

**Diploma in
Tropical
Medicine &
Hygiene
(DTM&H)**

LSTM
LIVERPOOL SCHOOL
OF TROPICAL MEDICINE



Programme

Handbook

Spring

2018

LIVERPOOL SCHOOL OF TROPICAL MEDICINE

Dear Students,

A very warm welcome to Liverpool and the School of Tropical Medicine!

LSTM was founded over one hundred years ago and was the first institute in the world devoted to the study of medicine and health in the tropics. We are proud of our tradition and our achievements and can claim to lead the world in a number of important areas of research. Through our research and scholarship, and our close working links with colleagues, universities and governments in low and middle income countries, the staff involved in our many teaching programmes bring a unique blend of experience and innovation to their work.

Our mission is to reduce the burden of sickness and mortality in disease endemic countries through the delivery of effective interventions which improve human health and are relevant to the poorest communities. Many of our students go on to make highly significant contributions to fulfilling this mission and maintain long-term links with the School.

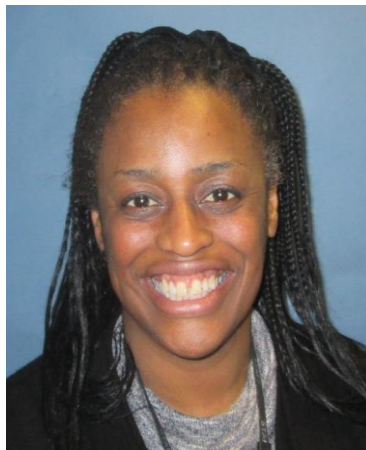
We trust that you will find LSTM a friendly environment to foster your studies and we are sure you will also find Liverpool to be a warm and welcoming city.

On behalf of all the staff, we wish you an interesting, informative and, most of all, an enjoyable time here.

Professor Janet
Hemingway Director LSTM



Dr. Angela Obasi
Co-Director of Studies
DTM&H



Professor Stephen Allen
Co-Director of Studies
DTM&H



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Programme introduction

Since 1898, the School of Tropical Medicine trains students from all over the world. LSTM established the Diploma in Tropical Medicine in 1904, the forerunner to the current Diploma in Tropical Medicine and Hygiene (DTM&H).

The aim of the Liverpool DTM&H is to equip physicians with the knowledge and skills needed to practice medicine and promote health effectively in resource-limited environments.

As well as developing your knowledge of the clinical presentation, diagnosis and management of major diseases, we aim to provide you with a much broader perspective on important diseases. You will study biological details essential for the identification and diagnosis of major pathogens and disease vectors and critically review principles of epidemiology and public health essential for disease control, elimination and eventual eradication. You will enhance your skills in critically appraising the evidence that underpins modern approaches to improving health, review how global health policies are applied in low and middle income countries and develop skills needed to manage health programmes in these settings.

The curriculum is organised into four broad themes: Tropical Medicine; Maternal, Newborn and Child Health; Parasitology and Vector Biology; Public Health. Teaching in diseases with a high burden, such as malaria, HIV and TB, will be done from various perspectives, including laboratory diagnosis, clinical medicine and disease control as part of public health strategies to illustrate how an integrated approach is applied to improving health and well being.

Although the DTM&H is a highly intensive course with lectures, practicals, tutorials and seminars, we encourage you to engage with the wider School community. We have an active lunchtime seminar series with world-leading experts from the UK and overseas. Please do look out for those that may be of interest to you and come along. Also, you will gain much from engaging with our students on other programmes about their experiences in many different countries and also disciplines such as biological science, nursing, humanitarian assistance and public health. Do take advantage of this mix of students.

Please read this handbook alongside other two other key resources to support your studies here in Liverpool:

- A Student Guide to LSTM
- LSTM Professional Diploma and Certificate Student Handbook

The DTM&H is recognised as fulfilling part of the requirements for the American Society of Tropical Medicine and Hygiene Certificate in Travel Medicine.

Contact details

Staff from all LSTM departments are involved in teaching your course; please feel free to approach them with any questions or concerns that you may have. In particular, DTM&H students are welcome to contact the following people:

Dr. Angela Obasi; Co-Director of Studies
1966 wing, second floor, room 202; Tel ext: 3102 (external 0151 705 3102)
<http://www.lstmed.ac.uk/about/people/dr-angela-obasi>
e mail: Angela.Obasi@lstmed.ac.uk

Prof. Stephen Allen; Co-Director of Studies
Maegraith wing; Room M-215; Tel ext: 3102 (external 0151 705 3752)
<http://www.lstmed.ac.uk/about/people/professor-stephen-allen>
e mail: Stephen.allen@lstmed.ac.uk

Registry*; LSTM course administrators
1966 wing, first floor, room 102; Tel ext: 3232
mylstm@lstmed.ac.uk

Ms. Sarah Jones; Student Experience Officer
Students can arrange appointments by email, phone or at the Student Support Desk*
1966 wing, first floor, room 103; Tel 151 705 3756
e mail: studentsupport@lstmed.ac.uk

*Please use the Student Support Desk on the ground floor of the main LSTM building as your first port of call for any programme enquiries. The desk is manned from 8.30am -9.30am and 1.00pm-2.00pm

Please note that general communication between staff and students takes place through BrightSpace (the virtual learning environment [VLE]) and/or your official LSTM e-mail address (e.g. studentnumber@lstmed.ac.uk). Please ensure that you check these on a regular basis.

Theme leads

Tropical Medicine
Dr Tim O'Dempsey



Public Health
Mary Lyons



Maternal, Newborn and Child Health; Dr
Charles Ameh and Prof Stephen Allen



Parasitology and Vector Biology
Dr James LaCourse and Dr Philip McCall



Topic Leads

HIV
Dr Angela Obasi



Tuberculosis
Dr Clare Van Halsema



Non-Communicable Diseases
Prof Geoff Gill



Critical Appraisal
Prof Paul Garner



Theme and topic leads are engaged in active research programmes as part of the LSTM world-leading portfolio of research, much of which is based in the developing countries of the tropics. Research ranges from studies devoted to improved delivery of health services to poor and disadvantaged populations, through social science research and clinical intervention studies, to basic studies in the molecular sciences, genomics and immunology of communicable diseases. There are also laboratory-based programmes, particularly in the area of parasitic and other communicable diseases.

Research is broadly organised under research groups; more detail can be found in Divisional entries <http://www.lstmed.ac.uk/research>. If you are interested in the many research opportunities at the School, please discuss this with the theme and topic leads and Directors of Studies.

Aim

To equip physicians with the knowledge and skills needed to practice medicine and promote health effectively in resource-limited environments.

Learning outcomes

Upon successful completion of the course, you should be able to:

Knowledge and understanding

- **Evaluate** the clinical presentation, diagnosis and management of major communicable, non-communicable and neglected diseases in LMICs, and **explain** principles of their epidemiology and control;
- **Analyse** specific health and health system challenges affecting vulnerable groups living in LMICs, choose strategies and **apply** programme management principles to overcome them;
- **Explain and illustrate** the importance of social, cultural and economic factors on the planning, management, implementation and uptake of preventative and curative health services and disease control programmes in LMICs
- **Appraise** major diagnostic strategies for controlling diseases of LMIC and **identify** relevant stages of development of important pathogens and vectors responsible for causing and transmitting human disease in LMICs
- **Summarise** key biological characteristics of major insect vectors of disease and **explain** their relevance in the epidemiology and control of communicable diseases in LMICs

Cognitive skills

- **Analyse, synthesise and evaluate** information from a variety of sources in a critical manner; for example, evaluate clinical practice according to national or international management guidelines
- **Apply** subject knowledge and understanding in a variety of contexts to analyse and reach evidence-based conclusions on complex situations, problems and opportunities
- **Demonstrate** creativity, innovation and originality in the application of knowledge

Practical and professional skills

- **Identify and describe** pathogens important in the diagnosis of diseases of LMICs and **distinguish** these from non-pathogenic organisms
- **Identify** important insect vectors of disease in LMICs
- **Lead and participate** in a health professional team and personally **manage** clinical problems commonly encountered in LMICs
- **Devise** strategies for assessing and improving community health in LMICs
- **Design** programmes, **prepare** action plans, and **evaluate** them to **produce** effective public health interventions for vulnerable communities and populations, including those affected by conflict and disaster

Detailed learning outcomes for themes (clinical tropical medicine; maternal, newborn and child health; parasitology and vector biology; public health) are included in Appendix 1.

Learning & Teaching Strategy

The DTM&H is a wide-ranging programme that draws on the personal experience of the teachers and many of the students. Biographical information and contact details of academic staff are available on the LSTM web site www.lstmed.ac.uk.

The learning and teaching strategy recognises the effectiveness of small working groups for building capacity in problem solving, analytical thinking, synthesizing information from multiple sources and evaluating it from different perspectives. The cosmopolitan nature of the student cohort greatly adds value to this activity.

Practical classes/sessions extend the learning experience and enable you to develop a number of hands-on skills. They are supported with a range of demonstration materials, and overseen by the experienced academic and technical staff.

Face-to-face learning is complemented by group work, laboratory practicals, on-line learning and revision resources

You have access to an excellent specialised library, computers and the internet across the teaching environment that provide additional learning resources.

Attendance: The DTM&H is a full-time programme and students are expected to attend all timetabled lectures, practicals and seminars unless otherwise indicated. The normal hours of attendance are: 9am – 5pm Monday to Friday.

Programme management

The DTM&H Board of Studies assists the Directors of Studies and Programme Administrator in the management of the programme. Minuted meetings are held regularly. The Board's membership and the Terms of Reference are set out in Appendix 2.

External Examiners: Three external examiners are appointed who have considerable expertise in the three core areas of tropical medicine, parasitology/vector biology and public health. Their role is to:

- advise on programme content in relation to the aims and objectives
- assist the programme committee in the formulation of examination papers
- assist and advise the Examination Board in making decisions on student performance including moderating a sample of examination papers
- participate in the viva examination
- contribute to the annual evaluation of the DTM&H required by the LSTM Quality Management Committee

Board of Examiners: The Board consists of the external examiners and a number of internal examiners from the academic staff of LSTM who contribute to the teaching. The responsibilities of the Board are:

- to assess student performance in accordance with regulations and agree awards
- to identify possible modifications to the course, including its objectives, assessment and content, for discussion by the course committee

Further information regarding the Board of Examiners, Assessment Regulations, and Academic Appeals Procedure are available in the Professional Diploma Handbook (on Brightspace) and on the LSTM website: <http://www.lstmed.ac.uk/study/quality-manual>

Student representation and feedback

Student Representatives: In order to enhance communication between course participants and staff, students select two representatives who will be invited to attend and contribute to DTM&H Board of Studies meetings. We suggest you also elect a social secretary to co-ordinate social activities for course participants. Previous groups have set up social media groups to help link the class socially.

Student Presentations: During the course there will be opportunities to share your experiences in clinical practice or public health relevant to LMICs. Please tell the Directors of Studies at an early stage if you would like to give a brief presentation to your colleagues.

Student feedback: Student feedback is an invaluable part of maintaining high standards in every aspect of the DTM&H. We use online student feedback methods throughout the course and these will be demonstrated to you on the first day. The immediate feedback allows us to spot potential problems quickly and find solutions to enhance your learning experience. There are also wider student surveys done later in the course and at the end; you will be sent a link to these important surveys. Feedback is reported at the Board of Studies and results inform developments and improvements to the course year on year.

You are also encouraged to discuss issues as they arise with individual lecturers, the Directors of Studies or, if you prefer, with your class representative. It is helpful if class representatives obtain points for discussion from the whole class in advance of each Board of Studies meeting.

Examples of recent improvements to the programme in response to student feedback include increased availability of e-learning resources on the VLE, an increase in the number of small group clinical problem solving sessions, re-organisation of laboratory demonstrations, better timekeeping for lectures and the way we collect feedback.

Assessment

The course assessments are designed to enable you to demonstrate a range of clinical, diagnostic, biological and public health skills, including analysing, synthesising and evaluating information, and identifying important pathogens and vectors. Both formative and summative assessment approaches are used.

Formative assessment: You will be able to track your progress through a practice multiple choice question (MCQ) and written paper during the course. The results of these assessments do not contribute to the final mark.

Revision sessions in parasitology and vector biology contain a range of practice exercises. Staff are available for immediate discussion with individuals or groups of students.

Summative Assessment: The award of Diploma is based on the results of examinations held at the end of the course. To receive the award, you must achieve the pass mark of 50% in each of the four papers (Papers 1, 2, 3 and 4).

Distinction is awarded to candidates who pass each assessment and score 70% and above on the final examination as a whole. *Merit* is awarded to candidates who pass each assessment and score 60 - 69% on the final examination as a whole.

Exam questions will be representative of the course content but will not cover all material from the extensive syllabus. Details of the format and weighting for the four papers is as follows:

Paper	Theme	Assessment Method	Content	Weighting	Duration	Overall Weighting
1	Clinical/ RMNCH	Written MCQ	Ans 1 out of 2 Qs 30 MCQs	30% 70%	1.5 hrs	28%
2	Parasitology/ Vector Biology	Written MCQ	Ans 1 out of 2 Qs 30 MCQs	30% 70%	1.5 hrs	28%
3	Public Health*	Written MCQ	Ans 1 out of 2 Qs 30 MCQs	30% 70%	1.5 hrs	28%
4	Practical and Diagnostic Skills	Pictures of pathogens, vectors + RDTs' Microscopy	25 MCQs 1 Blood 1 Faecal	60% 40%	50 mins 40 mins	16%

* Public Health assessments: In the written public health paper, questions may be based on either a paper and/or a case study/scenario given to you before the exam. You will be notified of this prior to the exam and provided with appropriate information. You may be expected to perform one or several of the following tasks: critical appraisal, basic epidemiological and statistical calculations, and application of public health policy/management principles to a question. Basic calculators are provided.

MCQ questions require a single 'best' response. There is no negative marking.

Marking guidelines for the written papers are shown in appendix 3 and example of the format for the Practical and Diagnostic Skills microscopy assessment is shown in appendix 4.

More details and guidance regarding assessments will be provided later in the course.

Viva for Prizes: The viva examination is not compulsory. Potential prize-winners will be invited to attend at the discretion of the examiners, largely based on exam performance. Each candidate will have a 20 minute viva examination conducted by all 3 external examiners. A Director of Studies/other DTM&H lecturer may be present as an observer. Prizes in Clinical Tropical Medicine, Public Health and Parasitology / Vector Biology will be awarded at the discretion of the examiners.

Notification of exam results: Provisional exam marks will be collated by the Quality Unit by 5pm on the day before viva examinations and viva candidates invited for viva on the Friday of week 13. Final marks will be released to students within 1-2 weeks of the end of the programme.

Re-sitting examinations: If you fail any of the four papers, you may re-sit the paper on only one occasion. Re-sits will take place with the next DTM&H course; there are no re-sits between courses. The Quality Unit/Directors of Studies will be able to advise which papers need to be repeated and passed in order to be awarded the Diploma. We offer support to those re-sitting through revision sessions and access to the VLE in preparation for the re-sit exam(s).

Reading list

Reading has been organized by theme and separated into “essential” and “recommended”. Essential reading is considered to be part of the taught course and may be examined as such. The recommended reading is to help you to broaden your knowledge and will also help you extend your answers in assessments including the vivas that are offered to some students. Of course, we encourage you to read widely based on your own interests, but have restricted the recommended reading given the limited time available during the course.

Many of the books listed below are available in the LSTM library and also at reduced cost from:

- Teaching Aids at Low Cost <http://www.talcuk.org/>
- Tropical Health Technology <http://www.tht.ndirect.co.uk/>

Tropical Medicine

Essential reading

Gill G, Beeching N (Eds) Lecture Notes on Tropical Medicine. (2014) 7th edition. Blackwell Scientific Publications.

A short book containing most of the core information needed on clinical tropical medicine for the DTM&H. Many of the contributors are lecturers for the course. There are linked online MCQs at <http://bcs.wiley.com/he-bcs/Books?action=index&bcsId=8966&itemId=0470658533>

WHO Guidelines for the treatment of malaria. Third edition 2015. Available from WHO website <http://www.who.int/malaria/publications/atoz/9789241549127/en/>

Key, up to date guidelines for malaria.

Recommended reading

Rothe C, Clinical Cases in Tropical Medicine (2014) 1st Edition Saunders Ltd. eBook ISBN: 9780702058264 eBook ISBN: 9780702063015 Paperback ISBN: 9780702058240

Comprised of 76 detailed clinical cases from as many tropical medicine physicians across the world, Provides an excellent learning opportunity to reinforce concepts on practical approaches to the diagnosis, management, and treatment of the major tropical diseases

Farrar J, et al Manson's Tropical Diseases. 23rd edition (2014). Saunders Ltd. ISBN-10: 0702051012. ISBN-13: 978-0702051012

Authored by global experts in the field of tropical medicine, this medical reference text provides comprehensive coverage of parasitic and other infectious diseases from around the world.

Peters W. & Pasvol G A Colour Atlas of Tropical Medicine and Parasitology. 6th edition (2007). Mosby Elsevier.

A collection of good quality photographs of parasites, vectors and clinical cases.

Mabey D, Gill G, Weber M (Eds) Principles of Medicine in Africa (4th edition 2013). Cambridge University Press.

Combines classical clinical medicine with a rich understanding of the major environmental and cultural influences on health and disease, providing comprehensive guidance for anyone intending to practise medicine in Africa.

Davidson R, Brent A, Seale A. Oxford Handbook of Tropical Medicine (4th Edition, 2014). Oxford University Press ISBN 0-19-9692564

A comprehensive pocket handbook with practical clinical advice for treating tropical diseases. A good quick reference for the field.

WHO. Management of severe malaria – a practical handbook. 3rd edition 2013. Available online at:

<http://www.who.int/malaria/publications/atoz/9789241548526/en/>

Kamel R, Lumley J (Eds). Textbook of Tropical Surgery. (2004) Westminster Publishing.

The text is an encyclopaedic cover of tropical disease as it relates to the surgeon, and provides an excellent and essential companion for all those working in, or managing patients from tropical areas. Useful for surgeons, or others as a reference text.

Johnson C et al. Oxford Handbook of Expedition and Wilderness Medicine. 2nd edition 2015. Oxford University Press

Ethics topics

Nuffield Council on Bioethics. The ethics of research related to healthcare in developing countries (2014), Chapters 6 & 7 in particular but whole book of value.

Downloadable from:

<http://nuffieldbioethics.org/wp-content/uploads/2014/07/Ethics-of-research-related-to-healthcare-in-developing-countries-1.pdf>

Tropical Medicine: HIV

Essential reading

World Health Organization (WHO) Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. 2016. Available from WHO website: <http://www.who.int/hiv/pub/arv/arv-2016/en/>

This is comprehensive and you not are expected to learn them by heart, the guidelines will help meet the learning outcomes for the HIV module and understand the use of ART in different circumstances.

Recommended reading

Wilson D et al. Oxford Handbook of HIV Medicine (3rd Edition, 2013)

Presents critical issues for quick reference in the urban and rural ward and is intended for clinicians practising in under-resourced conditions. Includes guidelines on antiretroviral therapy, adult and paediatric HIV medicine, and ethical issues.

Developing the 2013 WHO consolidated antiretroviral therapy guidelines. AIDS 2014, 28(suppl 2). http://www.who.int/hiv/pub/journal_articles/arv2013-supplement-june2014/en/

Series of articles and commentaries from AIDS supplement 2013. Detailed articles on background to the WHO ART guideline

Tropical Medicine: Tuberculosis

Essential reading

Guidelines for treatment of drug-susceptible tuberculosis and patient care. 2017 update.

<http://apps.who.int/iris/bitstream/10665/255052/1/9789241550000-eng.pdf?ua=1>

To be referred to for programme management issues and treatment. Read in conjunction with other guidelines on drug resistant disease and HIV.

Current WHO Guidelines for treatment of tuberculosis. Available from WHO website.

<http://www.who.int/publications/guidelines/tuberculosis/en/>

Recommended reading

WHO Global tuberculosis report Annual. Available at WHO website:

http://www.who.int/tb/publications/global_report/en/

WHO latest guidelines on management of multi-drug resistant tuberculosis – available at:

<http://www.who.int/publications/guidelines/tuberculosis/en/>

Tropical Medicine: Mental Health

Essential reading

WHO Mental health gap intervention guide, 2010 http://www.who.int/mental_health/mhgap/en/

Key reference for the mental health component of the DTM&H. Please download in advance of the sessions.

Recommended reading

All Party Parliamentary Group on Mental Health. Mental Health for Sustainable Development.

2014. Available online at: <http://www.appg-globalhealth.org.uk/reports/4556656050>

WHO. Mental health action plan 2013-2020. Available online at:

http://www.who.int/mental_health/publications/action_plan/en/

Vikram Patel. Where there is no psychiatrist: A mental health care manual. Royal College of Psychiatrists. ISBN: 9781901242751

WHO/War Trauma Foundation/World Vision. Psychological first aid: guide for field workers. 2011. Available online at:

http://www.searo.who.int/srilanka/documents/psychological_first_aid_guide_for_field_workers.pdf

Bhugra D, Bhui K. Textbook of cultural psychiatry. 2011. ISBN-10: 0521173388

Bhattacharya R, Cross S, Bhugra D. Clinical topics in cultural psychiatry. Royal College of Psychiatrists 2010. Available online at:

<http://www.imd.inder.cu/adjuntos/article/382/Clinical%20Topics%20in%20Cultural%20Psychiatry.pdf>

Maternal, newborn and child Health

Essential reading

World Health Organization: Health in 2015: from MDGs, Millennium Development Goals to SDGs, Sustainable Development Goals. WHO; 2015

http://apps.who.int/iris/bitstream/10665/200009/1/9789241565110_eng.pdf?ua=1

WHO. Training Modules for the Syndromic Management of Sexually Transmitted Infections 2007.

<http://www.who.int/reproductivehealth/publications/rtis/9789241593407/index/en/>

World Health Organization, United Nations Population Fund: Managing complications in pregnancy and childbirth: a guide for midwives and doctors – 2nd ed. WHO; 2017

http://www.who.int/maternal_child_adolescent/documents/managing-complications-pregnancy-childbirth/en/

World Health Organization, Department of reproductive health and research. Managing newborn problems: a guide for doctors, nurses and midwives. Geneva: WHO; 2003

<http://apps.who.int/iris/bitstream/10665/42753/1/9241546220.pdf>

World Health Organization. WHO Application of ICD-10 to deaths during pregnancy, childbirth, and the puerperium: ICD-Maternal Mortality (ICD-MM). Geneva: World Health Organization; 2012.

<http://www.who.int/reproductivehealth/publications/monitoring/9789241548458/en/>

World Health Organization. Maternal death surveillance and response: technical guidance. Information for action to prevent maternal death. Geneva: World Health Organization; 2013.

http://www.who.int/maternal_child_adolescent/documents/maternal_death_surveillance/en/

Van den Broek N. Life Saving Skills Manual. Essential Obstetric and Newborn Care. RCOG 2007

A Textbook of Gynecology for Less-Resourced Locations Paperback – Illustrated, 1 Oct 2012 by [Heleen van Beekhuizen](#) (Editor), [Regine Unkels](#) (Editor)

<https://www.amazon.co.uk/Textbook-Gynecology-Less-Resourced-Locations/dp/095522828X>

WHO Pocket book of Hospital Care for Children. Guidelines for the management of common childhood illnesses (2014), 2nd edition.

This is the key reference for child health and for IMCI (Integrated Management of Childhood Illness) and will be referred to frequently in teaching on child health. It is highly recommended as a book to carry in your pocket. It is available:

- for free download from

http://apps.who.int/iris/bitstream/10665/81170/1/9789241548373_eng.pdf?ua=1

- in hard copy from the library or WHO book shop

<http://apps.who.int/bookorders/anlais/detart1.jsp?codlan=1&codcol=80&codcch=228> or from Teaching Aids at Low Cost (www.talcuk.org)

Recommended reading

World Health Organization: Monitoring Emergency Obstetric Care-a handbook. WHO 2009
<http://www.who.int/reproductivehealth/publications/monitoring/9789241547734/en/>

Every Woman Every Child: The Global Strategy for Womens' and Children's Health.
http://globalstrategy.everywomaneverychild.org/pdf/EWEC_globalstrategyreport_200915_FINAL_WEB.pdf

World Health Organization: Strategies toward ending preventable maternal mortality (EPMM).
WHO http://apps.who.int/iris/bitstream/10665/153540/1/WHO_RHR_15.03_eng.pdf?ua=1

World Health Organization. Time to respond: a report on the global implementation of maternal death surveillance and response. Geneva: WHO: 2016
http://www.who.int/maternal_child_adolescent/epidemiology/maternal-death-surveillance/en/

Southall D (Ed). International Maternal and Child Health. A practical manual for hospitals worldwide. MCAI: Maternal and Childhealth Advocacy International 2014. Radcliffe Publishing, London. ISBN-13: 978 184619 992 9

A comprehensive and recent textbook covering most aspects of maternal and child health. Some free copies are available from the library.

Countdown to 2030: A Decade of Tracking Progress for Maternal, Newborn and Child Survival: The 2015 Report.

<http://www.countdown2015mnch.org/reports-and-articles/2015-final-report>

The Countdown country profiles give a very useful overview of the status of maternal and child health and main services provided.

The Global Nutrition Report 2016. From Promise to Impact: Ending Malnutrition by 2030.

<http://globalnutritionreport.org/the-report/>

WHO Essential Nutrition Actions. Improving maternal, newborn, infant and young child health and nutrition. 2013.

http://www.who.int/nutrition/publications/infantfeeding/essential_nutrition_actions/en/

WHO. Updates on the management of severe acute malnutrition in infants and children. 2013

http://www.who.int/nutrition/publications/guidelines/updates_management_SAM_infantandchildren/en/

UNICEF The State of the World's Children Reports: <https://www.unicef.org/sowc/>

Save the Children End of Childhood Report 2017: <https://campaigns.savethechildren.net/end-of-childhood>

Recent reviews from The Lancet Global Health series:

- Breastfeeding 2016: <http://www.thelancet.com/series/breastfeeding>
- Stillbirths 2016: ending preventable stillbirths <http://www.thelancet.com/series/ending-preventable-stillbirths>
- Every Newborn 2014: <http://www.thelancet.com/series/everynewborn>
- Maternal and Child Nutrition 2013: <http://www.thelancet.com/series/maternal-and-child-nutrition>
- Childhood Pneumonia and Diarrhoea 2013: <http://www.thelancet.com/series/childhood-pneumonia-and-diarrhoea>
- Adolescent Health 2012: <http://www.thelancet.com/series/adolescent-health-2012>
- Early Child Development in Developing Countries 2011

<http://www.thelancet.com/series/child-development-in-developing-countries-2>

Hart & Broadhead. A Colour Atlas of Paediatric Infectious Diseases. 1991 Woolfe Publishing. Aimed at doctors, this is a picture based teaching book giving brief, but helpful, descriptions of the conditions which many find an easy way of learning and revising. OUT OF PRINT but available in the School's library.

Parasitology and Vector Biology

Essential reading

A laboratory manual is provided to support practical sessions and complement lectures. Any additional reading is typically supplied with individual sessions or students are directed to supporting literature when appropriate during the programme.

Recommended reading

These texts are useful in broadening understanding of the topics of pathogens and vectors of disease. Students are not required to read all contents but instead may focus upon those areas related to DTM&H Programme sessions.

Service, MW Medical entomology for students. 5th ed (2012). Cambridge: Cambridge University Press.

Perhaps the single most popular book with students regarding the subject of vectors of disease currently held on our library shelves. If you need an entomology text to complement course materials, this is the one we recommend. Out of print but available in library. Earlier editions are reliable as far as biology of the organisms is concerned but be aware that information on methods of control and insecticide resistance will not be up to date.

Despommier DD, et al. Parasitic Diseases, Apple Trees Productions, LLC, Pub., New York, 5th ed., 2nd printing (2006). ISBN 0-9700027-7-7

An extremely popular medical parasitology text that provides a concise overview of the major (and some minor) parasites.

Zeibig E. Clinical Parasitology: A Practical Approach. 2nd ed. (2012). Saunders. ISBN-10: 1416060448; ISBN-13: 978-1416060444

A student-friendly and concise text that clearly highlights the major aspects of parasitology diagnostics and control.

Chiodini PL et al. Atlas of Medical Helminthology & Protozoology. (2001) Churchill Livingstone. User-friendly manual with very good images and lifecycle descriptions.

Peters W. & Pasvol G. Atlas of Tropical Medicine and Parasitology (2007).

Cheesbrough M. District Laboratory Practice in Tropical Countries (Parts 1 and 2). Cambridge University Press.

A useful book for those with any element of laboratory work in the tropics.

Public Health

Essential Reading

No single absolutely essential text, but you are encouraged to read as directed by course material and your interests, to develop your understanding of international public health.

For a reference text book, we suggest you start with:

Merson MH, Black RE, Mills A. Global Health: Disease, Programs, Systems, and Policies. 3rd Edition. London: Jones and Bartlett Learning, 2012

Or

Birn, Anne-Emanuelle; Pillay, Yogan; Holtz, Timothy H. Textbook of international health: global health in a dynamic world. 3rd Edition. New York Oxford, Oxford University Press, 2009

The Lancet global health series is strongly recommended and available here (free of charge if you register with the Lancet)

[http://www.thelancet.com/journals/lancet/issue/vol380no9845/PIIS0140-6736\(12\)X6037-9](http://www.thelancet.com/journals/lancet/issue/vol380no9845/PIIS0140-6736(12)X6037-9)

The Lancet: Universal Health Coverage: Global Health Series. London: Elsevier, 2012.

- Moreno-Serra and Smith. Does progress towards universal health coverage improve population health?
- Savedoff, Ferranti, Smith, Fan. Political and economic aspects of the transition to universal health coverage.
- Lagomarsino, Garabrant, Adyas, Muga, Otoo. Moving towards universal health coverage: health insurance reforms in nine developing countries in Africa and Asia.
- Niessen LW, Khan JA. Universal access to medicines. *Lancet* (London, England). 2016;387(10013):9-11. Epub 2015/10/27. doi: 10.1016/s0140-6736(15)00552-8. PubMed PMID: 26498705.

UNICEF: The state of the world's children. Published annually.

Recommended Reading

The World Health report: Published annually on the WHO website: free down load.
<http://www.who.int/whr/en/>

World Health Report 2006: working together for health. Geneva, WHO.

Sousa A, Scheffler RM, Nyoni J, Boerma T. A comprehensive health labour market framework for universal health coverage. *Bull World Health Organ*. 2013;91(11):892-4

Chan M, Kazatchkine M, Lob-Levyt J, Obaid T, Schweizer J, Sidibe M, et al. Meeting the demand for results and accountability: a call for action on health data from eight global health agencies. *PLoS Med*. 2010;7(1):e1000223.

Frenk J. Reinventing primary health care: the need for systems integration. *The Lancet*. 2009;**374**(July 11).

Murray CJ, Frenk J. Health metrics and evaluation: strengthening the science. *Lancet*. 2008;371(9619):1191-9.

Crisp N. Turning the World Upside Down: The search for global health in the 21st Century Paperback – 15 Jan 2010. Royal Society of Medicine Press. <http://www.ttwud.org/>

Beaglehole, R., Bonita, R., Kjellström, T Basic Epidemiology. WHO 2nd edition. 2006.. ISBN:

92 4 154446 5 http://apps.who.int/iris/bitstream/10665/43541/1/9241547073_eng.pdf?ua=1

Aschengrau A, Seage GR. Essentials of Epidemiology in Public Health. 2nd Edition (2008). Publ. Jones & Bartlett.

Hennekens CH, Buring JE Epidemiology in medicine. Little Brown and Company, Boston/Toronto. ISBN 0-316-35636-0. 1987 ed.

Slightly dated but sound text on study design and issues of bias and confounding.

El Feki S The Birth of Reproductive Health: A Difficult Delivery. PLoS Med 1(1): e9 (2004) (online journal).

Lucas AO, Gilles HM. Short Textbook of Public Health Medicine for the Tropics. 4th edition (2002) Arnold International Student Edition.

Heymann DL (Ed) Control of Communicable Diseases Manual (20th Edition, 2014). American Public Health Association.

Useful quick reference for infectious diseases including distribution, transmission, incubation periods.

Médecins Sans Frontières Refugee Health: An approach to emergency situations. (1997). Macmillan. Available in hard copy or online from

http://refbooks.msf.org/msf_docs/en/refugee_health/rh.pdf

Essential reading for those managing humanitarian emergencies, sound on methods and priorities in complex emergencies, though not updated since 1997. Excellent value.

Perrin P War and Public Health. 1996 ICRC, Geneva.

This is the handbook used by ICRC to accompany their HELP (Health Emergencies in Large Populations) course. Clearly and concisely covers a wide range of important topics including planning, food and nutrition, water and environmental health, communicable diseases, medical and surgical care, epidemiology, health-care systems, disasters and development, protecting victims of armed conflicts, and humanitarian ethics.

Valadez JJ. Assessing Child Survival Programs in Developing Countries. Harvard University Press, 1991.

Valadez JJ, Weiss W, Leburg C, Davis R. Assessing Community Health Programs: A Trainer's Guide. Using LQAS for Baseline Surveys and Regular Monitoring. St Albans: Teaching-aids At Low Cost; 2007.

Both texts are useful resources for learning to conduct a community based health survey. Also see:

Henderson RH, Sundaresan T. Cluster sampling to assess immunization coverage: a review of experience with a simplified sampling method. Bull World Health Organ. 1982;60(2):253-60.

Robertson SE, Valadez JJ. Global review of health care surveys using lot quality assurance sampling (LQAS), 1984–2004. Social Science & Medicine. 2006;63:1648-60.

Caincross S, Feachem RG. Environmental Health Engineering in the Tropics: An Introduction Text. (1993) John Wiley & Sons.

On-Line Resources

There is plenty of useful information out there, including downloadable manuals and other texts.

Societies

The Royal Society of Tropical Medicine and Hygiene <https://rstmh.org/>
American Society for Tropical Medicine & Hygiene <http://www.astmh.org>
American Society for Microbiology <http://www.asm.org/>
European Society of Clinical Microbiology and Infectious Diseases <http://www.escmid.org/>
CORE Group: Membership organization of International NGOs <http://www.coregroup.org/>
RCPCH International Child Health Group <http://www.internationalchildhealthgroup.org/>

International partnerships and initiatives

The Partnership for Maternal Newborn and Child Health <http://www.who.int/pmnch/about/en/>
Healthy Newborn network <http://www.healthynewbornnetwork.org/>
Countdown to 2030; Maternal Newborn and Child Survival <http://countdown2030.org/>

Tropical Medicine

Clinical Tropical Medicine Links <http://www.cdc.gov/ncidod/EID/>
WHO Tropical Diseases <http://www.who.int/tdr>
Medscape Infectious Diseases <http://id.medscape.com>
Infectious Diseases Society of America <http://www.idsociety.org/>
Paediatric Infectious Diseases <http://www.pids.org/>
Infectious Diseases resources (Australia) <http://www.health.vic.gov.au/ideas/>
Welcome to Eurosurveillance Weekly <http://www.eurosurv.org/>
International Society for Infectious Diseases ProMED mail <http://www.promedmail.org/>

Johns Hopkins Antibiotic and HIV Guides <http://www.hopkins-bxguide.org/>

Harvard TH Chan has a useful website that covers many public health topics. You can sign up to get a weekly newsletter with all the latest research: <https://www.hsph.harvard.edu/news/press-releases/>

HIV (online support for HIV care from the Tropical Institute in Antwerp)
<http://telemedicine.itg.be/telemedicine/site/Default.aspx?WPID=1&L=E>

On-line clinical cases from the The Gorgas Course, Peru 2017:

<https://www.uab.edu/medicine/gorgas/cases-blog>

Previous years' clinical cases can be searching on "Gorgas cases"

Ultrasound Guide for Emergency Physicians <http://www.sonoguide.com/introduction.html>

Parasitology

CDC Parasitic Diseases <http://www.dpd.cdc.gov/dpdx/>
Parasitic Diseases – Monthly Case Studies <http://www.dpd.cdc.gov/dpdx/HTML/Cases.htm>

NGOs and Humanitarian Health

MSF Publications on line: General / Refugee Health <http://www.refbooks.msf.org/>
Health Library for Disasters: <http://helid.desastres.net/>
Sphere: <http://www.sphereproject.org/handbook/index.htm>
The Medical Peace Work textbook <http://www.medicalpeacework.org/?q=node/232>
CORE Group Technical Working Group Resources for Child Health; Community centered Health Systems Strengthening; Monitoring and Evaluation; Nutrition; Reproductive, Maternal,

Newborn, and Adolescent Health; Social and Behavior Change <http://www.coregroup.org/our-technical-work/working-groups>
UNICEF/LSTM's LQAS Generic Toolkit <http://www.lstmed.ac.uk/the-lqas-generic-toolkit>
LSTM's training videos for community surveys <http://www.lstmed.ac.uk/lqas-films>

Travel Links

Centre for Disease Control, Travel Health advice from the USA <http://www.cdc.gov/travel/>

Weekly Epidemiological Record From World Health Organisation <http://www.who.ch/wer/>

World Health Organisation 'Outbreaks' http://www.who.int/emc/outbreak_news/index.html

(Regularly updated notes by World Health Organization)

WHO (Yellow Book) International Travel and Health
<http://www.who.int/ith/>

Other Links

Babelfish translation site

<http://www.babelfish.com>

Appendix 1: Detailed learning outcomes for themes

Clinical Tropical Medicine and Maternal, Newborn and Child Health

By the end of the programme participants will be able to:

1. demonstrate an in-depth understanding of the epidemiology, pathogenesis, clinical presentation, complications, differential diagnosis, investigation and management of important diseases affecting infants, children and adults living in the tropics
2. critically evaluate data related to the presentation, investigation and management of patients with tropical diseases
3. apply an informed and logical approach to clinical problem solving in a variety of regional and resource settings
4. devise appropriate strategies for disease prevention and control in a variety of settings
5. describe current approaches that aim to address the health needs of men, women, children and the newborn in a variety of settings
6. discuss ethical and cultural issues related to health care in low resource settings

The following clinical problems are regarded of particular importance based on the level of emphasis reflecting their contribution to the burden of disease in low and middle income countries. Additional emphasis is given to current outbreaks or clinical issues of major significance:

Parasitic infections: Malaria, African trypanosomiasis, American trypanosomiasis, leishmaniasis, schistosomiasis, other flukes, lymphatic filariasis, onchocerciasis, loiasis, gut protozoa, soil transmitted helminths, cestodes, parasites of importance in the immunocompromised

Communicable Diseases: Acute respiratory infections, diarrhoea, cholera, dysentery, typhoid, TB*, HIV**, STIs**, arboviruses, VHF, rabies, hepatitis, typhus, relapsing fever, plague, anthrax, tetanus, meningitis, melioidosis, brucellosis, spirochaetoses, leprosy, deep mycoses, zoonoses.

Non-communicable diseases: Venomous bites and stings, haematological problems, asthma, cardiovascular disease, diabetes, mental health problems, skin disease, eye disease.

Principles of reproductive health care, obstetrics and gynaecology in low resource settings.

Principles of neonatal and child health care, including WHO Integrated Management of Childhood Illness (IMCI), immunisation, growth and nutrition

Principles of anaesthetics and surgery in low resource settings

Principles of travel medicine including disease prevention in healthy travellers and travellers with special needs, identification and management of problems in the returned traveller

Learning Outcomes are provided during the course for individual lectures/sessions, for example:

* Essentials of Tuberculosis Epidemiology, Management and Control: By the end of the course, you should be able to:

- Describe TB pathophysiology and clinical manifestations, including extrapulmonary disease
- Apply knowledge of latent TB infection to TB control problems
- Outline the core principles of TB epidemiology, clinical management and control
- Evaluate the relevance of new approaches and tools to your current or intended day-to-day practice in clinical or public health aspects of TB
- Identify areas within your own current or intended practice that could be updated in line with current international guidelines
- Suggest at least two future research directions in the clinical and public health management of TB
- Describe current challenges in TB epidemiology, clinical management and control, especially in relation to HIV co-infection and drug-resistant TB.

**HIV and STI Clinical Case Management and principles of prevention and control in Resource Poor Settings:

By the end of the course, you will be able to:

- Demonstrate a good understanding the principles of prevention and control of HIV and STI, including best practice Counselling and Testing procedures and Antiretroviral Treatment strategies
- Diagnose and treat patients suffering from the common STIs
- Diagnose and treat patients suffering from the common manifestations of HIV disease
- Describe current and emerging challenges and developments in HIV and STI treatment and prevention in LMIC settings

Parasitology and Vector Biology

Parasitology

By the end of the lectures and practicals you should be able to:

1. discuss the life histories of parasites of medical importance in relation to transmission, prevention and control
2. review the key features of the epidemiology of major parasites in humans, including the role of human behaviour in transmission
3. explain the development of parasites in the human body in relation to clinical signs and potential pathology, including an outline of key interactions between parasites and immune and genetic host factors
4. recognise the public health significance of parasites in humans including the potential interactions between infection with specific parasites and other agents of disease
5. diagnose a range of parasites microscopically and relate their presence (or absence) to patient management
6. analyse the advantages and disadvantages of different approaches to the diagnosis of parasites

7. indicate key developments in research on selected parasites and recognise their importance to our understanding of epidemiology and developments in control
8. discuss current approaches to the control, elimination and eradication of selected parasites of medical importance

Lectures focus on gastrointestinal protozoa, malaria, Leishmania, trypanosomes, schistosomiasis, soil transmitted helminths, cestodes and filarial parasites.

Practical sessions are principally 'hands-on', involving extensive use of microscopy to detect and identify stages important in the diagnosis of a range of parasites in stained blood films and faecal smears. These sessions are supported by demonstration specimens and other materials.

Vector Biology

By the end of the lectures and demonstrations on medically important insects and their control, you should be able to:

1. Describe the basic life-cycle of medically important insects and discuss their relevance for prevention and control.
2. Identify ways in which human behaviour and development activities may increase or diminish the risk of breeding and/or disease transmission.
3. Name the major infections transmitted / diseases caused and describe how they are transmitted / caused by the vector / insect;
4. Indicate the geographic distribution of these major infections and explain their relative public health importance. Determine whether a particular vector is likely to be present or absent in a locality.
5. Describe the principal features of the epidemiology of the major infections, including those aspects of vector biology that most influence epidemiology, e.g. host preference, time and location of biting, resting and flight behaviour, breeding site preferences, survival and population density.
6. Explain briefly the most important methods of vector control, including their primary purpose and their relative advantages and limitations for different diseases. Understand the importance of vector control relative to the use other control methods such as chemoprophylaxis and chemotherapy, or the use of vaccines.

In particular have knowledge of: insecticide treated bed nets (ITNs) or long-lasting insecticidal nets (LLINs); indoor residual spraying (IRS); larviciding; the major insecticide groups and the challenge of insecticide resistance; environmental modification; biological control and its limitations; integrated vector management.

7. During the practical demonstrations, recognise the distinguishing features and, where appropriate, the different life cycle stages of the important groups including mosquitoes, sandflies, blackflies, tsetse flies, ticks, lice, fleas, mites, bugs, houseflies and other flies.

For mosquitoes in particular:

- a. Recognise the different life cycle stages: eggs, larvae, pupae, adults
- b. Identify the adult females of *Anopheles*, *Aedes*, *Culex* and *Mansonia*
- c. Distinguish the larvae of anophelines from culicines
- d. Recognise the larvae of *Mansonia*.

Public Health

By the end of the DTM&H course you will be able to

- Critically review the history of public health, and its impact on the development and delivery of services to improve health
- Synthesise information from a wide range of sources and critically appraise research evidence so that you can monitor and amend your own working practices and influence service design and delivery; making them more efficient and effective, and responsive to health need
- Critically review the non-clinical determinants of health, including social, political, economic, environmental, and gender disparities
- Critically review global health policy and the role of various organisations involved in global health governance
- Take a leadership role in the monitoring and evaluation of health services and in the reorientation of services so that they better protect and improve health, including in a disease outbreak situation.

The Public Health sessions of the DTM&H are designed to help you strengthen your capacity and capability to understand the health issues that people living in low resource settings face. You will learn how to engage in partnership work with and for communities to improve health and health services, and reduce inequalities in health.

We will present you with a variety of perspectives on population health, health care and related services, through which you can evaluate your role and responsibilities when working as a medical professional in a low resource setting.

You will learn about the population approach to health that will enable you to bring an enhanced public health dimension to your current work as well as any future role when you are working in a low resource setting.

You will increase your professional effectiveness by improving your critical, analytical, management and evaluation skills. You will be able to take a more confident leadership role in the ethical development of public health policy, strategy, research and evidence based practice.

You will also learn more about the interpersonal, leadership, management and communication skills needed to improve health by working within a multicultural, multi-disciplinary environment in a low resource health setting.

The curriculum includes a review of basic epidemiology and its application in low resource settings, and provides an introduction to health economics and financing.

Appendix 2: DTM&H Board of Studies membership and Terms of Reference

Membership:

Co-Directors of Studies (joint Chairs)
Child Health teaching Lead
TB Short Course Lead
HIV Short Course Lead
Critical Appraisal teaching Lead
Parasitology teaching Lead
Public Health teaching Lead
Maternal and Newborn Health teaching Lead
Vector Biology teaching Lead
Practical teaching Lead
Student Representatives

In Attendance:

Director of Education
Academic Registrar (Deputy for Director of Education)
Quality Assurance Unit Representative
Technology Enhanced Learning Unit Representative
Student Experience Officer
Programme Administrator (Secretary)

Terms of Reference:

Programme Management:

To oversee the operation and management of the Diploma in Tropical Medicine, including consideration of issues relating to the delivery, staffing and administrative support.

Monitoring and Review:

- To monitor and evaluate the programme including student performance and feedback from students, staff, graduates, sponsors, employers and professional bodies, as appropriate.
- To receive reports from External Examiners and agree any actions to be taken.
- To assist the Directors of Studies in preparing the Annual Programme Review and updating the Programme Specification on an annual basis.
- To highlight to the Programmes Board any resource issues that have a direct impact on the programme.

Learning, Teaching and Assessment:

- To ensure that the curriculum remains current and reflects the expectations of students, employers, professional bodies and other stakeholders.
- To ensure that the approaches used to assess the programme are robust and fit for purpose.
- To promote continuing discussion of effective means of Learning and Teaching and of mechanisms for enhancing Learning and Teaching.

Student Matters:

- To discuss matters concerning individual applicants or students and decide on any action to be taken (under reserved business)

Communication with other Committees:

- To liaise with other Boards of Studies where necessary to ensure the discharge of their respective duties.
- To carry out such other functions as may from time to time be requested by the Programmes Board, Quality Management Committee or L&T Committee.

Appendix 3: Marking Guidelines for DTM&H Written Papers

%	COMMENTS
90-100	Distinction Absolutely outstanding answer. Factually flawless; strong degree of originality and critical insight; clearly organised; comprehensive coverage; extensive evidence of supplementary reading; style and presentation excellent.
80-89	Distinction Outstanding answer. Factually flawless; clearly organised; logical; good evidence of supplementary reading; originality and critical insight present; style and presentation excellent.
70-79	Distinction Very good answer. Factually flawless; some originality of thought and critical insight; evidence of outside reading; good coverage; style, presentation and organisation very good.
60-69	Merit Comprehensive answer. Clear; logical; thorough; factually sound with no serious errors; evidence of outside reading and/or originality and critical insight; style, presentation and organisation good.
50-59	Pass Adequate answer. Accurate but limited to lecture material; perhaps some errors or key facts missing; no originality; little evidence of outside reading; style, presentation and organisation moderate.
40-49	Fail Incomplete answer. Information fairly sparse; some inaccuracies; answer broadly relevant to question but poor coverage of lecture material; no sign of outside reading; style, presentation and organisation poor.
30-39	Fail Deficient answer. Poorly directed at question; many omissions or errors but some relevant facts correct; understanding poor; style, presentation and organisation poor.
15-29	Fail Very deficient answer. Answer largely irrelevant to the question; a few facts correct but many omissions and errors; style, presentation, grammar and organisation very poor.
0-14	Fail Totally inadequate answer. Little relevance to question or little factual material; wrong approach; style, presentation, grammar and organisation extremely poor.

Appendix 4: Diagnostic Parasitology Practical Examination

Below is an example of how we would like you to present your findings

Examination No.	Write your examination number in this space:
-----------------	--

Patient History

The patient is an Italian who has recently returned from Ethiopia where he was working as a teacher in a rural area. He visited his general practitioner because he was suffering from fever and headache. He informed his doctor that he had not taken any prophylaxis for malaria. He was febrile, T 38.4 °C, but there were no other abnormal physical findings. Routine blood smears were made and a stool specimen collected.

1. Examine the thin blood film

Report your findings below and state your conclusion in the space provided:
(N.B. Each finding must be checked by a member of the staff.)

	For official use only	
DESCRIPTION: <i>(Below are examples of findings you might report. The more different features you report, the better)</i>	Code	Initials
Infected red blood cell enlarged, edge not frayed		
Schüffner's dots present		
Early ring (trophozoite) form present in RBC		
Developing schizont with dividing nucleus (chromatin) and undivided cytoplasm		
Late trophozoite (irregular/amoeboid appearance), large single nucleus (red) and irregular cytoplasm (blue) present in RBC		
CONCLUSION: <i>Plasmodium vivax</i>		

Examine the stool specimen. What parasite/s are present in the stool?

Report your findings below:

For official use only

DESCRIPTION (report all your relevant findings)	CONCLUSION	Code	Initials
1. Oval cyst 6 x 12 μ m with curved central rod/line (axostyle)	<i>Giardia duodenalis</i>		
2 Round cyst 12 μ m, 4 nuclei present	<i>Entamoeba histolytica/dispar</i>		
3 Brownish oval egg 50 x 25 μ m with clear (mucoid) plug at each end	<i>Trichuris trichiura</i>		
4 Round cyst 12 μ m, 2 nuclei with peripheral chromatin, glycogen mass	Immature cyst of <i>E. histolytica/dispar</i>		
5			
6			
7			
8			
9			
10			

2. How would you manage this patient?

Here you would give as full information as possible (bearing in mind the time constraints) on your management, including basic approach to the patients, supportive and specific treatment and prevention.