MEDICAL DOCTOR

March 2007

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Preface

Recent increases in migration of Ethiopian health Professionals and high migration from the public sector to the private and NGO sectors are a matter of concern to the relevant Ministries in particular and to the community at large as the vast majority of the population is at a severe disadvantage. Besides the crisis in its health status, the country does also lose a significant amount of money due to the brain drain of medical doctors. As part of the response to this concern, the Ministry of Education established a Committee with a mandate of determining the cost of training a medical doctor in Public Higher Education Medical Schools of Ethiopia.

The committee began its task by reviewing the existing practice in different parts of the world and adopted a costing model that generates the full tuition cost incurred, at tertiary level of education, in educating a medical doctor. Next, the committee collected relevant data from Medical Faculty of Addis Ababa University (AAU), and Hospitals as well as Health Centers involved in the training as designed by the faculty.

The results of the data analysis obtained based on the medical curriculum of AAU indicated that the total cost of educating a Medical Doctor at tertiary level over a period of five and half years range from 262,632 to 376,904 Birr in the first option (without considering class size) and 243,299 to 348,505 in the second option (considering class size). Each option considers four different scenarios based on the proportion of capital expenditure to recurrent expenditure. The report also addresses the cost per trainee at each level of training.

Members of the Committee

1. Dr. Butte Gotu,	Addis Ababa University
2. Dr. Damte Shimelis	" " "
3. W/o Fantanesh Tilahun	Ministry of Education
4. Ato Mulu Wolde	" "
5. Dr. Hassen Mohammed	Ministry of Health
6. Ato Workie Mitiku	" "
7. W/t Bezawit Hailu	" "

- 2 -

1. Background

The health sector, by its very nature, is highly reliant on skilled human resource. Lack of human resource in this sector severely hampers the effective provision of health services. The most common factor to which the shortage of health human resource attributes is 'brain drain'. The encyclopedia Britannica defines *Brain drain* as 'the departure of educated or professional people from one country, economic sector or field for another, usually for better pay or living conditions'. Countries that are involved in the brain drain are referred to as 'sender' and 'recipient' countries that respectively refer to countries experiencing outflow and inflow of professionals. Sender countries usually tend to be less-developed countries whose socio-economic conditions are negative incentives for professionals to leave.

Most of African countries are sender countries that are worst deprived of their health human resources. Health professionals continue to migrate from these countries due to push and pull factors. 'Push' factors are negative situations in the country of origin (the sender) that motivate professionals to emigrate, while on the other hand, 'Pull' factors are positive situations in other countries (the recipients) that attract professionals to immigrate.

The pulling factors may be intentional or unintentional actions that exist in the recipient countries. Since international recruitment offers a relatively quick increase in the number of health professionals without the lag period of training, governments in most developed countries intentionally facilitate immigration of the professionals through policies such as relaxed immigration regulations. The willingness of immigrants to work in less desirable areas and conditions such as mental health and night shifts is also an incentive for the recipient countries to do so. In the UK, for instance, internationally recruited Nurses represent a very large proportion of the total Nursing workforce (Dovlo, 2004). Better remunerations as well as working conditions, secure and conducive conditions of living, freedom from political instability and opportunities for intellectual growth are also among factors that may not be intentional in attracting health professionals of other countries (Kirigia et al, 2006).

The pushing factors that motivate professionals to emigrate include low remunerations, lack of professional development opportunities, lack of technology and equipment to perform professional tasks, poor living conditions, social and political instability and the like in the countries of origin (Nunn, 2005; Dovlo, 2003).

Emigration of health professionals, besides causing a crisis in the health system, it does also causes economic crisis as the cost of training shares a significant amount of the public expenditure. This paper estimates the cost of educating a medical doctor at a tertiary level.

2. Statement of the Problem

Adequate number of health professionals is the bedrock of healthy society in a country. Ethiopia has trained a limited number of health professionals as compared to its population which resulted in a very poor health status of the society. This dire situation is further worsened by the loss of health professionals due to emigration. In addition, the inter-sectoral migration of health professionals within the country has also worsened the poor health status of the society as the professionals migrate from the public sector to the private and NGO sectors that concentrate in urban areas, leaving the majority of the population (85%) who reside in the rural areas deprived of health care services. Such an inter-sectoral migration of health professionals disrupts the referral system and resulted in health service inequity.

District level health facilities suffer the most from the shortage of health professionals, and consequently, are forced to unduly refer many cases to the higher level of health facilities that could be treated there. This improper referral system over-burden tertiary level health facilities.

Bearing the above-discussed problems in mind, the present study aims at estimating the full tuition cost incurred in educating a Medical Doctor in view of calculating the cost of expanding medical training and retaining in the public sector of the country or recover the cost incurred in training.

1 Methodology and Findings in Vietnam

Hucknell, et al (2001) has undertaken analysis of the cost of medical education in Thai Binh, *a medical school in Vietnam*, using the year 1996-1997 actual expenditure. They estimated the cost of medical education by allocating percentage of teaching hours to each component (theoretical and practical) of medical education for each year until the student graduates. These percentage and the actual hours behind them are used to allocate costs by *considering* the assignments of the medical staff. After such allocation of teaching hours, analysis of actual budgetary expenditure was carried out to determine the cost of medical education. The actual analysis of budgetary expenditure enables to disaggregate the cost incurred by major curriculum component i.e. costs incurred for preparatory work, medical science, clinical theory and clinical practice. The first three curriculum components (theoretical part) are costs of the medical school campus and the last component *includes* costs of clinical sites (hospitals and health centers) for practical part of the education. In addition, the method identifies the total cost incurred for each year and the cost per graduate. The steps followed to determine the full cost of training a six year medical student were:

- Determine medical school staff assignment among different activities such as preparatory work, medical science, clinical theory, clinical practice and other activities in consultation with the medical school *staff*;

- Determine annual actual expenditures for major program components such as personnel, travel, utilities, research and service, student aid, repair and minor construction using the medical school's financial records and also costs paid by other institutions for the medical school for some activities such as training of staff both in country and abroad; capital costs are estimated to a certain percentage of annual recurrent expenditure and included in the cost;

- Determine the annual teaching expenditures at the teaching Hospital and Health centers (*having discussed with* teaching hospitals' managers,

heads of workshops to determine the hospital activity to be considered as part of training of medical school student and hence the associated expenses);

- Allocate expenditures to preparatory work, medical science and clinical training based on the *staff* assigned to each curriculum component;
- Curriculum analysis and determining educational cost per year by determining the number of hours dedicated to each curriculum component: preparatory work, medical science, clinical theory and clinical practice as actually taught (based on the curriculum hours assigned to each curriculum component in each year, the cost for each component is distributed);
- Finally the cost per student for each year is calculated;

They found that the total cost for educating a medical *doctor* in *Vietnam* is US$ 9,527 in 1997. *This cost excludes housing, subsistence, and other expenses by a student.* The cost covers only costs incurred at the teaching sites. The cost has also been breakdown for each of the six years of education which enable to disaggregate the cost incurred by the medical school and cost incurred by clinical sites. In terms of the cost by component, it was found that preparatory works, (year 1 & 2), medical sciences (year 2 &3), clinical theory (year 4, 5 &6) and clinical practice (year 4, 5, and 6) constitute 11%, 24%, 37% and 28% of the total medical education expenses. In other words, the medical school constitutes 72% of the cost while that of clinical sites for clinical practice constitute the remaining 28% of the total cost of medical education. Such cost analysis helps to set tuition fees or to determine the amount of charge a medical student graduate should pay if he wishes to be out of a national service obligation.

3.2 Methodology and Findings in Kenya

Kirigia et al (2006) have estimated the cost of health professionals' brain drain in Kenya. They used education cost and lost returns from invest to calculate the cost of brain drain form a physician using the 2005 data. In calculation of the cost, they have used costs incurred at primary and secondary education in addition to costs at tertiary education. They have used costs of non profit

religious schools for primary and secondary education and public universities for tertiary education. *Non-profit institutions were selected as they are believed to represent the closer reflection of the cost of primary and secondary education without overestimating like private schools and also without underestimating as in public schools* The tuition fee for self sponsored medical students in public universities was used as a proxy for the unsubsidized cost of tertiary education. Accordingly, they have found that the cost of training a medical doctor in Kenya is approximately US$ 48,169 and the cost for primary education and secondary education were US$ 10,963 and US$ 6,865 respectively. The total cost therefore to educate a physician is $ 65,997. The cost in primary and secondary education includes tuition fee, lunch cost, transport cost and cost of textbooks plus stationery. The cost for tuition fee in primary and secondary education was US$ 6,287 and US$ 4, 132 respectively. On the other had the cost in tertiary education includes tuition and accommodation plus living expenses. Therefore, if the costs other than tuition in primary and secondary education are excluded, the, cost for a single student is only US$ 10,419. *This is similar to our country context where lunch, transport and other expenses are not covered by the government in primary and secondary education.* Thus, the cost for educating a doctor including primary and secondary education is *US$ 58,588* and if we take only the cost at tertiary education, it is US$ *48,169*. Loss incurred as a result of brain drain to the country has also been calculated using compound interest rate on the cost of educating a doctor, *by considering* different interest rate and the working life of the doctor after graduation. *Accordingly, assuming a 32 years of working life after graduation and an interest rate of 6.65 % and cost of education of US$65,997, it is found that the country losses US$ 517,931 per a doctor.* However, this loss to the country is relevant if the physician did not pay the cost of education when he leaves the country.

3.3 Cost of medical education in India

It has also been estimated that the cost o   the   *India h private medical schools is US$ 27,000* (Bhargava, 2005). This cost doesn't include cost of education at primary and secondary level.

3.4 Cost of Medical Education in United States

The cost of medical education in the United States on the other hand is high. The average tuition and other fee at public medical schools during 2003-2004 academic year was US$ 16,153 and the corresponding figure for private schools was US$32,588. This and other costs such as living expenses and expenses on books *(about US$ 20,000-25,000 per year) raises* the total cost for four years attendance to about US$ *140,000 for public schools and US$225,000* for private schools (Morrison, 2005).

3.5 Summary of the Review

Analysis of costs helps, *among others*, to set some charges if a medical doctor wants to be out of its obligation of service. All the above costs estimated are mainly direct costs of medical education. But there are also *indirect costs* such as productivity losses as a result of health problem which is contributed by those physicians which are not rendering their obligations. However, it is difficult to quantify and convert them in monetary terms. The one used in Vietnam is more appealing and comprehensive while that of Kenya does not go into the details of the actual cost incurred.

4. Methodology and Results

The framework of the model developed by Bicknell J., et al (2001) was used as a base in developing the model that is used in this paper. The model is used to determine the full costs of training Medical Doctors incurred over a period of five and half years, and also to disaggregate the total cost to each year and to each student, based on the 1998 EFY data collected from Addis Ababa University's Medical Faculty. The basic assumption of the model is: 'Costs of education follow the intensity of education which is implied by contact hours' as the resources used in providing the education are well indicated by the hours spent on the teaching process

Accordingly, the total cost of training Medical Doctors is broken-down to each year of study using the proportion of contact hours spent in each year from the total number of

contact hours spent over the whole five and half years. Since medical education is provided both at the medical school (teaching site) and in health facility (clinical site), the total cost of the training is the summation of the costs incurred at the teaching site and at the clinical site.

The proportions of lecture contact hours at each year of study help to breakdown the total cost of the medical school to each year, while the proportions of the practicum contact hours help to disaggregate the total cost of the health facility(s) incurred in providing the training. Hence, the process of estimating the yearly cost of educating a Medical Doctor begins with calculating the yearly proportion of the lecture contact hours as well as practical contact hours of the discipline (Medicine) separately, and goes through six steps as follows:

Step 1: Identifying each year's share of lecture and practical contact hours separately.

1.1. Yearly share of lecture contact hours:

$$\frac{Yearly..lecture..contact..hours}{Total..lecture..contact..hours}$$

From the data collected, the each year's computed share is given in the following table:

Table 1: Yearly share of lecture contact hours

Years of study	Yearly lecture contact hours	% Share
Premedical	320	13.05
proclinical year 1	778	31.65
Preclinical year 2	856	34.91
Clinical I (year 3)	345	14.07
Clinical II (year 4)	155	06.32
Internship (year 5)	0	00.00
Total	2452	100

Note:- curriculum hours of both theoretical and practical for Medical faculty of Addis Ababa University is attached as annex 1.

1.2. Yearly share of practical contact hours is computed as:

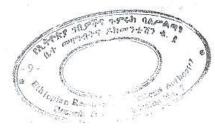$$\frac{Yearly..practical..contact..hours}{Total..practical..contact..hours}$$

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Table 2: Yearly share of practical contact hours

Years of study	Curriculum hours	% share
Premedical	0	0
Preclinical year 1	0	0
Preclinical year 2	0	0
Clinical I (year 3)	1575	29.06
Clinical II (year 4)	1765	32.56
Internship (year 5)	2080	38.38
Total	5420	100

The above-indicated proportions will help to allocate costs incurred at the medical school and the health facility(s) to each years of study respectively. The costs incurred by these institutions in educating Medicine students are to be calculated in the following steps.

Step 2: Determining the proportion of the medical school's total expenditure that is spent on educating Medicine students.

Since the medical school offers training programs in other disciplines such as Nursing, Midwifery, Dentistry etc, the proportion of its total expenditure that is spent on Medicine should be separately calculated. This also holds true for health facilities. In this paper, this proportion is calculated using two different options (scenarios) that give different results. In the *first option*, the proportion of the medical school's expenditure that is spent on educating Medicine students is calculated as the proportion of the total number of the Medicine students to the total number of students in the medical school. In this case, the total number of students in the medical school means, the total number of students in all disciplines being converted into medicine students in terms of their resource utilization, which is implied by the intensity of theoretical contact hours at the medical school. The conversion factor is hence;

$$\frac{Total.lecture..contact..hours..of..each..discipline}{Total.lecture..contact..hours..of..medicine}$$

After converting the number of students enrolled in each discipline to the number of Medicine students by multiplying their actual number by the conversion factor, the real proportion of the Medicine students from the total number of students in the medical school can be calculated as:

$$\frac{Total..number..of..medicine.students}{Total..number..of..students..after..conversion}$$

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This proportion represents the proportion of the total expenditure of the medical school that directly flows to the Medicine students among the students of other disciplines.

From the data collected, it could be found that the total number of students (including Medicine students) in the medical school by the year 1998 was 1,728. When these students are converted into Medicine students in terms of resource utilization, they amount to be around 1,189. From this number of students, the proportion of Medicine students is 43.63% (of the total 1189 students, 519 are medicine students). Since the amount of costs and beneficiaries are positively related, it is *assumed that the cost of education follows the number of students*, and hence, this proportion of Medicine students is determined to be the proportion of the medical school's costs incurred in educating Medicine students. The detailed information including the lecture hours, which is used to calculate the conversion factor and the number of students in each discipline, is attached in the Annex 1 and 2.

In the *second option*, the proportion is calculated by determining the share of lecture contact hours of Medicine students from the total lecture contact hours of all disciplines provided in the medical school, weighted by respective class sizes. In this case, as the size of the classes in each discipline's years of study is an important variable that has a cost implication, the total number of lecture contact hours in each years of study of each discipline is weighted by the respective class sizes. In general, the proportion is calculated as:

$$\frac{\sum_{i=1}^{4}(Number.of.yearly lecture contact hours.of.medicine students)..(Number.of.respective class sizes)}{\sum_{i=1}^{8}(\sum_{i=1}^{n}(Number.of.yearly lecture contact hours.of.each discipline)..(Number of.respective class sizes))}$$

Where $\sum_{i=1}^{4}$ explains the total number of lecture contact hours which is weighted by the yearly class sizes from year one up to year four, as year five is fully left for practice.

The symbol $\sum_{i=1}^{8}$ explains the summation of the product of each of the eight disciplines offered in the medical school. From the collected data the proportion is calculated to be 36.89%, i.e., of the total number of 13,715, the share of Medicine is 5,059 (see Annex 3 for details).

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For each option, four different scenarios (10%, 15%, 20% and 61%) are considered based annual capital expenditure i.e. the proportion of capital expenditure to recurrent expenditure. The assumption to consider 20% of recurrent expenditure as capital expenditure is based on the data of the national expenditure (ESDP III) allocated to expand higher education in the country in 2002 E.C. Because in the year 2002 E.C. the capital investment is expected to stabilize. The 61 % scenario is taken based on the expenditure plan (proportion of capital to recurrent expenditure) of Universities with medical faculty in the Country for the period 1998-2002 E. C. The other scenarios i.e 10 % and 15% are based on the experience of other countries. The summary of results for the different scenarios is annexed (annex 7). The remaining part of the document explains the detailed cost calculation based on the 20% scenario in both options.

Step 3: Obtaining the total annual expenditure of the medical school and determining the amount of expenditure spent on educating Medicine students using the above-calculated proportions.

Using the proportion calculated in the *first option* and by taking capital expenditure as 20% of the recurrent expenditure, the amount of expenditure at the medical faculty is given in the following table:

Table 3: Expenditures of the medical faculty (in Birr) in 1998 E.C

Types of expenditures	Amount of exp.
Recurrent expenditure	12,276,188.00
Expatriate employees' salary	2,691,072.00
Expenditure from internal revenue (housing allowance , overload payment, etc)	208,400.00
Annualized capital expenditure (20% of the recurrent expenditure)	3,303,831.24
Total	18,210792.00
Allocation for General practice students (43.63 %)	7,945,368.55

Using the proportion calculated in *option two*, the amount of medical school's expenditure spent in educating Medicine students is given in the following table:

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Table 4: Expenditures of the medical faculty in 1998 E.C (Birr)

Types of expenditure	Amount of exp.
Recurrent expenditure	12,276,188.00
Expatriate employees' salary	2,691,072.00
Expenditure from internal revenue (housing allowance , overload payment, etc)	208,412.00
Annualized capital expenditure (20% recurrent expenditure)	3,303,531.24
Total	18,210,792
Allocation for General practice students (36.88%)	6,716,140.09

The difference between the first and the second option is that in the first option, the proportion is determined by the contact hours and the number of students in each discipline, while in the second option by the contact hours weighted by the class size to estimate the share of Medicine students from the total expenditure of the medical school.

Step 4: Determining the proportion of the health facilities' total expenditure that is indirectly spent on the training of Medicine students.

Health facilities also incur costs for educating medical students. The cost is calculated as the share of Medicine students from a health facility's expenditure that is indirectly spent on providing training for all medical students from its total annual expenditure. The amount of expenditure that the facility indirectly spends on providing training for all medical students is first calculated as:

$$\frac{(Hourly..expenditure..of..the..health..facility)...(Total..hours..spent..by..medical..students..in..the..facility)}{Total..annual..expenditure..of..the..health..facility}$$

Where;

$$Hourly\ expenditure = \frac{Total..annual..expenditure..of..the..health..facility}{Total..service..hours..of..the..health..facility}$$

Where Total service hours= 365 days x 24 hours=8,760 hours.

$$Hours\ spent = \sum_{i=1}^{8} Total..practicum..contact..hours..of..each..discipline,$$

For example in the teaching hospital (Black Lion), the total number of hours spent by all medical students is 2,232.48 and its total expenditure (both capital and recurrent,

excluding expenditure on food (budget line 6216) and uniforms, clothing and bedding (budget line 6211)) of the year was 34,589,658. The proportion of its total expenditure that is spent on training medical students is hence,

$$\frac{(2,232.48)}{8760} = 25\%$$

In other hospitals, the students share 6% of the total expenditures. For example, in Emanuel hospital, hours spent by medical students is 562.48 and its total expenditure of the year was 9,355,007. The 6% is hence resulted as:

$$\frac{(562.48)}{8760} = 6\%$$

As can be seen from above, in 1998 E.C., one-fourth of the teaching hospital's annual expenditure was indirectly spent on training medical students, while other hospitals spent 6% of their respective annual expenditures.

After finding the amount of expenditure that the health facility indirectly spends on training all medical students, we then determine the proportion of this expenditure that goes towards training of Medicine students *in particular*. This proportion is to be determined the total practical contact hours of Medicine students to the total practical contact hours of all disciplines (including Medicine). i.e.

$$\frac{Total..practical..contact..hours..of..Medicine}{Total..practical..contact..hours..of..all..disciplines}$$ As mentioned above, the total

amount hours spent by all medical students in the teaching hospital is 2,232.48, of this amount, the share of Medicine students' at Black lion hospital 's:

$$\frac{1,901}{2,232.48} = 85\%$$

As the students reside in the teaching hospital and attend all their practicum programs there starting from year three, they spend greater amount of hours in the teaching hospital than other hospitals. Hours spent by Medicine students in other health facilities are found to be only 231 out of 562.48 hours spent by all medical students. It is assumed that medicine students spent equal amount of practical hours i.e. 231 in each health facilities other than the teaching hospital (Black lion hospital), and the percentage share is:

$$\frac{231}{562.48} = 41\%$$

The total amount of cost incurred in educating Medicine students in the clinical site is thus found using the above-calculated proportions (see Annex 4 and 5).

It should be noted that in calculating the annual capital expenditures of health facilities, the proportion of capital and recurrent expenditure in the HSDP III was taken as a basis i.e. 20% for teaching hospital. The proportion of capital to recurrent expenditure for health facilities other than the teaching hospital is taken by considering the proportion of practical hours spent on these facilities compared to the teaching hospital. Accordingly 5% of the recurrent expenditure is taken as annual capital expenditure in the health facilities. Once the aggregate costs incurred at the teaching and clinical sites are found, the next step is disaggregating them to each years of study.

Step 5: Disaggregating the total tuition expenditure of the medical school and that of the health facilities to each years of study.

This can be done by using the proportion of contact hours in each year, which was calculated in Step 1, i.e.

Option one:

Table 5: Disaggregating the total tuition expenditure of the medical school and that of the health facilities to each years of study

Years of study	% share of lecture contact hours	Yearly share of the medical school's exp.	% share of practical contact hours	Yearly share of the health facilities' exp.	Total yearly cost
Premedical	13	1,036,870.60	0	0.00	1,036,870.60
Preclinical year 1	32	2,514,709.15	0	0.00	2,514,709.15
Preclinical year 2	35	2,773,728.16	0	0.00	2,773,728.16
Clinical I (year 3)	14	~1,117913.35	30	2,606,848.44	3,724,761.80
Clinical II (year 4)	6	502,147.29	32	2,780,118.53	3,282,265.82
internship (year 5)	0	0	38	3,276,538.32	3,276,537.32
Sub-total medical school	100%	7,945,368.55	100%	8,663,504.29	16,608,872.84

Option two:

Table 6: Disaggregating the total tuition expenditure of the medical school and that of the health facilities to each years of study

Years of study	% share of lecture contact hours	Yearly share of the medical school's exp.	% share of practical contact hours	Yearly share of the health facilities' exp.	Total yearly cost
Premedical	13	876,456.28	0	0.00	876,456.28
Preclinical year 1	32	2,125,658.34	0	0.00	2,125,658.34
Preclinical year 2	35	2,344,604.51	0	0.00	2,344,604.51
Clinical I (year 3)	14	944,960.91	30	2,606,848.44	3,551,809.35
Clinical II (year 4)	06	424,460.05	32	2,780,118.53	3,204,578.58
internship (year 5)	0	0.00	38	3,276,537.32	3,276,537.32
Sub-total medical school	100%	6716140.09	100%	8,663,504.29	15,379,644.38

Step 6: Disaggregating the cost to each student.

The above-determined yearly cost of educating a Medical Doctor can further be disaggregated to each Medicine student by dividing the cost at each year of study to the respective number of students. The summation of the yearly costs per student thus gives the full costs of educating a Medical Doctor as indicated in the following tables:

Option one:

Table 7: Disaggregating the total cost to each student

Years of study	Annual cost	No. of students	Cost per student
Premedical	1,036,870.60	118	8,787.04
Preclinical year 1	2,514,709.15	114	22,058.85
Preclinical year 2	2,773,728.16	71	39,066.59
Clinical I (year 3)	3,724,761.80	68	54,775.91
Clinical II (year 4)	3,282,265.82	86	38,165.88
internship (year 5)	3,276,537.32	62	52,847.38
Total			215,701.65

Option two:

Table 8: Disaggregating the total cost to each student

Years of study	Annual cost	No. of students	Cost per student
Premedical	876,456.28	118	7,427.60
Preclinical year 1	2,125,658.34	114	18,646.13
Preclinical year 2	2,344,604.51	71	33,022.60
Clinical I (year 3)	3,551,809.35	68	52,232.49
Clinical II (year 4)	3,204,578.58	86	37,262.54
internship (year 5)	3,276,537.32	62	52,847.38
Total			201,438.73

However, if this amount is to be paid after n years, the total amount of money spent should be compounded as: $P(1+r)^n$;

Where P= principal amount of money

r=interest rate

n=time period

Accordingly, the amount of money that takes the opportunity cost of capital into account is given below:

Option one:

Table 9: Compounding the total cost

The principal amount	$(1+r)^n$	Total amount
8787.04	1.77	15553.061
22058.85	1.6	35294.16
39066.59	1.46	57037.221
54775.91	1.33	72851.96
38165.88	1.21	46180.715
52,847.38	1.1	58132.118
Total		285,049.24

Option two:

Table 10: Compounding the total cost

The principal amount	$(1+r)^n$	Total amount
7427.60	1.77	13146.852
18646.13	1.6	29833.808
33022.60	1.46	48212.996
52232.49	1.33	69469.212
37262.54	1.21	45087.673
52,847.38	1.1	58132.118
Total		263,882.66

The cost of medical education that is incurred by the government institution (Addis Ababa University) is as stated in the above paragraphs. Since comparing the cost with what is currently being charged in the private sector is necessary, information was also gathered from a pre-accredited private medical school (Hayat Medical College). From the information collected, it is found that the amount of tuition fee that a student should pay for the year "pre-medical" is Birr 8,000 and for the rest of the years of study, Birr 16,000 (but subject to revision) at yearly basis. This amount charged by the private sector when compared to the results in this study particularly to 20% scenario is almost equal.

Annex 1: Curriculum hours of Medical education

Premedical Courses

NO.	COURSES IDENTIFIED AS PREMEDICAL TEACHING	COURSE NUMBER	CREDIT HOURS
1	Organic Chemistry	CHEM 259	3
2	Organic Chemistry Lab	CHEM 301	1
3	Psychology	PSYC 201	3
4	Role of Computers in Medicine	COMP 201	1
5	Sociology & Medical Anthropology	SOAN 203	3
6	Genetics	BIOL 376	4
7	Sophomore & Communication English	FLEn 202	3
8	Civic Education	GeEd 101	2
	Total		20

Preclinical Year I

NO.	COURSES IDENTIFIED	COURSE NUMBER	CONTACT HOURS
1	Anatomy	ANAT 201	262
2	Histology/Embryology	HIEM 201	154
3	Physiology	PHYS 201	205
4	Biochemistry	BCHM 201	155
	Total		776

Preclinical Year II

NO.	COURSE IDENTIFIED	COURSE NUMBER	CREDIT HOURS
1	Pharmacology	Pharm 201	70
2	Microbiology Immunology	Mbiol 301	150
3	Parasitological	Pars 301	70
4	Pathology	Path 301	230
5	Clinical Toxicology	Phar 312	28
6	Epidemiology	COMH 302	48
7	Nutrition	NUTR 201	32
8	Environmental Health	Meit 311	32
9	Health Planning & Management	HPLM 201	48
10	Biostatistics	COMH 301	32
11	Health Educaiton	COMH 311	16
	Total		878

Clinical I (Year III)

NO.	COURSE	COURSE NUMBER	DURATION
1	Clinical Lab Method	CLIN 301	2 weeks (40 hrs) (P/F)
2	Physical Diagnosis and Medical Ethics	PDME 301	5 weeks (200 hrs) (P/F)
3	Internal Medicine	Imed 301	11 weeks (440 hrs)
4	Surgery	Surg 301	11 weeks (440 hrs)
5	Obstetrics & Gynecology	ObGy 301	10 weeks (400 hrs))
6	Pediatrics & Child Health	Paed 301	10 weeks (400 hrs)
7	Radiology*		(10 hrs)
	Total		42 weeks (1680 + 10* hrs)

Clinical II (Year IV)

NO.	COURSE	COURSE NUMBER	DURATION
1	Internal Medicine	Imed 401	7 weeks (280 hrs.)
2	Surgery	Surg 401	7 weeks (280 hrs.)
3	Obstetrics & Gynecology	ObGy 501	6 weeks (240 hrs.)
4	Pediatrics & Child Health	Paed 501	6 weeks (240 hrs.)
5	Psychiatry	Psyc 401	7 weeks (280 hrs.)
6	Ophthalmology	Opht 406	3 weeks (120 hrs.)
7	Dermatology	DERM 401	3 weeks (120 hrs.)
8	Rural Community Attachment	COMH 401	6 weeks (240 hrs.)
9	Clinical Pharmacology	CLPH 401	. week (32 hrs.)
10	* Forensic Medicine (if no course, cancel)	FRNS 401	* 1 week (16 hrs.)
11	ENT* (ear, nose, throat)	ENTS 401	* (2 weeks) 80 hrs.
12	Dentistry* (if no course, cancel)	DENT 401	* (2 weeks) 10 hrs.
	Total		1832 + *36(48) weeks

Internship (Year V)

NO.	COURSE	COURSE NUMBER	DURATION
1	Internal Medicine	MDINTM 600	13 weeks
2	Surgery	MDSURG 600	13 weeks
3	Obstetrics & Gynecology	MDGYOB 600	13 weeks
4	Pediatrics & Child Health	MDPAED 600	13 weeks
	Total		53 weeks

Annex 2: Number of lecture hours in each discipline

Discipline	lecture hours	Conversion factor
Medicine	2452	1
Anesthesia	1504	0.61
Dentistry	1328	0.54
Midwifery	1360	0.55
Nursing	1504	0.61
Radiography	1392	0.57
Lab	1504	0.61
Post Graduate	1056	0.43

Annex 3: Number of students in each discipline by year in 1998 E.C. and adjusted number of studer Using the conversion factor given in Annex 1

Discipline	Premed	year I	Year II	year III	Year IV	Intern	Total No.Stud.	adjusted # of students
Anesthesia Deg. Reg.		33	33				86	40.458
Denthal Therapy		44	33	26			103	55.7745
General Practice	118	114	71	68	86	62	519	519
Lab. Tech. Deg. Reg.		73	49	114			236	144.7388
Midwifery		74	52				126	69.8796
Nursing Deg. Reg		92	105	94			291	178.4907
Radiography Deg. Reg		66	41				107	60.7439
Post graduate		111	169				280	120.4
Total students							1728	1189.485

Annex 4: lecture hours and class size by year and discipline

Discipline	# of lecture hours	class size	Total # of lecture hours
Anesthesia			
year 1	688	1	688
year 2	560	1	560
year 3	256	0	0
Total			1248
Dentistry			
year 1	528	1	528
year 2	416	1	416
year 3	384	1	384
Total			800
Midwifery			
year 1	656	1	656
year 2	656	1	656
year 3	48	0	0
Total			1312
Lab. Technology			
year 1	592	1	592
year 2	608	1	608
year 3	304	2	608
Total			1808
Nursing			
year 1	656	1	656
year 2	656	1	656
year 3	48	2	96
Total			1408
Radiography			
year 1	656	1	656
year 2	368	1	368
year 3	368	0	0
Total			1024
Medicine			
Pre-medicine	320	2	640
year 1	776	2	1552
year 2	856	2	1712
year 3	345	2	690
year 4	155	3	465
year 5	0	0	0
Total			5059
Post graduate			
year 1	144	6*	864
year 2	32	6*	192
Total			1056
Grand Total			13715

Medicine share 0.368866205

* Note:- class size for postgraduate students is considered only for six mainly lecture based disciplines as compared to others. The six disciplines are Anatomy, Biochemistry, Community health, Nursing, Pharmacology and Physiology.

Annex 5: Annual teaching expenditures at teaching hospitals, other hospitals and health centers (for option 1)

Types of health facilities	Annual recur. expe.	Capital cost as % of recu.	capital cost	recur plus capital	% for all types of medical training	Exp.for all types of medical training
Blacklion teaching hospital	28924715.16	20%	5764943.032	34589658.19	25%	8,647,414.55
Amanuel hospital	7,683,098	5%	384154.9	8067252.9	6%	484,035.17
Paulos	12,660,688	5%	633034.3895	13293722.18	6%	797,623.33
Yekatit	8,890,305	5%	444515.25	9334820.25	6%	560,089.22
Menilik	8,214,888	5%	410744.4	8625632.4	6%	517,537.94
Gandi	4,021,434	5%	201071.7	4222505.7	6%	253,350.34
Alert	8,511,291	5%	425564.55	8936855.55	6%	536,211.33
Zewai Health Center	380,500	5%	19025	399525	6%	23,971.50
Kirkos Health center	477,979	5%	23898.95	501877.95	6%	30,112.68
Total						11,850,345.06

Annex 6: Expenditures at teaching hospitals for General practice students (for option 1)

Types of health facilities	Expe. for all medical students	% for general practice student	expe. for general practice students
Blacklion teaching hospital	8,647,414.55	85%	7350302.366
Amanuel hospital	484,035.17	41%	198454.4213
Paulos	797,623.33	41%	327025.5656
Yekatit	560,089.22	41%	229636.5782
Menilik	517,537.94	41%	212190.557
Gandi	253,350.34	41%	103873.6402
Alert	536,211.33	41%	219846.6465
Zewai Health Center	23,971.50	41%	9828.315
Kirkos Health center	30,112.68	41%	12346.19757
Total expe. for general practice student	11,850,345.06		8,663,504.29

Annex 7: Summary of cost of medical education per students at AAU using 1998 E.C Expenditur

		Capital expenditure as % of recurrent Expenditure (In Birr)			
		10%	15%	20%	61%
Option 1 (without class size)					
	actual cost	198,840.89	207,271.27	215,701.65	284,786.20
	actual cost plus opportunity cost	262,632.59	273,840.90	285,049.24	376,904.02
Option 2 (with class size)					
	actual cost	185,766.54	193,502.64	201,438.73	265,650.11
	actual cost plus opportunity cost	243,299.88	253,556.25	263,882.66	348,505.51

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