

PROGRESS REPORT OF THE ONGOING MULTIDISCIPLINARY RESEARCH UNIT (MRU) OF
ICMR
AT ASSAM MEDICAL COLLEGE (AMC), DIBRUGARH

(A) Annual progress reports for the years: 2012-13 and 2013-14 on the following aspects: (From page no. 2 to page no. 10)

Physical: (From page no. 2 to page no. 4)

- (i) Number of rooms with dimensions and individual rooms and nature of laboratories set (such as Biochemistry, Microbiology, Pathology etc.)
- (ii) Number and types of equipments installed
- (iii) Number and categories of personnel in these laboratories

Financial: (From page no. 5 to page no. 8)

- (i) Expenditure statement (salary, equipments, consumables and training etc.)
- (ii) Unspent balance after each financial year
- (iii) Further budgetary requirement in 2014-15

Scientific: (From page no. 9 to page no. 10)

- (i) Number of studies initiated/ carried out (list)
- (ii) Proposed areas of further research addressing important public health issues
- (iii) Number of publications in peer reviewed journals in 2012 and 2013

(B) Utilization of the laboratory: (From page no. 11 to page no. 24)

How many studies have been planned and carried out with the support from AMC, Dibrugarh, ICMR and other agencies along with the following details:

- (i) Principal Investigator and other members of the team
- (ii) Subject/ area of each research study
- (iii) Departments (interdisciplinary programmes) in each research study
- (iv) Name the departments of AMC taking benefit from MRU (viz, MD/MS thesis, individual projects, Ph.D. scholars etc.)

A write-up of 2-3 pages on each research activity/ programme will be required.

(C) Leads for clinical/ public health from the studies undertaken as above (Page no. 25)

A. Annual progress reports for the years: 2012-13 and 2013-14:

Physical

1. Total Floor area of the Laboratory:

44 ft X 57.3 ft = 2521.2 sq.ft.

- a. **Biochemistry section:** 13' X 12'
- b. **Pathology section:**
 - i. Histopathology: 10.6' X 5.3'
 - ii. Cell counter area: 21' X 9'
- c. **Microbiology including Molecular Biology section:**
 - i. Elisa room: 15' X 9'
 - ii. Pre-PCR area: 16' X 12'
 - iii. PCR area: 12' X 10'
 - iv. Post PCR & Data processing: 12' X 7'
 - v. Tissue culture room: 11' X 9'
 - vi. Sample Processing area: 11' X 9'
 - vii. Media Preparation area: 11' X 9'
 - viii. Washing room: 17' X 9'
- d. Computer section: 13' X 8'
- e. Changing Room: 10' X 5'
- f. Common storage area for Deep freezers.

2. **Number and types of equipments installed:**

Sl. No.	Name of equipment	Number allotted	Number purchased
1	Hematological analyzer	1	1
2	Autoanalyser	1	1
3	Tissue Processor	1	0
4	Cryostat	1	1
5	Microscope	4	1
6	Centrifuge		
	a. Table top non refrigerated centrifuge	1	1
	b. Table top refrigerated centrifuge	2	2
	c. Microfuge (Refrigerated)	2	2
	d. Ultracentrifuge	1	1
7	Refrigerator and deep freezer		
	a. Ordinary Freeze	2	0
	b. Minicold Lab	1	1
	c. -20 C Freezer	2	2
	d. -70 C Freezer	2	2
8	Molecular Biology Lab		
	a. Thermal Cycler	1	1
	b. Microfuge	1	1
	c. Centrifuge	1	1
	d. Ordinary Refrigerator	1	0
	e. Biosafety cabinet	1	1
	f. -20 C freezer	1	1
	g. Water bath	2	2
	h. Gel doc	1	1
	i. Hybridisation oven	1	1
	j. Microwave oven	1	0
	k. Electrophoresis system	1	1
	l. Gel dryer	1	0
	m. Spectrophotometer	1	1
	n. Real-time PCR	1	1
	o. Ph meter	2	2
	p. Electronic weighing balance	1	1
	q. Vortex mixers	2	0
	r. Ice flaking machine	1	1
	s. Micropipettes	4 sets	4 sets
9	Water purification system	1	1
10	Sterilization Room		

	a. Autoclave	3	3
	b. Hot air oven	3	3
11	ELISA Reader		
	a. Reader	2	2
	b. Washer	2	2
	c. Micropipettes	3 sets	3 sets
12	Histopathology section		
	a. Microtome	1	1
	b. Electronic weighing balance	1	1
13	Tissue culture		
	a. Biosafety cabinet	1	1
	b. CO2 incubator	1	1
	c. Automatic pipettes		1 set
	d. Table top centrifuge	1	1
	e. Positive pressure filtration system	1	0
14	Minor equipment		
	a. magnetic stirrer	1	0
	b. Multichannel pipettes	4X4 sets	4X4 sets
	c. tissue homogenizer	2	1
	d. Ultra sonicator	1	1
	e. Incubator	1	1
	f. Shaker incubator	1	1
	g. Ice flaking machine	1	0
15	Computer with printer and internet facility	2	2
16	Anoxomat anaerobic system (as per approval)		1
17	Generator (as per approval)		1

3. Number and categories of personnel in these laboratories:

The following personnel are employed on a contractual basis for the entire laboratory as per the MRU establishment guidelines:

- (i) Research Scientist II: Dr. Saurav Jyoti Patgiri, M.D. Microbiology.
- (ii) Research Scientist I: Dr. Himangshu Mazumdar, M.D. Biochemistry.
- (iii) Laboratory technicians:
 - a. Ms. Soni Begum.
 - b. Mr. Sumit Gupta.

In addition, other Departmental staff, Post-graduate students and Faculty members use the laboratory facilities for their respective work as and when necessary.

Financial

For Financial year 2012-2013:

(i) Expenditure Statement:

Annexure – 4

**FORMAT FOR ANNUAL STATEMENT OF ACCOUNT TO ACCOMPANY REQUEST FOR RELEASE OF FIRST INSTALLMENT
(Financial year from 1st April, 2012 to 31st March, 2013)**

1. Sanction letter No. : No. 49/9/RMRC/10/NCD-II Date : 28-03-2012
2. Total Project Cost : Rs. 6,00,00,000.00 (Rupees six crore only)
3. Sanction /Revised Project cost (if applicable) : No.
4. Date of commencement of Project : 08-08-2012
5. Statement of Expenditure :

S. No.	Sanctioned / Head	Funds Allocated	Expenditure Incurred			Balance as on (31-03-2013)	Requirement of Funds upto 31 st March 2014	Remarks
			I Year	II Year	III Year			
1.	Salaries	15,45,860.00	2,07,982.00			1337878.00		
2.	Permanent Equipments	3,28,88,000.00	3,04,89,574.00			23,98,426.00		
3.	Consumable	4,00,000.00	7,84,866.00			-3,84,866.00		
4.	Contingencies	2,50,000.00	22,8302.00			21,698.00		
5.	Training	2,00,000.00	1,88,600.00			11,400.00		
6.	Overhead Expenses							
7.	Others (if any)							
8.	Total	3,52,83,860.00	3,18,99,324.00			33,84,536.00		

Signature of the Principal Investigator
Assam Veterinary College
Dibrugarh.

Signature of the Accounts Officer of the Institute
Assam Veterinary College
Dibrugarh.

ii) Unspent balance after 1st Year: Rs. 33,84,536.00/-(Rupees Thirty three lakhs eighty four thousand five hundred and thirty six)

For Financial year 2013-2014:


1st Half Yearly report: Period: 01.04.2013 – 30.09.2013

i) Expenditure statement:

STATEMENT OF ACCOUNT
(Financial year from 1st April, 2013 to 30th Sep, 2013)

1. Sanction letter No. : No. 49/9/RMRC/10/NCD-II Date : 28-03-2012
 2. Total Project Cost : Rs. 6,00,00,000.00 (Rupees six crore only)
 3. Sanction /Revised Project cost (if applicable) : No.
 4. Date of commencement of Project : 08-08-2012
 5. Statement of Expenditure : From April to September 2013

S. No	Sanctioned / Head	Opening Balance as on (01-04-13)	Funds received vide ICMR Letter No. 49/9/RMRC/10-RCN Dated : 28-03-2013 (Rs. 10,00,000/-)	Funds allocated from existing balance vide ICMR Letter No. 49/9/RMRC/10-RCH Dated :23.05.13 (Rs. 15,04,800/-)	Expenditure from April to September 2013 (6 months)	Balance as on 30.09.2013 (including committed amount for Equipments and power backup system)	Remarks
1.	Salaries	13,37,878.00	-	7,54,800.00	4,59,609.00	8,78,269.00	-
2.	Permanent Equipments	23,98,426.00	-	-	-	23,98,426.00	*Committed Rs. 13,91,400/- (Ref. No. 49/9/RMRCH Dated: 27.09.13)
3.	Consumable	-3,84,866.00	-	4,00,000.00	13,556.00	- 3,98,422.00	-
4.	Contingencies	21,698.00	-	2,50,000.00	1,00,723.00	- 79,025.00	-
5.	Training	11,400.00	-	1,00,000.00	84,918.00	- 73,518.00	-
6.	Overhead Expenses	-	-	-	-	-	-
7.	Others (if any)	-	10,00,000.00*	-	-	10,00,000.00	*Committed Rs. 10,00,000/- for Power back up system (No. 49/9/RMRC/10-RCN Dated : 28-03-2013)
8.	Total	33,84,536.00	10,00,000.00		6,58,806.00	37,25,730.00*	*13,34,330.00 balance after deducting committed amount


 Signature of the Co-ordinator
 Co-ordinator,
 Multi-Disciplinary Research Laboratory,
 Assam Medical College & Hospital


 Signature of the Principal Investigator
 Principal,
 Assam Medical College,
 Dibrugarh.


 Signature of the Accounts Officer of the Institute
 Accounts Officer,
 DIBRUGARH


2nd half Yearly report: Period: 01.10.2013 – 31.03.2014.


i) Expenditure statement:

**STATEMENT OF ACCOUNT
(Financial year from 1st October, 2013 to 31st March, 2014)**

1. Sanction letter No. : No. 49/9/RMRC/10/NCD-II Date : 28-03-2012
 2. Total Project Cost : Rs. 6,00,00,000.00 (Rupees six crore only)
 3. Sanction /Revised Project cost (if applicable) : No.
 4. Date of commencement of Project : 08-08-2012
 5. Statement of Expenditure : From October'13 to March'14

1	2	3	4	5	6	7	
S. No.	Sanctioned / Head	Opening Balance as on (01-10-13)	Funds received vide ICMR Letter No. 49/9/RMRC/2010-RCH Dated : 26-02-2014 (Rs. 11,82,702/-)	Funds allocated from existing balance	Expenditure from October'13 to March 2014 (6 months)	Balance as on 31.03.2014 (2+3)-5	Remarks
1.	Permanent Equipments	23,98,426.00	-	13,91,400/- (Ref. No. 49/9/RMRRCH Dated: 27.09.13)	10,38,163.00*	13,60,263.00	*Payment for Anoxomat culture system done. Payment for Rotors pending.
2.	Salaries	8,78,269.00	4,32,702.00	4,33,836.00	8,45,094.00	4,65,877.00	-
3.	Consumable	- 3,98,422.00	4,00,000.00	-	1,94,758.00	- 1,93,180.00	-
4.	Contingencies	- 79,025.00	2,50,000.00	-	55,529.00	1,15,446.00	-
5.	Training	- 73,518.00	1,00,000.00	-	-	26,482.00	-
6.	Overhead Expenses	-	-	-	-	-	-
7.	Others (if any)	Rs. 10,00,000*	-	-	9,00,000.00*	1,00,000.00	*Payment for Power back up system. Purchase made as per ICMR Memo No. 49/9/RMRC/10-RCN Dated: 28-03-2013.
	*Bank Interest(from commencement of project)	-	12,43,261.00	-	-	12,43,261.00	
8.	Total	37,25,730.00*	24,25,963.00		30,33,544.00	31,18,149.00	


Signature of the Co-ordinator
 Co-ordinator,
 Multi-Disciplinary Research Laboratory,
 Assam Medical College & Hospital


Signature of the Principal Investigator
 Assam Medical College,
 Dibrugarh.


Signature of the Accounts Officer of the Institute
 Assam Medical College,
 DIBRUGARH

ii) Unspent balance at the end of the second Year: Rs.31,18,149.00 (Rupees Thirty One Lakhs eighteen thousand one hundred and forty nine only).

iii) **Budgetary requirements for 2014-2015:**

Sl. No.	Heads	Scale/ allotted fund	Yearly expenses	
1	Salary (as per revised scale)	Scientist II	Rs. 55500+HRA @ 10% = Rs. 58275 / month	Rs. 699300.00
		Scientist I	Rs. 55250+HRA @ 10% = Rs. 55125/ month	Rs. 661500.00
		Lab Technician X 2	Rs.22340/ month	Rs. 536160.00
2	Contingency	Rs. 250000.00 / 6 months	Rs. 500000.00	
3	Training	Rs. 100000.00 / 6 months	Rs. 200000.00	
4	Consumables	Rs. 400000.00 / 6 months	Rs. 800000.00	
Total for 1 financial year 2014-15: Rupees Thirty three lakhs ninety six thousand nine hundred and sixty only.			Rs. 33,96,960.00	

******Request has also been made for permission to purchase extra equipments from existing fund under Permanent Equipments head. (Ref. Letter No. 2014/AMC/MDRL/40 dated 11/04/2014).***

Scientific

(i) **Number of studies initiated/ carried out (list):**

No. of studies going on : 6

1	Assessment of oxidative stress correlating the levels of antioxidant enzymes and non-dietary antioxidants with extent of lipid peroxidation in drug naïve Schizophrenia patients in Assam. (Intramural Project)
2	Sero-surveillance of Taenia solium IgG antibodies in Acute Encephalitis Syndrome cases. (Intramural Project)
3	Blood zinc levels in children with severe Pneumonia and effects of zinc supplementation. (Extramural Project – ICMR)
4	Occurrence of Respiratory Syncytial virus, Influenza A and B virus, Parainfluenza 1, 2, 3 virus and Human Metapneumovirus in Acute Respiratory Tract Infection in paediatric patients – A hospital based study. (Intramural Project)
5	Spectrum of bacterial pathogens causing Community Acquired Pneumonia in children under 5 years of age. (Intramural Project)
6	Evaluation of the virulence factors of Candida albicans isolated from HIV positive patients. (Intramural Project)

No. of studies initiated : 3

1	Association of Helicobacter pylori virulence factors with upper gastrointestinal and extra-intestinal diseases in adults. – Post graduate thesis.
2	A clinical and serological study of childhood neurocysticercosis with suggestive lesion on CT scan brain.
3	Isolation and characterization of Helicobacter pylori from gastric biopsy specimen.

ii) **Proposed areas of further research addressing important public health issues:**

- a. Childhood pneumonia
- b. Acute encephalitis syndrome

iii) **Number of publications in peer reviewed journals in 2012 and 2013:**

Nil.

B. Utilization of the laboratory:

Ongoing Projects:

A total of 6 (six) studies are being carried out presently in the Multi-disciplinary Research Laboratory (MDRL) with the support from AMC, Dibrugarh, ICMR and other agencies.

Summary of Ongoing projects:

Serial No.	Topic	PI	Date/Month of initiation	Intramural/ Extramural	Summary
1	Assessment of oxidative stress correlating the levels of antioxidant enzymes and non-dietary antioxidants with extent of lipid peroxidation in drug naïve Schizophrenia patients in Assam.	Principal cum Chief Superintendent, AMCH	November '2013	Intramural	Till date 36 samples have been processed for estimation of serum MDA level, serum SOD activity, serum bilirubin and serum uric acid level.
2	Sero-surveillance of Taenia solium IgG antibodies in Acute Encephalitis Syndrome cases.	Principal cum Chief Superintendent, AMCH	July '2013	Intramural	Till date 278 samples have been processed for detection of Taenia solium IgG and 23 samples have been found to be positive.
3	Blood zinc levels in children with severe Pneumonia and effects of zinc supplementation.	Dr. A. Barua Asst. Prof. Dept. of Paediatrics, AMCH	December '2013	Extramural	Till date 75 samples have been processed for R/E blood, serum total protein and fraction and serum hs-CRP level.
4	Occurrence of Respiratory Syncytial virus, Influenza A and B virus, Parainfluenza 1, 2, 3 virus and Human Metapneumovirus in Acute Respiratory Tract Infection in paediatric patients – A hospital based study.	Dr. L. Saikia Prof. & HOD Dept. of Microbiology, AMCH	June '2013	Intramural	Till date 300 samples have been collected, and 250 samples have been processed for RNA extraction, c-DNA synthesis and PCR has been performed on 170 of them.
5	Spectrum of bacterial pathogens causing Community Acquired Pneumonia in children under 5 years of age.	Dr. L. Saikia Prof. & HOD Dept. of Microbiology, AMCH	June '2013	Intramural	Till date 150 samples have been collected, BAL culture has been done for all of them and PCR performed for 5 bacteria so far.
6	Evaluation of the virulence factors of Candida albicans isolated from HIV positive patients.	Dr. L. Saikia Prof. & HOD Dept. of Microbiology, AMCH	June '2013	Intramural	Till date 126 samples have been collected, among them 46 samples are found to be positive for Candida albicans. Phenotyping has been done for the virulence factors in those samples.

Details of Ongoing Projects:

Project no. 1:

Title: Assessment of oxidative stress correlating the levels of antioxidant enzymes and non-dietary antioxidants with extent of lipid peroxidation in drug naïve Schizophrenia patients in Assam.

Principal Investigator & Other members of the team:

PI: Principal cum Chief Superintendent, AMCH.

Dr. Lahari Saikia, Co-ordinator, MDRL & Prof. & HOD, Dept. of Microbiology, AMCH.

Dr. Kamala Deka, Prof., Dept. of Psychiatry, AMCH.

Dr. Himangshu Mazumdar, Research Scientist I, MDRL.

Dr. Saurav Jyoti Patgiri, Research Scientist II, MDRL.

Departments (interdisciplinary programs) in the research study:This study is being carried out in collaboration with the Dept. of Psychiatry, Assam Medical College. The samples used have been collected from Dept. of Psychiatry and stored in MDRL. Sample processing is being done in MDRL.

Hypothesis: Schizophrenia is a common psychiatric disorder, marked by a vast array of symptoms ranging from gross distortion from reality to disturbances in thinking, feeling and behavior.

There is increasing evidence that oxidative stress is a major contributor in the pathophysiology of this condition, as indicated by increased production of products of lipid peroxidation (malondialdehyde and 4-hydroxynonenal in particular) in plasma and CSF as well as decrease in the anti-oxidant defense mechanism.

The proposed study aims at estimation of malondialdehyde as a marker of lipid peroxidation, antioxidant enzyme Superoxide dismutase and non-dietary antioxidant Uric acid and Bilirubin drug naïve schizophrenia patients.

Objectives:

1. To estimate the level of malondialdehyde (MDA) in drug naïve schizophrenia patients and controls.
2. To estimate superoxide dismutase (SOD) activity, uric acid level and bilirubin level in drug naïve schizophrenia patients and controls.
3. To find out the correlation between malondialdehyde level and superoxide dismutase activity in patients as well as controls.
4. To find out the correlation between malondialdehyde level and levels of uric acid and bilirubin inpatients and controls.

Study subject:Drug naïve diagnosed cases of schizophrenia who fulfill DSM – IV criteria have been included in the study.

Study period: A period of 1 year has been proposed for completion of the study including sample collection, processing, result analysis and interpretation.

Study design: The given study will be a Case control study.

Sample size: A total of 40 cases have been included in the study group and 40 age and sex matched cases have been included in the control group.

Progress till date: Till date, a total of 36 samples have been processed. Estimation of Serum malondialdehyde level, superoxide dismutase activity, Serum total bilirubin level and Serum uric acid levels have been performed in all the 36 samples.

Project no. 2:

Title: Sero-surveillance of Taenia solium IgG antibodies in Acute Encephalitis Syndrome cases. (Intramural Project)

Principal Investigator and other members of the team:

PI: Principal cum Chief Superintendent, Assam Medical College.

Dr. Lahari Saikia, Co-ordinator, MDRL

Dr. Saurav Jyoti Patgiri, RS II, MDRL.

Dr. Himangshu Mazumdar, RS I, MDRL.

Subject/ area of research study:

Background: Japanese encephalitis and Neurocysticercosis share quite a few epidemiological features and their co-infection has already been described in literature. This study was undertaken to explore whether this hypothesis holds true in a JE endemic zone such as the upper Assam districts. We also tried to examine if there was any correlation between co-infection and clinical outcome. The feasibility of routine screening of AES cases for Cysticercus antibodies was also examined to determine if it needs to be included in the gamut of tests needed to accurately diagnose a case of AES.

Materials and Methods: 278 AES cases admitted in Assam Medical College, Dibrugarh between July 2013 & June 2014 were taken up for the study. Diagnosis of Neurocysticercosis was done by detection of Taenia solium IgG antibodies in serum by ELISA. The diagnosis of JE was established by JE specific IgM capture ELISA. The study population included 118 JE cases and 160 non-JE Acute encephalitis cases as controls. Chi-square test and Fisher exact test were used for calculation of the P value.

Current project status: The study will be drafted for publication purposes as soon as the analysis is complete.

No. of samples processed: 278

Total cases positive for NCC: 23

Prevalence of NCC in JE cases: 15%

Prevalence of NCC among controls: 3%

Statistical analysis: pending.

Departments (interdisciplinary programs) in the research study: This study was carried out in collaboration with the Dept. of Microbiology, Assam Medical College. The samples used were collected as part of the ongoing AES surveillance programme under NVBDCP. Sample processing was done in MDRL.

Project no. 3:

Title: Blood zinc levels in children with severe Pneumonia and effects of zinc supplementation.

Principal Investigator: Dr. Aditi Barua, Asst. Prof., Dept. of Paediatrics, AMCH.

Co-PI 1: Dr. Abhijit Dutta, Registrar, Dept. of Paediatrics, AMCH

Co-PI 2: Mr. Hiranya Saikia, Senior Lecturer in Biostatistics, Dept. of Community Medicine, AMCH.

Co-PI 3: Dr. Meghali Chaliha, Assoc. Prof., Dept. of Pharmacology, AMCH.

Departments involved: Dept. of Paediatrics, Dept. of Pharmacology, Dept. of Community Medicine & MDRL, AMCH.

Hypothesis:

1. Serum zinc level is low in children suffering from severe pneumonia in comparison to children without pneumonia, which decreases immune-competence and thereby makes the child susceptible to severe pneumonia.
2. Zinc supplementation speeds up the recovery from severe pneumonia i.e. clinical resolution as compared to placebo by 25%.

Objectives:

1. To estimate the serum zinc level in children hospitalized for severe pneumonia and to compare with that of control group.
2. To evaluate the effect of administering oral zinc (10 mg to children aged 2 – 6 months and 20 mg to children aged 7 – 60 months) daily for 14 days as compared to placebo to children aged 2 – 60 months admitted for severe pneumonia.

Study subject: All children aged 2 – 60 months with severe pneumonia (who satisfy the WHO case definition of severe pneumonia) have been selected as study subjects.

Study period: A time period of 2 years have been proposed for completion of the study, including 1 ½ years for collection of data and 6 months for compilation of data.

Study design: The results will be analyzed in two parts. Estimation of serum zinc level will be a Case control study & zinc supplementation part will be Randomized double blind placebo controlled study.

Sample size: 50 cases and 50 controls have been included for estimation of serum zinc level. For the zinc supplementation part, 280 subjects have been/will be included in each treatment group having a total of 560 subjects.

Progress till date: A total of 75 samples have been processed till now in MDRL. Routine investigation of blood, estimation of Serum total protein and fraction and estimation of hs – CRP level have been done in MDRL. Part of the study is also being carried out at RMRC, NE region, Dibrugarh.

Project no. 4:

Title: Occurrence of Respiratory Syncytial virus, Influenza A and B virus, Parainfluenza 1, 2, 3 virus and Human Metapneumovirus in Acute Respiratory Tract Infection in paediatric patients – A hospital based study.

Principal Investigator and other members of the team:

PI: Dr. Lahari Saikia, Co-ordinator, MDRL & Prof. & HOD, Dept. of Microbiology, AMCH.

Dr. P. Biswanath, Professor, Dept. of Paediatrics, AMCH.

Dr. Bhaswati Sarma, PGT, Dept. of Microbiology, AMCH.

Departments involved: MDRL, AMCH & Dept. of Microbiology, AMCH.

Objectives:

1. To detect the RNA viruses like Respiratory Syncytial Virus, Influenza A and B virus, Parainfluenza Virus 1, 2, 3 and Human Metapneumovirus causing ARI among children 1-12 years of age attending the Department of Paediatrics, AMCH.

Study subject: Children in the age group of 1 to 12 years and presenting with symptoms of ARI (as per WHO guidelines) are selected for the study, selecting every alternate case to cover entire study period.

Study period: A period of 1 year has been allotted for the completion of the study, including sample collection, processing, result analysis and interpretation.

Study design: The given study will be a Prospective cross sectional study.

Sample size: A total of 300 cases have been included in the study.

Progress till date: Till date 300 samples have been collected. Out of them 250 samples have been processed (RNA extraction and c-DNA synthesis). PCR has been performed for 170 samples. Out of them 16 samples have been found to be positive for RSV, 10 samples for Influenza A, 6 samples for human Metapneumovirus.

Project no. 5:

Title: Spectrum of bacterial pathogens causing Community Acquired Pneumonia in children under 5 years of age.

Principal Investigator and other members of the team:

PI: Dr. Lahari Saikia, Co-ordinator, MDRL & Prof. & HOD, Dept. of Microbiology, AMCH.

Dr. P. Dowerah, Prof. & HOD, Dept. of Paediatrics, AMCH.

Dr. Anusmita Das, PGT, Dept. of Microbiology, AMCH.

Departments involved: MDRL, AMCH & Dept. of Microbiology, AMCH.

Objectives:

1. To determine the spectrum of bacterial pathogens in children attending the Pediatric Outpatient Department and Pediatric Ward at Assam Medical College and Hospital, Dibrugarh, with community acquired pneumonia.
2. To compare the results of broncho-alveolar lavage (BAL) culture, blood culture and PCR analysis of broncho-alveolar lavage (BAL) in the diagnosis of these bacterial pathogens.

Study subject: All consecutive cases of pneumonia (those who satisfy case definition of pneumonia as per WHO guidelines) and those with presence of consolidation on chest X-ray for a duration of 1 year in children below 5 years age have been included as study subject.

Study period: A period of 1 year has been allotted for the completion of the study, including sample collection, processing, result analysis and interpretation.

Study design: The given study will be a Prospective cross sectional study.

Sample size: A total of 150 cases have been included in the study.

Progress till date: Till date, all the 150 samples have been processed. Broncho-alveolar lavage and throat swab (from those cases where BAL couldn't be collected) culture has been done for all the samples. PCR has been performed on 120 samples for Mycoplasma pneumoniae, Chlamydia pneumoniae, Streptococcus pneumoniae, Haemophilus influenzae and Legionella pneumophila till now. From culture results, 31 samples have been found to be positive for S. pneumoniae, 7 for Klebsiella pneumoniae, 8 for Staphylococcus aureus. All S. pneumoniae positive samples (31 samples) were also found to be positive by PCR. On the other hand from PCR findings, 5 samples are found to be positive for M. pneumoniae, 4 for C. pneumoniae and 21 for H. influenzae.

Project No. 6:

Title: Evaluation of the virulence factors of *Candida albicans* isolated from HIV positive patients.

Principal Investigator & Other members of the team:

Principal Investigator and other members of the team:

PI: Dr. Lahari Saikia, Co-ordinator, MDRL & Prof. & HOD, Dept. of Microbiology, AMCH.

Dr. Reema Nath, Assoc. Prof., Dept. of Microbiology, AMCH.

Dr. Vicky Lahkar, PGT, Dept. of Microbiology, AMCH.

Dr. Himangshu Mazumdar, Research Scientist I, MDRL.

Dr. Saurav Jyoti Patgiri, Research Scientist II, MDRL.

Departments (interdisciplinary programs) in the research study: This study is being carried out in collaboration with the Dept. of Psychiatry, Assam Medical College. The samples used have been collected from Dept. of Psychiatry and stored in MDRL. Sample processing is being done in MDRL.

Objectives:

1. Evaluation of the virulence factors of *Candida albicans* isolated from HIV positive patients.

Study subject: All patients attending ICTC, AMCH who were found to be HIV positive during the study period have been included in the study.

Study period: A period of 1 year has been proposed for completion of the study including sample collection, processing, result analysis and interpretation.

Study design: The given study will be a Prospective cross sectional study.

Sample size: A total of 126 cases have been included in the study.

Progress till date: Till date all the 126 samples have been collected and initial processing has been done. Out of them, 46 samples have been found to be positive for *Candida albicans*. Biofilm production, Proteinase and Phospholipase secretion have been evaluated in those samples. 26 samples are found to be positive for Biofilm production, 37 samples are found to be positive for Proteinase secretion and 37 samples are found to be positive for Phospholipase secretion. Genotyping of the samples is yet to be done.

Projects initiated:

A total of 3 projects/ post graduate thesis have been initiated recently in the Multi-disciplinary Research Laboratory (MDRL).

Summary of projects/P.G.Thesis initiated:

S. No	Topic	Guide	Date/Month of initiation	Intramural/ Extramural	Summary
1	Association of Helicobacter pylori virulence factors with upper gastrointestinal and extraintestinal diseases in adults.	Dr. Lahari Saikia, Prof. & HOD, Dept. of Microbiology	June 2014	Post graduate thesis	Sample collection and initial processing have been started.
2	A clinical and serological study of childhood neurocysticercosis with suggestive lesion on CT scan brain	Dr. Lokajeet Baro, Associate Professor, Dept. of Pediatrics	April 2014	Post graduate thesis	Sample collection and initial processing have been started.
3	Isolation and characterization of Helicobacter pylori from gastric biopsy specimen.	Dr. Lahari Saikia, Prof. & HOD, Dept. of Microbiology	June 2014	Ph.D. thesis	Sample collection has been started.

Details of Project/P.G.Thesis initiated:

Project No. 1:

Title: Association of *Helicobacter pylori* virulence factors with upper gastrointestinal and extraintestinal diseases in adults.

Name of Guide: Dr. Lahari Saikia, Professor & HOD, Dept. of Microbiology, AMCH.

Name of Co-guide 1: Dr. Ratna Kanta Bhuyan, Prof. & HOD, Dept. of Surgery, AMCH.

Name of Co-guide 2: Dr. Mondita Borgohain, Professor, Dept. of Pathology, AMCH.

Name of Co-guide 3: Dr. B. N. Mahanta, Asso. Professor, Dept. of Medicine, AMCH.

Name of the student: Dr. Bibhuti Bhusan Hazarika, PGT, Dept. of Microbiology, AMCH.

Departments involved: MDRL & Dept. of Microbiology, AMCH.

Objectives:

1. To assess *Helicobacter pylori* virulence factors, *cagA* and *vacA*, in upper gastrointestinal diseases.
2. To assess the association of *Helicobacter pylori* infection with glycosylated hemoglobin (HbA1C).

Study subject: Adult patients who will undergo upper gastrointestinal endoscopy because of dyspeptic complaints at Assam Medical College and Hospital will be included in the study.

Study period: A period of 1 year has been proposed for sample collection, processing, analysis and interpretation of results.

Study design: The proposed study will be a Prospective cross sectional study.

Sample size: A total of 300 consecutive cases will be included in the study.

Progress till date: Sample collection has been started.

Involvement of MDRL: Sample storage, tissue biopsy, ELISA and PCR for the virulence genes will be done in MDRL, AMCH.

Project No. 2:

Title: A clinical and serological study of childhood neurocysticercosis with suggestive lesion on CT scan brain.

Name of Guide: Dr. Lokajeet Baro, Associate Professor, Dept. of Pediatrics, AMCH.

Name of Co-Guide: Dr. Lahari Saikia, Professor & HOD, Dept. of Microbiology, AMCH.

Name of the student: Dr. Jitu Doley, PGT, Dept. of Paediatrics, AMCH.

Departments involved: MDRL, Dept. of Pediatrics, Dept. of Radiology, Dept. of Microbiology, AMCH.

Objectives:

1. To study the clinical presentation of neurocysticercosis in children (< 12 years age).
2. To study the role of serological test in diagnosis of neurocysticercosis with suggestive lesion in CT scan of brain.

Infection of the human brain with *Taenia solium* metacestodes or cysticerci is known as neurocysticercosis (NCC). This parasitic disease can cause a variety of neurological abnormalities, with the most common being seizures. In the clinical setting, the diagnosis of NCC is not simple because similar clinical and radiological picture can also be present in other diseases of the central nervous system (CNS). In fact the only way of obtaining a definitive diagnosis is through surgical removal and subsequent identification of the parasite. However this invasive method is seldom practiced, as most of these lesions carry a benign and self-limiting course. Therefore, a diagnosis of NCC is usually obtained after combining the clinical findings with radiological, serological, and epidemiological data, which was the basis of the consensus for the accurate and stringent revised criteria for the diagnosis of NCC (Del Brutto *et al*, 2001).

Based on the revised criteria for the diagnosis of NCC (Del Brutto *et al*, 2001), cases were separated into two groups i.e., definitive and probable cases of NCC. The absolute criteria allow unequivocal diagnosis of NCC, major criteria strongly suggest the diagnosis but cannot be used alone for definitive diagnosis. Minor criteria are frequent but not specific and epidemiological criteria refer to circumstantial evidence that favors the diagnosis of NCC. Definitive Diagnosis:(1) Presence of one absolute criterion and (2) Presence of two major plus one minor epidemiologic criterion. Probable Diagnosis: (1) Presence of one major plus two minor criteria.

Assam Medical College and Hospital, Dibrugarh renders services to the people of Upper Assam as well as the people from some districts of Arunachal Pradesh, Nagaland and Manipur. Neurocysticercosis is common among the patients presenting with seizures from this part of Assam. Therefore, it is thought to be appropriate to conduct a study in this group of population.

Involvement of MDRL: Sample storage and ELISA for *Taenia solium* IgG will be done in MDRL, AMCH.

Project no. 3:

Title: Isolation and characterization of *Helicobacter pylori* from gastric biopsy specimen.

Name of Guide: Dr. Lahari Saikia, Professor & HOD, Dept. of Microbiology, AMCH.

Name of the student: Anisha Sarma, M.Sc. Microbiology.

Departments involved: Multi-disciplinary Research Laboratory (MDRL), AMCH.

Objectives:

1. Isolation and phenotypic and genotypic characterization of *Helicobacter pylori* from gastric biopsy specimen.

Study subject: Patients from all age group attending Assam Medical College & Hospital and undergoing upper gastrointestinal endoscopy for suspected gastritis, gastric ulcer diseases and gastric carcinoma will be included in the study. Among them endoscopy proven diseases will be included as cases and the rest will be included as controls.

Study period: A time period of 3 years have been proposed for completion of the study including sample collection, processing and result analysis.

Study design: The proposed study will be a Prospective case control study.

Sample size: All consecutive non repeat cases attending Assam Medical College & Hospital during the study period will be included.

Progress till date: Sample collection has been started.

Involvement of MDRL: Culture for *H. pylori* and its phenotypic and genotypic characterization will be done in MDRL, AMCH.

Utilization of laboratory equipments:

The laboratory equipments are used by MDRL staff members as well as faculty members and post graduate students of various departments for different projects and post graduate thesis work.

Name of the equipment		Departments taking benefit	Purpose
Deep freezers	-80 °C	<ul style="list-style-type: none">• Dept. of Microbiology• MDRL	Sample storage for project and post graduate thesis.
	-70 °C	<ul style="list-style-type: none">• Dept. of Paediatrics• MDRL	Sample storage for project purpose.
	-20 °C	<ul style="list-style-type: none">• Dept. of Microbiology• MDRL	Sample storage for post graduate thesis.
	2 – 8 °C	<ul style="list-style-type: none">• Dept. of Microbiology• MDRL	Storage of reagents for project and post graduate thesis.
Incubator		<ul style="list-style-type: none">• Dept. of Pharmacology• Dept. of Microbiology• MDRL	Post graduate thesis work and projects.
Spectrophotometer		<ul style="list-style-type: none">• Dept. of Pharmacology• Dept. of Microbiology• MDRL	Post graduate thesis and project work.
Microscope		<ul style="list-style-type: none">• Dept. of Pathology	Academic and post graduate thesis work.
pH Meter		<ul style="list-style-type: none">• Dept. of Pharmacology• Dept. of Microbiology	Academic and post graduate thesis work.

Academic activities performed/ proposed to be performed in the research laboratory:

1. CME cum Workshop:

A 3 day CME cum Workshop including hands on training was conducted on “Molecular Diagnostic Methodology” in the month of November ‘2013 among the faculty members and post graduate students of different medical colleges of Assam.

Summary of the CME cum Workshop:

Date: 05/11/2013 to 07/11/2013

Venue: Multi-disciplinary Research Laboratory, AMCH

Total no. of participants: 24

Participating Medical Colleges: Assam Medical College & Gauhati Medical College

Guest speakers: Dr. K. Narain, Scientist E, RMRC, NE Region, ICMR
 Dr. Kangjam Rekha Devi, Scientist D, RMRC, NE Region, ICMR
 Dr. B. J. Borkakoty, Scientist C, RMRC, NE Region, ICMR

Demonstration for hands on training by: Dr. H. Mazumdar, RS I, MDRL
 Dr. S. J. Patgiri, RS II, MDRL
 S. Gupta, Lab technician
 S. Begum, Lab technician
 R. Dutta, JRF
 J. Rajkonwar, JRF

2. Summer training:

MDRL has planned for organizing summer training every year targeting the undergraduate students, students from graduation course (Science stream), Nursing students, students from Veterinary Science, Life Science as well as Higher Secondary level (Science) pass out students in order to create awareness and interest in research activities. The students will be tried to make familiar with basic methodology of Molecular Biology and Human Genetics with the help of audio-visual lectures as well as live demonstration of various procedures performed in the research laboratory. The first chapter of the summer training has been planned in July-August ‘2014.

C) Leads for clinical/ public health from the studies undertaken as above:

Serial No.	Topic	Leads for clinical/public health																																				
1	Assessment of oxidative stress correlating the levels of antioxidant enzymes and non-dietary antioxidants with extent of lipid peroxidation in drug naïve Schizophrenia patients in Assam.	Since it is a Double-blinded Case Control study, the results can be interpreted only at the time of conclusion of the study.																																				
2	Sero-surveillance of Taenia solium IgG antibodies in Acute Encephalitis Syndrome cases.	JE-NCC co-infection is an established phenomenon in published literature. The same has not been documented in this region. The present study shows a significant association of AES/JE and NCC.																																				
3	Blood zinc levels in children with severe Pneumonia and effects of zinc supplementation.	Since only a part of the study is completed so interpretation of the findings is not possible at this stage.																																				
4	Occurrence of Respiratory Syncytial virus, Influenza A and B virus, Parainfluenza 1, 2, 3 virus and Human Metapneumovirus in Acute Respiratory Tract Infection in paediatric patients – A hospital based study.	<table border="0"> <tr> <td>Total cases done:</td> <td>170</td> </tr> <tr> <td>Virus detected:</td> <td></td> </tr> <tr> <td> RSV:</td> <td>16</td> </tr> <tr> <td> Influenza A:</td> <td>10</td> </tr> <tr> <td> hMPV:</td> <td>6</td> </tr> </table>	Total cases done:	170	Virus detected:		RSV:	16	Influenza A:	10	hMPV:	6																										
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5	Spectrum of bacterial pathogens causing Community Acquired Pneumonia in children under 5 years of age.	<table border="0"> <tr> <td>Total cases done:</td> <td>Culture:</td> <td>150</td> </tr> <tr> <td></td> <td>PCR:</td> <td>120</td> </tr> <tr> <td>Bacteria detected:</td> <td></td> <td></td> </tr> <tr> <td> From Culture:</td> <td></td> <td></td> </tr> <tr> <td> S. pneumoniae:</td> <td></td> <td>31</td> </tr> <tr> <td> K. pneumoniae:</td> <td></td> <td>7</td> </tr> <tr> <td> S. aureus:</td> <td></td> <td>8</td> </tr> <tr> <td> From PCR:</td> <td></td> <td></td> </tr> <tr> <td> S. pneumoniae:</td> <td></td> <td>31</td> </tr> <tr> <td> M. pneumoniae:</td> <td></td> <td>5</td> </tr> <tr> <td> C. pneumoniae:</td> <td></td> <td>4</td> </tr> <tr> <td> H. influenzae:</td> <td></td> <td>21</td> </tr> </table>	Total cases done:	Culture:	150		PCR:	120	Bacteria detected:			From Culture:			S. pneumoniae:		31	K. pneumoniae:		7	S. aureus:		8	From PCR:			S. pneumoniae:		31	M. pneumoniae:		5	C. pneumoniae:		4	H. influenzae:		21
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6	Evaluation of the virulence factors of Candida albicans isolated from HIV positive patients.	<table border="0"> <tr> <td>Total case done:</td> <td>126</td> </tr> <tr> <td>Candida albicans positive:</td> <td>46</td> </tr> <tr> <td> Biofilm production positive:</td> <td>26</td> </tr> <tr> <td> Proteinase secretion positive:</td> <td>37</td> </tr> <tr> <td> Phospholipase secretion positive:</td> <td>37</td> </tr> </table>	Total case done:	126	Candida albicans positive:	46	Biofilm production positive:	26	Proteinase secretion positive:	37	Phospholipase secretion positive:	37																										
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