

# THE MIZORAM Pharmacists

2018-2019

Vol. 9

Pharmacist for a  
healthy  
india

Published by  
Mizoram Pharmacists' Association  
in commemoration of  
National Pharmacy Week 2018



Pharmacists for a Healthy India

**THE**  
**MIZORAM PHARMACISTS**

VOLUME 9

2018-2019

A magazine published by  
MIZORAM PHARMACISTS' ASSOCIATION  
in commemoration of  
National Pharmacy Week 2018

# THE MIZORAM PHARMACISTS 2018-2019

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## CONTENTS

Message: Hon'ble Minister Dr. R. Lalthangliana

Message: Timothy Thanchungnunga

Message: Lalsawma Pachuau

Editorial

1. <b>General Secretary's Report</b> -Dr. C. Zothanmawia ..... 1	15. <b>Vaihlo - Sim theih a ni</b> -Dr. Jane R. Ralte ..... 58
2. <b>Scope and future of Pharmacy practice in India</b> -Prof. K.R.S. Simbasiva Rao ..... 9	16. <b>Naupai leh a damdawi kaihhnawihte</b> -Rebecca Lalnunmawii ..... 63
3. <b>Smoking: Why till now?</b> -Prof. L. Fimate ..... 15	17. <b>Damdawi vawn that dan</b> -Judy Lalrengpuii ..... 66
4. <b>Hepatitis (Thin vung)</b> -Dr. Zoramthanga ..... 18	18. <b>Naupanga damdawi hman dan</b> -Zatluangpuii ..... 68
5. <b>Methicillin Resistant (Staphylococcus aureus) (MRSA)</b> -Laldinchhana ..... 22	19. <b>Zu leh damdawi</b> -Dr. C. Zothanmawia ..... 71
6. <b>Intihcher chungchang</b> -H.T. Lalruatdiki ..... 26	20. <b>Ui seh tih reng mai hi!</b> -Dr. Mahminga Sailo ..... 74
7. <b>Orphan Drug</b> -R. Vanlalruata ..... 29	21. <b>Medication Therapy Management (MTM)</b> -Dr. C. Lalramdina ..... 79
8. <b>Drug administration legal and ethical aspect</b> -Lalchhanhimi ..... 32	22. <b>Ramhmul/Mizopa/Tualto damdawi leh tunlai damdawi (Allopathic medicine) inkungkaihna</b> -K. Thanzami ..... 81
9. <b>Geriatric leh damdawi kaihhnawihte</b> -Vanlalnggheta ..... 35	23. <b>North-East India-a Pharmacy zirna hmasawn dan</b> -Lalduhsanga Pachuau ..... 84
10. <b>Rannung seh natna (Srub typhus)</b> -Laltlanhlui ..... 40	24. <b>Damdawi chungchanga hriat tur pawimawh thenkhat</b> -K. Lalremmawii ..... 87
11. <b>I thil ei leh in thinte kha i hre chiang em?</b> -B. Lalzamlia ..... 44	25. <b>Damdawi chungchang kan hriat fuh tawk loh thenkhat</b> -Dr. C. Zothanmawia ..... 90
12. <b>AB-PMJAY</b> -Vanlalhluti ..... 48	
13. <b>Clinical Trials</b> -Rema Vanphawng ..... 52	
14. <b>From research to healthcare: Your Pharmacist is at your service</b> -Lalrindiki ..... 54	

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**2017-2018**  
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10	Laldinpuia		



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**Dr. R. LALTHANGLIANA**  
MINISTER  
HEALTH & FAMILY WELFARE  
GOVT. OF MIZORAM



Mizoram Pharmacists' Association-in General Conference leh National Pharmacy Week 2018 lawmna hun an hmang leh thei hi ka lawmpui hle a. Hemi puala hriselna kaihnhawih thu tha leh tangkai, mipuite beng tivar a, hriselna lama hmasawntir theitu tur magazine tha tak 'The Mizoram Pharmacists' buatsaih a ni leh hi lawmawm ka ti hle a ni.

Pharmacist-te hi damdawi enkawl, siam leh hmuhchhuah kawngah a bika zirna nei in nih avangin mithiam in ni a, in thiamna te nasa zawka hmang tangkai leh zual turin ka duh che u a. Tun hnaiah India ram in khawthlang ram changkangte hnung zuiin Clinical Pharmacy lamah pawh hma a la a. Hemi kawngah hian Mizo pharmacist-te pawhin theihtawp in chhuah tih ka hria a. India ram state tê-te zinga a hmasawn leh hmahruaitu ni chho zel thei turin duhsakna ka hlan a che u. Tin, mipui tana him zawka damdawi leh ei leh in enkawl kawngah Food & Drugs Administration hnathawhte nasa taka tan la leh zual turin ka duh che u a ni.

Mizoramah ramhmul damdawi tam tak hmuhchhuah tur a awm niin an sawi thin a, hemi kawngah hian theihtawpa ãan la zel turin ka fuih duh che u a, hmuhchhuah duhawm tak tak in neih theih nan duhsakna ka hlan bawh che u a ni.

He magazine hi a chhiartu apiang tana hlawkpuina hlu tak ni turin duhsakna sang ber ka hlan e.

Dr. R. LALTHANGLIANA



**TIMOTHY THANCHUNGNUNGA**  
PRESIDENT  
MIZORAM PHARMACISTS' ASSOCIATION



### **“Pharmacists For A Healthy India”**

Keini Mizoram Pharmacists' Association-te chuan kum khat danah General Conference kan nei thin a. He hunah hian National Pharmacy Week pawh hman thin a ni a. Dan naranin kan conference leh National Pharmacy Week hi November thlaah hman thin a ni a, amaherawhchu, tun tum kan conference & NPW hman hun tur leh kan ram inthlanpui hun a innanchin avangin a hunah tak kan hmang thei ta lo va. January, 2019-ah hian hman a lo ngai ta a ni.

General Conference apiang hian 2010 atang khan 'The Mizoram Pharmacists' magazine tihchhuah thin a ni a, kumina mi hi volume 9-na a ni ve ta. He magazine-ah hian thuziak tha tak tak leh bengvarthlak tak tak chhiar tur a awm a, thuziaktute hi Pharmaceutical Sciences kaihnnawih mai bakah MZU Vice Chancellor te, Medical Science lama kan mi chhuanvawr te, kan state medical college MIMER leh MCON hotu te, Veterinary Sciences mithiam leh Nutrition & Diet lama mithiam te an ni.

MPA General Conference leh National Pharmacy Week 2018 kan hmang leh thei hi lawmawm ka ti a. He hun pawimawh tak kan hmanna kan khaulian MZU Vice Chancellor leh member kalkhawm zawng zawngte chungah lawmthu ka sawi a. NPW 2018 thupui ang hian Pharmacist-te hian a bulthut atanga a tawp thlengin mipui hriselna atana tang zel turin theihtawp i chhuah zel ang u.

**TIMOTHY THANCHUNGNUNGA**



**LALSAWMA PACHUAU**  
PRESIDENT  
MIZORAM STATE PHARMACY COUNCIL



Mizoram chhunga ka Pharmacist puite a hmasain duhsakna sang ber chibai ka buk a che u.

Mizoram Pharmacists' Association hian General Conference a hman apiangin magazine 'The Mizoram Pharmacists' kan chhuah thin a. He kan magazine chhuah thin hian kawng tam takah Mizorama Pharmacist-te thawhhona thatzia leh hma kan sawnzia a lantir bakah pharmacy profession mipuite hmaa min pho chhuahsaktu pawimawh tak a ni a. Pharmacist-te hi tihdamna rawngbawlnaah hian sawrkar leh khawtlangah tangkai taka hna thawktu kan nihzia min puanzarsak thin a ni. Hetiang magazine hlu tak tihchhuah a ni thei hi a ropuiin a lawmawm takzet a ni. A phena rim taka thawktute leh thu leh hla tha tak tak rawn ziak thintute chungah lawmthu ka sawi a, tun tum kan magazine-ah hian pharmacy profession mi mai ni lovin, hriselna lama kan thawhpui mi chhuanawm tak takten thuziak an rawn thawh hi lawmawm ka ti takzet a ni.

Mizoramah hian Pharmacist-te hian ngaih pawimawh kan hlawh chho ve tial tial a, sorkar leh mipuite atang pawhin ngaihhlut kan hlawh sawt hle a. Tun dinhmunah phei chuan thiamna lama Mizoram Pharmacy-in hmasawwna a neih hi a ropui takzetin ka hria. Thiamna lamah Pharmacy profession hnuai a awm thei ang zawng zawng Mizote zingah nei an lo awm ta nual mai. Diploma atanga M.Pharm, Pharm.D leh Ph.D thlengin an awm ta fur mai hi hmasawwna duhawm tak a ni a. Hun lo la kal zel turah Zofate tan mi tangkai leh hriselna huanga sang taka min hlangkaitute an la ni ngei ang.

The Mizoram Pharmacists chhiartuten nasa taka hlawkna chhar theuh turin duhsakna ka hlan a.



LALSAWMA PACHUAU

# Editorial



The Mizoram Pharmacist 2018-2019 (Vol.9) tihchhuah leh a ni ta hi a lawmawm ka ti hle a. Mizoram Pharmacists' Association-in hunbi mumal tak neia magazine tha tak a tichhuak thin hi a lawmawm ka tiin kan hruaitute chungah lawmthu ka sawi takzet a ni.

He issue bikah hian Pharmaceutical Sciences kaihhnawih thuziak tha tak tak bakah hriselna lama kan thawhpuite thuziak telh ve thain kan hria a. Chumi atan chuan Mizoram chhunga kan Medical leh Nursing College hruaitute mai bakah, hriselna lama tangkai thiamna dang neite thuziak pawh telh a ni a. Heng mithiam tak takte thahnemngaihna hi a hlu ka ti hle a, chumi puitlin theihna tur atana thahnemngai em em kan Joint Editor Pi Vanlalhluti chungah a bik takin lawmthu ka sawi a ni. Tin, magazine tihchhuah a nih theihna tura sum leh paia min puitute zawng zawng chungah lawmthu ka sawi takmeuh a, Editorial Board member-te inpekna avang chauhva he lehkhabu hi tihchhuah theih a ni.

Kan magazine-ah hian damdawi kaihhnawih hriat tur pawimawh chi hrang hrang te, natna leh mihringte hriselna atana tangkai thilte leh zirna chungchang thlengin thuziak bengvarthlak tak tak chhiar tur a awm a, chhiartuten hriselna lamah kawng khat talin hmasawwna in neih ngei ka beisei.

Mizoram Pharmacists' Association vul reng rawh se.

Dr. C. ZOTHANMAWIA



## The Mizoram Pharmacists 2018-2019

Dr. C. Zothanmawia  
General Secretary  
General Headquarters, Aizawl

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### General Secretary Report

#### 2016-2018 CHHUNGA MIZORAM PHARMACISTS' ASSOCIATION HRUAITUTE

OFFICE BEARERS		
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9	C. Lalmachhuana	19	R. Lalawmpuii
10	Laldinpuia		

## The Mizoram Pharmacists 2018-2019

# 2016-2018 chungin MPA meeting vawi 14 neih a ni a, Office Bearer's meeting vawi 7 leh Executive Committee meeting vawi 4 neih a ni. MPA OB & FDA joint meeting vawi 1, MPA OB & MGPA joint meeting vawi 1, MPA OB & MCDA joint meeting vawi 1 neih a ni bawk. Heng bakah hian MPA, Champhai Sub-Hqrs hawnna official meeting vawi 1 neih a ni a, tin, kan member boralte ral dan tur chungchang te, MPA Conference leh thil ñul dangah official meeting ni lovin OB-te vawi eng emaw zat an ñhukhawm a ni.

# National Pharmacy Week 2017: National Pharmacy Week 2015 chu a hnuaiia programme ang hian hman a ni:

### NATIONAL PHARMACY WEEK 2017

#### PROGRAMME

##### Theme

##### Know Your Medicines : Ask Your Pharmacist

- Date : 21st November, 2017 2:00 pm
- Venue : Conference Hall, Civil Hospital, Aizawl
- Chief Guest : Pu H. Thankima  
Retired Asst Drug Controller
- Chairman : Pu R. Rodingliana  
Vice President, MPA
- Welcome Speech : Pu Lalsawma  
Jt Director, FDA
- Greetings : 1) President, IMA (Mizoram Branch)  
2) President, TNAI (Mizoram Branch)

SL Sailo Pharmacy Award distribution and speech by Chief Guest

Short speech on Oral Health from IDA Representative

Release of Pharmacists' Manual  
by Dr. H. Lahlhenmawia, Vice President, MSPC

Speech by President, MPA

Vote of Thanks by Finance Secretary, MPA

DINNER

## The Mizoram Pharmacists 2018-2019

# MPA General Conference 2016-in a rel angin MPA Sub-Headquarters chu Champhai, Mizoramah 13.1.2017 khan MPA Hqrs OB-te kaihhruiain Circuit House, Champhaiah a hawna hun hman a ni a. Hemi hunah hian Champhai District-a MPA member-te an kal tha hle a, MPA President leh General Secretary kaihhruiaina hnuaiiah hetiang hian Sub-Hqrs MPA, Champhai hruaitute thlan an ni:

President : H. Lalchawimawia  
Vice President : P.C. Zaingena  
Secretary : Lalbiakhnuna Ngente  
Asst. Secretary : Vanlalbiakdiki  
Finance Secretary : H. Vanlalhriata  
Treasurer : F. Lalrinsangi  
Adviser : C. Ramdinmawii

# Pharmacist-te pharmacy supervision chungchangah 25.1.2017-ah Food & Drugs Administration (FDA) nen joint meeting neih a ni a, MPA Executive Committee (9.12.2016) thurel angin rualkhai zawka supervision fee kan neih theih nan Rs. 7000 per month-ah hrut rual tura thutlukna siam a ni a. Supervision kalphung mumal leh supervision checklist, Pharmacist's registration seal hman dan mumal zawk ruahman a ni a, hemi chungchangah hian Mizoram Govt. Pharmacists' Association (MGPA) leh Mizoram Chemists & Druggists Association (MCDA) hruaitute pawh kawm niin 1.4.2017 aţangin hetiang hian kalpui ţan a ni.

# Commercial, special area leh a bikin private hospital-ah te full-time/daily basis-a Pharmacist rawih kan nih theihna turin hma lak a ni a, hemi chungchang hi FDA hruaitute hnenah thlen a ni a. FDA-te hmalakna azarah tun hnaia hospital setup thar reng rengah chuan full-time Pharmacist rawih an ni ve ta zel a, hemi chungchangah hian MPA chuan FDA chungah lawmthu a sawi takmeuh a ni.

# Mizoram Public Service Commission (MPSC) combined competitive examination-a optional paper-ah Pharmaceutical Sciences telh ve tura hma lak a ni.

# National Health Mission (NHM)-te Pharmacist hlawh tisang tur leh mumal zawk a awm theih nan hma lak a ni.

# World Pharmacists' Day 2017 pualin MPA member leh Pharmacy zirlaite thuziaka inelna buatsaih a ni a, a thupui atan World Pharmacists' Day 2017 theme 'From Research to Healthcare: Your Pharmacist is at Your Service' tih hman niin, a hnuaiia mite hi lawmman latute an ni:

1st Prize : R. Vanlalruata, Asst. Professor, Deptt of Pharmacy, RIPANS  
2nd Prize : Laldinchhana, Asst. Professor, Deptt of Pharmacy, RIPANS

## The Mizoram Pharmacists 2018-2019

- 3rd Prize : 1) Lalduhsanga Pachuau, Asst. Professor, Assam University  
2) Lalhmangaihhsanga Renthlei, 4th Sem, Pharm.D.  
SJM College of Pharmacy, Chittradurga, Karnataka

Anni bakah hian consolation prize mi pathum hnenah pek a ni bawk.

# World Pharmacists' Day 2017 pual hian All India Radio (AIR) zingkar programme-ah MPA General Secretary chuan theme pualin thusawina hun a nei a, K. Lalremmawii, Asst. Professor, Deptt of Pharmacy, RIPANS pawhin MPA hmingin AIR-ah hian 'Damdawi chungchanga finkhur ngaihna' tih thupui hmangin hun a hmang bawk.

# National Pharmacy Week 2017 chu 21.11.2017-ah Conference Hall, Civil Hospital, Aizawlah hman niin kan senior member H. Thankima chu khuallian a ni a, hriselna lama kan thawhpuite- Indian Medical Association (IMA, Mizoram Branch), Indian Dental Association (IDA, Mizoram Branch) leh Trained Nurses Association of India (Mizoram Branch) hruaitute pawh sawm niin member kalten hun hlawkthlâk tak kan hmang. NPW 2017 pual hian zingkarah walkathon neih niin, member kalte hnenah NPW T-Shirt sem a ni a, zawngchhangthlâk kan ti hle. NPW 2017 hi Champhai Sub-Hqrs-ah pawh hman a ni a, Headquarters aţangin General Secretary bakah R. Vanlalruata (FDA), RIPANS aţangin Asst. Professor pathum - Zothanpuia, K. Lalremmawii leh C. Malsawmtluangi ten an hmanpui a, NPW pual meeting bakah local channel TV-ah damdawi chungchanga mipui zirtirna hun hman a ni.

# The Mizoram Pharmacists 2018-2019 magazine chu buatsaih lehin tihchhuah a ni a, Editorial board-te chu:

Editor : Dr. C. Zothanmawia  
Joint Editors : Vanlalhluti & Esther Lalduhawmi Hnamte  
Members : Dr. H. Lahlhenmawia  
R. Vanlalruata  
R. Vanlalsiama  
Lalhmingliana  
Rosangluaia  
Laldinchhana  
MPA Office Bearers (Ex-officio)

# Kum hnih dana kan neih tawh thin MPA General Conference 2018 chu National Pharmacy Week 2018 nen hman kawp leh tura ruahmanna siam a ni a, amaherawhchu NPW 2018 hun hi Mizoram Inthlanpui 2018 hun nen a innangching a, kan member zingah sorkar hnathawk, inthlan kaihhnawiha buai tur tam tak kan awm bakah, inthlan hun chungchangah boruak chi hrang hrang a lo awm a, MPA

## The Mizoram Pharmacists 2018-2019

General Conference cum NPW 2018 lawmna hun chungchangah pawh hruaitute lu a haiin ngaihtuahna tam tak sen a ni a. Inthlan zawh maiah Kristiante hunpui a lo tla bawk nen, a tawpah NPW hun pel deuh tawh mah se, MPA General Conference cum NPW 2018 lawmna chu hun thawl tha zawk leh member tam zawk tana remchang a nih beiseiin 15.1.2019-ah kan hman a lo ngai ta a ni. Hetiang hian hun hman a ni:

### MIZORAM PHARMACISTS' ASSOCIATION



### GENERAL CONFERENCE CUM NATIONAL PHARMACY WEEK 2018

Theme: 'Pharmacists for a Healthy India'

### P R O G R A M M E

Date : January 15, 2018  
Venue : Tourist Lodge, Chaltlang  
Registration : 10:30 am - 11:00 am

#### FIRST SESSION

Chairman : Mr. Timothy Thanchungnunga  
President, MPA  
Chief Guest : Professor K.R.S. Sambasiva Rao  
Vice Chancellor  
Mizoram University  
Devotion : Mr. L. Laizika, Retired Pharmacist  
Welcome Speech : Chairman  
Speech and Magazine Release : Chief Guest  
Solo : Ms. V.L. Thatpuii Pachuau

## The Mizoram Pharmacists 2018-2019

- Report and Orbituary : Dr. C. Zothanmawia, General Secretary, MPA  
Release of Pharmacists' Manual : Mr. Lalsawma Pachuau  
President, Mizoram State Pharmacy Council  
Speech on Theme of NPW 2018 : Mr. R. Vanlalruata  
Asst. Professor, Deptt of Pharmacy, RIPANS  
Vote of Thanks : Ms. Vanlalhluti, Finance Secretary, MPA  
Refreshment : 12:30-1:00 pm

### **SECOND SESSION**

- Chairman : Mr. Timothy Thanchungnunga  
Finance Report : Ms. Vanlalhluti, Finance Secretary, MPA  
Report : Lunglei & Champhai District Sub-Headquarters, MPA  
Solo : Mrs. Lorind Lalthannguri  
Discussion (Rorel) : Executive Committee Official Agenda  
1) MPA member-te thihna chungchanga inral dan phung ennawn ni rawh se  
2) MPA Constitution ennawn  
3) District tina MPA Sub-Headquarters din chungchang  
Election : Official Candidate for 2018-2020  
1) C. Vanthuama  
2) Dr. C. Zothanmawia  
3) Esther Lalduhawmi Hnamte  
4) Laltlanmawia Pachuau  
5) R. Vanlalruata  
6) Rodingliana  
7) Rothanga Ralte  
8) T.L. Rualawia  
9) Timothy Thanchungnunga  
10) Vanlalhluti

Floor Nomination may be made up to 5 persons  
Returning Officers - Mizoram Journalists Association

- Solo : Mr. John Ruolthanglien Khongsai

**Dinner**

## The Mizoram Pharmacists 2018-2019

# Kum 2017-2018 chhunga auditors turin C. Lianchhunga, Lalmuanawma te ruat an ni a. Hetiang hi tuna kan sum dinhmun a ni:

Audit period	:	4.11.2016 - 31.12.2018
Opening Balance	:	₹ 2,668,92
Total income	:	₹ 6,79,900
Grand total income	:	₹ 9,46,792
Total expenditure	:	₹ 5,16,848
Balance in hand	:	₹ 4,29,944

# S.L. Sailo Pharmacy Award chu kum tin Mizorama Pharmacy zirna kan neih chhun RIPANS leh Laithangpuii College of Pharmacy aṅanga degree leh diploma pass chhuak tiṅha ber hnenah pek ṅhin a ni a. Heng mite hnenah hian S.L. Sailo Pharmacy Award 2018 chu hlan an ni:

1. A. Lalzamlia, RIPANS  
Pharmacy Student of the Year (Degree) 2018
2. Lalrinfeli, Laithangpuii College of Pharmacy  
Pharmacy Student of the Year (Diploma) 2018

# MPA General Conference hmasa leh tun inkar (Dec, 2016-Dec, 2018) chhung hian kan member mi pariat laiin min boralsan a, MPA chuan pawl kan tiin kan ui takzet a, an chhungte Pathian awmpuina leh thlamuanna kan dilsak a ni. Kan member boralte hi thlahna pangpar hlanin Rs. 20,000/-in kan rál a ni. Member boral tate:

P.C. Lalthanzuala, Bilkhawthlir  
Lalhuapzauva, Khatla South, Aizawl  
B. Lalmachhuana, Ramhlun North, Aizawl  
Z.D. Dengtlaia, Kikawn, Lunglei  
Vanlalremruata, Kolasib  
T. Vungzaliana Paihte, Bawngkawn South, Aizawl  
R. Vanlalliana, Thakthing Tlang, Aizawl  
D. Thankhuma, Kawrtethawveng (Rál tum mek)



## PHARMACISTS OATH

I Swear by the code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of health care team.

I shall uphold the laws and standards governing my profession.

I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.

I shall follow the system, which I consider best for pharmaceutical care and counselling of patients.

I shall endeavour to discover and manufacture drugs of quality to alleviate sufferings of humanity.

I shall hold in confidence the knowledge gained about the patients in connection with professional practice and never divulge unless compelled to do so by the law.

I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organisations.

While I continue to keep this Oath inviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times!

Should I trespass and violate this oath, may the reverse be my lot!



# Scope And Future Of Pharmacy Practice In India

---

Prof. K.R.S. Sambasiva Rao  
Vice Chancellor, Mizoram University

Pharmacy is a versatile, dynamic, growing, and increasingly diverse profession, one which creates an excitement because there are so many opportunities for service.

Pharmacists are health care professionals whose professional responsibilities include seeking to ensure that people derive maximum therapeutic benefit from their treatments with medicines. This requires them to keep abreast of developments and advances in knowledge & technology related to manufacture and use of medicines, professional standard requirements, laws governing pharmacy, etc.

The mission of Pharmacy profession is to improve public health by ensuring safe, effective, and appropriate use of medications. Pharmacy practice reflects an evolving paradigm from which the Pharmacist primarily involved in medication distribution and counsels patients, to a team based clinical role providing patient centered medication therapy management, health care improvement, and disease prevention services.

While by nature of work/practice, many pharmacists work silently behind

the scenes, some of them who are in direct contact with patients represent the face of the pharmacy profession. Thus, pharmacy is a product, as well as a service-related discipline, increasing its scope two-fold. It is a noble profession which unfolds vista full of opportunity leading to a golden future for a young career aspirant. The 'Practice of Pharmacy' includes interpretation, evaluation, and implementation of Physician Orders; Dispensing of Prescription Drug Orders; participation in Drug and Device selection;

Drug Administration; Drug Regimen Review; Practice of Telepharmacy; Drug or Drug-related research; provision of Patient Counseling; safe storage of Drugs and Devices, and maintenance of required records. The practice of Pharmacy also includes continually optimizing patient safety and quality of services through effective use of emerging technologies and competency-based training.

Pharmacists work in a wide variety of health care settings: in the pharmaceutical industry (carrying out a wide range of activities - from R & D to manufacturing to quality control, packaging, quality assurance, etc.), in practice settings (Hospital and Community, i.e. retail pharmacy), in academics, Regulatory affairs, Clinical Research).

Pharmacists represent the 3rd largest healthcare professional group in the world and 4th highly paid health profession globally.

### **Profession of Pharmacy in India**

Currently there are over a million pharmacists in India with around 55% of them in community, 20% in hospital, 10% in industry & regulatory and 2% in academia in India, formal pharmacy education leading to a degree began in 1937, with the introduction of a 3 year industry oriented Bachelor of Pharmacy Course. To meet the varying needs of the profession at different levels the following pharmacy programs are offered in India today: Diploma in Pharmacy, Bachelor of Pharmacy, Master of Pharmacy, Practice based Doctor of Pharmacy (Pharm.D.), and Doctor of Philosophy in Pharmacy (Ph.D.). To practice as a pharmacist in India, one needs at least a diploma in

pharmacy, which is awarded after 2 years and 3 months of Pharmacy studies and practical training. These diploma-trained pharmacists are currently the mainstay of pharmacy practice in India. Every year nearly 20,000 D.Pharm., 30,000 B.Pharm., 6,000 M.Pharm. and 700 Pharm.D. students graduate in the country.

### **Future of Pharmacy in India**

India has shown significant growth in the last few decades. It is one of the strongest economies in the world today. Though every sector has performed well, industries such as pharmacy have grown remarkably well. Not only entrepreneurs but people aspiring for making a bright career in pharmacy also find it lucrative. Experts say that in the coming years, other than the noble academic jobs, pharmacy business will become more profitable. Here are a few areas that show a promising future.

### **Research and Development**

Research and development or R & D are the core of pharma business. According to the business analysts, there will be a high demand for qualified pharmacists.

Resources that possess higher degrees such as M.Pharm. or Ph.D. will get priority:

Research on new drugs, Process development, Formulation, Development, Clinical trials, Toxicological studies, Formulation and development.

### **Analysis and testing**

Analysis and testing go together. For this pharma companies require highly skilled people. They can take care of ana-

lytical work and sophisticated equipment. Quality Control or QC, and Quality Assurance or QA are areas where a lot of job opportunities will generate in the coming times. These job profiles are important in a pharma business, and highly respectable and rewarding as well.

### **Manufacturing**

As the demand for medicines increases, new industries are coming up. To manage production and operation in these industries, entrepreneurs need qualified people. In a production industry, various skills are required. Starting from production to operation, and maintenance to quality control; the need for human resources is everywhere.

The Indian pharmaceutical industry currently tops the chart amongst India's science - based industries with wide ranging capabilities in the complex field of drug manufacture and technology. A highly organized sector, the Indian pharmaceutical industry is

estimated to be worth \$4.5 billion, growing at about 8 to 9 percent annually. It ranks very high amongst all the third world countries, in terms of technology, quality and the vast range of medicines that are manufactured. It ranges from simple headache pills to sophisticated antibiotics and complex cardiac compounds; almost every type of medicine is now made in the Indian pharmaceutical industry.

The Indian pharmaceutical industry is the world's second-largest by volume and is likely to lead the manufacturing sector of India. This industry has gained significant attraction in the last few years. It is currently on a high growth trajectory and rapidly integrating with the global industry. This integration is opening up tremendous new opportunities for Indian pharma across all segments including generics, research and development of new chemical entities (NCE) and contract research and manufacturing services (CRAMS).



### **Sales and marketing**

It is not enough to manufacture pharmaceutical products in manufacturing units. It is equally important to take them to the customers. Sales and marketing teams play a vital role in it. They explore the markets and find out areas with high business potential. People who have a good caliber of convincing others can make a bright career in sales and marketing of pharmaceutical products. Jan Aushadhi Stores under Pradhan Mantri Bhartiya Jan Aushadhi Kendra and e-pharmacy is a very useful option for retail business.

### **Career in Hospitals**

The pharmacists work in hospitals are people who know better about the drugs prescribed there. Though it is a more familiar thing in the western countries, in India also hospitals are appointing qualified pharmacists nowadays.

### **Scope for Pharmacy Practice in India**

Pharmacists should move from behind the counter and start serving the public by providing care instead of pills only. There is no future in the mere act of dispensing. That activity can and will be taken over by the internet, machines, and/or hardly trained technicians. The fact that pharmacists have an academic training and act as health care professionals puts a burden upon them to better serve the community than they currently do (Source from: Pharmaceutical care, European developments in concepts, implementation, and research: a review).

Over the past four decades there has been a trend for pharmacy practice to

move away from its original focus on medicine supply towards a more inclusive focus on patient care. The role of the pharmacist has evolved from that of a compounder and supplier of pharmaceutical products towards that of a provider of services and information and ultimately that of a provider of patient care. Increasingly, the pharmacist's task is to ensure that a patient's drug therapy is appropriately indicated, the most effective available, the safest possible, and convenient for the patient. By taking direct responsibility for individual patient's medicine-related needs, pharmacists can make a unique contribution to the outcome of drug therapy and to their patients' quality of life. The new approach has been given the name pharmaceutical care. The most generally accepted definition of this new approach is: "Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life".

Although the number of pharmaceutical products on the market is increasing, access to essential medicines is still lacking in many parts of the world. Rising health care costs and changing social, technological, economic and political environments have made health care



reforms necessary throughout the world. New approaches are needed at individual and at population level to provide safe and effective pharmacotherapy to patients in an ever more complex environment.

The Pharmacy Practice Activity Classification (PPAC) initiated by the American Pharmacists Association (APhA), provides a common language for a consistent classification of pharmacy practice activities that represents a new way to describe or document pharmacists' activities in a common language.

**Classification of Pharmacy Practice Activity**

- \* Ensuring appropriate therapy and outcomes
- \* Ensuring appropriate pharmacotherapy
- \* Ensuring patient's understanding/adherence to his or her treatment plan
- \* Monitoring and reporting outcomes

**Dispensing medications and devices**

- \* Processing the prescription or medicine order
- \* Preparing the pharmaceutical product
- \* Delivering the medication or device

**Health promotion and disease prevention**

- \* Delivering clinical preventive services
- \* Surveillance and reporting of public health issues

- \* Promoting safe medication use in society

**Health Systems Management**

- \* Managing the practice
- \* Managing medications throughout the health system
- \* Managing the use of medications within the health system
- \* Participating in research activities
- \* Engaging in interdisciplinary collaboration

Pharmacy is practiced across a range of both traditional and new settings and levels of decision-making. As members of the health care team, pharmacists need to be able to assume many different functions. The concept of the seven-star pharmacist was introduced by WHO and FIP to describe these roles.

Pharmacists have the potential to improve therapeutic outcomes and patients' quality of life within available resources, and must position themselves appropriately within the health care system. Pharmaceutical education has a corresponding responsibility to produce graduates who are competent to deliver pharmaceutical care. Outcome competencies contribute to quality assurance by providing readily accessible standards against which practice may be measured.

**Pharmacy Practice in India**

**Courses related to Pharmacy Practice**

- \* M.Pharm. Pharmacy Practice (2 yrs after B.Pharm.).
- \* Pharm.D. (6 yrs)

## The Mizoram Pharmacists 2018-2019

- \* Pharm.D. Post Baccalaureate (3 yrs after B.Pharm.)

### **Opportunities for Pharmacy Practice in India**

- \* Academia
- \* Clinical Pharmacists (Government & Corporate Hospitals)
- \* Hospital Pharmacists (Government & Corporate Hospitals)
- \* Community Pharmacists
- \* Drug Information Specialists (Corporate Hospitals)
- \* Clinical Pharmacy Manager (Corporate Hospitals)
- \* Hospital Administration (Corporate Hospitals)
- \* Quality Service Officer (Corporate Hospitals)
- \* Contract Research Organizations (CROs)/Industry - Clinical Research Coordinators (CRC), Clinical Research Associates (CRA), Clinical Data Manager, Clinical Operations Manager, Clinical Team Leader, Clinical Trial Site Manager.
- \* Drug Safety Officers
- \* Pharmacovigilance Associates (Government and Corporate Hospitals)
- \* Prescription Analysts (Corporate Hospitals)
- \* Scientific Medical Writing
- \* IT Sector - Medical Coding, Medical Billing, Insurance Claim

- \* Pharma Product Management
- \* Medical Writer or Medical Science liaison or Medical Advisor

### **Emerging Ventures/Entrepreneurship Opportunities**

- \* Pharma Clinics
- \* Drug and Poison Information Centers
- \* E-Pharmacy
- \* Medical Writing/Medical Science Liaison/Medical Advisor
- \* Medical Tourism
- \* Project Leader (National/International Health Organizations, Funding Agencies)

### **Professional Challenges for Pharmacy Practice**

- \* Acceptance by the healthcare professionals is required as they may feel that pharmacist infringe into their territory.
- \* To get acceptance pharmaceutical care services like drug therapy monitoring, ADR monitoring, dosage adjustment, patient counseling, drug information, Medication error management etc., need to be practiced.
- \* Involvement of policy makers, professional bodies, stake holders, educational institutions, etc, need to be ascertained.
- \* Key competency levels need to be practiced in all settings with equal importance so that there is no variation in the competency levels of Pharm D and M.Pharm Pharmacy Practice professionals coming out from various institutions.





# Smoking: Why Till Now?

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**T**obacco is the dried leaf of a plant named *Nicotiana Tabacum*. The plant grows all over the world and all parts of it, except the dried seeds, are poisonous. The active principle of this plant is **nicotine**. Nicotine is extensively used in agricultural and horticultural works for fumigating and spraying as insecticides, worm powders, etc. Tobacco contains one to eight per cent of nicotine, and is used either to **smoke** or as **snuff** or is **chewed**.

Nicotine is easily absorbed in the body through all mucus membranes, lungs and the skin. Each cigarette contains about 15-20 mg of nicotine, of which 1 to 2 mg is absorbed from smoking. While smoking a cigarette, the inhaled nicotine reaches the brain within about 10 seconds. It is reported that, 40 mg of nicotine, or **what is contained in two average cigarettes is fatal**.

When nicotine is absorbed in the body, it stimulates **adrenaline** secretion, and stimulates both **central** and **periph-**



**eral nervous system**, thus causing burning acid sensation, nausea and vomiting, sickness, abdominal pain, hyper salivation etc. The **cardiopulmonary effects** include increased heart beat, irregular heart beat, hypertension, severe prostration, convulsion, delirium, irregular respiration, dyspnoea and coma.

*Tobacco rivals cyanide as a poison capable of producing rapid death. 15 to 30 gm of crude tobacco is found to be fatal. If the amount of nicotine from one cigarette is ex-*

***tracted and injected into a rat, the rat will succumb in a few minutes. (Dr.KSN Reddy)***

### **No Tobacco:**

A fight against TOBACCO started more than three decades ago. WHO played a major role in that fight against smoking. It took drastic steps by removing ashtrays from all its offices around the world. Propaganda were sent all over the world, campaigning against the use of tobacco and its products, circulating different themes every year, such as, **‘Tobacco or health, the choice is yours’**, **‘Tobacco or health, choose health’**, **‘tobacco free workplaces: safer and healthier’**, **‘Tobacco kills, don’t be duped’**, **‘Health professionals against tobacco’**, **‘Tobacco is injurious to health’**, etc.



It has been established that tobacco causes cancer, and that, the largest cause of lung cancers is smoking. This is because tobacco contains nicotine, which is a known carcinogen (agent for cancer production). Accordingly, tobacco chewing claims mouth cancer in many pan chewers, and this habit of tobacco chewing, which is highly prevalent in Mizoram, is said to be the main cause of high incidence of cancer in this part of the coun-

try. Gradually, the war against tobacco spread worldwide ,and, most of the countries, including India, took serious steps, such as banning smoking and declaring smoke-free in public places, hospitals and government offices .

It has been reported that ,tobacco is now the **World’s leading single agent of death**, killing 100 million people worldwide in the 20th century. It is the **leading preventable cause of death**, killing half of people who use it.

Many NGOs have come up with projects and programmes for the fight against tobacco use. It has been repeatedly publicised that a **smoking father passes second-hand smoking to his wife and the children he lives with, through the breath and the body smell.**

Advertisement of cigarette in cinema halls had been banned. Beautiful catchy propagandas were exhibited on the streets. Warning labels were put on cigarette, bidi and smokeless tobacco packets.

The dangers of tobacco has been extensively shown in various media, exhibitions, cartoons and posters, so much so, it has become monotonous, boring and appears to have been ineffective.

In the state of Manipur, the movement against smoking was gaining ground from the eighties. It has influenced the minds of the educated and the high class people of Manipur so much that the culture of **smoking as a status symbol** during the sixties, has been replaced by **‘no smoking’ as a status symbol** from the late eighties. To take an example, most of the 20 Head of Departments of



Regional Institute of Medical Sciences (RIMS), Imphal, were smokers till the late eighties. Being one of the last three HODs who continued smoking, all the HODs of RIMS were ultimately free from smoking when the author quits smoking from first January 1988 as a New Year resolution. From then on, RIMS staff community became **smoke free**. Smoking had become considered as, **unhealthy, uncultured and a dirty habit**.

Inspite of the world declaring **war against tobacco**, and, **even condemning smoking as a dirty habit**, it is sad to say that incidence of smoking and use of tobacco products is still alarmingly high in a place like Mizoram, a state, widely recognised as a cultured society. The habit is said to be still popular even among the doctor community and the elite group of Mizoram. A survey of Mizoram showed that, 54.1% of men, 14.3% of women, and 34.4 % of all adults currently smoke tobacco. 21.3 % of men, 46% of women and 33.5 % of all adults use smokeless tobacco. **(Global Adult Tobacco Survey, Mizoram 2016-17)**. When a south Indian lady who came to Mizoram for the first time, was asked her most interesting experience during her brief stay in Aizawl, quick was the reply, saying, '**rampant smoking**' was the most surprising thing she saw in Mizoram . She said that, from the time she stepped out of the Lengpui

airport, she saw many people, including ladies, smoking all the way. One may ask why this is so. Is it because we are ignorant of the fight against tobacco around the world, and need more works to be done? Or we want to preserve the smoking culture passed on by our forefathers from time immemorial? Or are we too much insensitive to the propaganda against smoking, too frequently preached, thus requiring a new style of approach? Or, are we preparing to face the consequences of smoking, and continue the habit, come what may, instead of taking up the pains of saying goodbye to smoking?

***Considering the health hazard, the costs, and the habit, that has been considered not decent by the world, it is time to have a thought before the next puff.***

Learned readers are hereby appealed to join hands in eradicating smoking from this civilised society, for a tobacco- free future.

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# Hepatitis (Thin Vung)

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**T**hin hi taksa peng zinga a pawimawh ber pakhat a ni. Hna chi hrang hrang a thawh tlangpuite chu: Kan chaw ei zawng zawng te hi thinah a lut chho vek a, taksa tana hman tlak turin a lo sawng bawl a ni. Glucose te, thau-cholesterol, triglyceride te, sa (protein) te leh vitamin te a chhêkin a sem kual vel a ni. Taksaa bawlhhlawh tam tak mît (bile)-ah a paih chhuak a, damdawi tam takte hi thawk thei turin a lo siam danglam a; tin, an thawh tur an thawh zawhah a paih chhuak leh a ni. Thisen tikhaltu hi thin siam a ni a, thin chak lote hi an thisen a pan a, an thî (bleed) duh bik a ni. Albumin-te siamin, a siam tlem chuan vûngte a thlen thei a ni. Tin, taksain hrik a donaah thui tak a thawk bawk a ni.

Hepatitis hi thin vûng tihna a ni. Chhan tam tak a nei a. Natna hrik- virus, bacteria, protozoa te, damdawi chi hrang hrang- antibiotic, na chhawkna, hnimhlum, cancer damdawi te, cancer, etc. ten thin vûng an thlen thei a ni. A common zualte chu: Hepatitis hrik A, B, C, D, E, etc., Amoeba (Santên) hrik, Malaria, drugs/damdawi, cancer, zu te an ni.

Hepatitis hi acute leh chronic-in an thên leh a. Acute awmzia chu, rawn awm thut, rei vak lova dam leh mai tihna a ni a, chronic chu benvawn tihna a ni a.

**ACUTE HEPATITIS:** kan sawi tawh angin acute hepatitis chu rawn awm thut kan tih kha.

- Khua a sik ser ser a,
- an chau ngawih ngawih a,
- thin zâwn a nâ a,
- luak a chhuak a,
- chaw ei a tui lo va,
- mît a liam (jaundice) a.

A tlangpuiin kar 2 velah an dam leh mai thin. Entirnan, mîtliam kan tih mai viral hepatitis 'A' hi, thil thianghlim lo ei vanga thleng a ni a. Mit (eye) a lo eng a, an zawi hle a, mahse a tlangpuiin kar hnih velah an dam leh mai. Zu in nghek (kar hnih khat in ngheng)-te pawh hian Acute hepatitis a thlen thin, an in zui loh chuan a tha ve leh mai. Damdawi huat vanga hepatitis/mîtliam te pawh, an huat

damdawi hnathawh a tâwp chuan an ða ve leh mai.

A tlangpuiin acute hepatitis hi an ða leh maia, mahse vanduaia thih pui <1% vel an awm ve.

**Enkawl dan:** Acute viral hepatitis enkawl nan hian damdawi bik a awm lo. Symptomatic treatment kan ti mai a, a ðul anga chhâwkna pek a ni mai. Luak chhuah chuan luak danna, khawsik chuan paracetamol, ei theih loh chuan IV drip. Tin, thlum (glucose)-te pek tam a ða.

**CHRONIC HEPATITIS:** Acute hepatitis dam zo ve ta lo ho hi an benvawn/rei tak an na ta ðhin a ni.

Thin vûng an lo neih benvawn hian zawi zawiin a cell (timur)-te kha a tichhia a, insiam ða leh teh mah se a ngai a awh tawh lo ðhin a ni. Thin vûng hian ser a siam a, a rei tawlh tawlh a, ser a tam tawlh tawlh a; heng serte hian thin lo pawt sâwngin cirrhosis (thin sâwng) a lo thlen ta ðhin a ni. Hetih hunah hi chuan thin a lo chak lo hle tawh a, a veite chu hetiang hian an awm tlangpui:

- An zawiin an chak lo hle
- An vûng/pum puar
- Thi a pût awl - hnar thi, thi a luak, êk dum, etc.
- Mîtlîam, eng pip pep/thisen tlem
- Rilrute khawih buaiin nikhaw hre lo (coma) te pawhin an awm thei
- Piles leh Oesophageal varix (pumpui hnûna thisen dâwt puar)-te an nei ðhin.

A ðhenin i thin a sâwng an lo ti a, a ðhenin i thin a lian an lo ti bawk a, buai map theih a ni. A awmzia chu thin sâwng, cirrhosis kal zelin a pawt sâwng a; hetih

hunah hian thin vûng/hepatitis kha lo zual bawk se - zu in vang emaw viral hepetitis zual vangin; a pahnih pawt sâwng leh tivûng a kal kawp thei a ni.

**CHRONIC HEPATITIS:** Miin zu a in reng chuan thinlian/vûng/chronic hepatitis a thlen a. A lo rei deuh chuan ser (fibrosis) a lo insiam a, zawi zawiin thin a pawt sâwng (cirrhosis) ta ðhin a ni. Mizoramah hian heng hepatittis kan sawi tak zingah hian hepatitis benvawn pathum kan buaipui zual a; chungte chu Alcoholic Hepatitis (zu), Chronic Hepatitis B leh Chronic Hepatitis C te an ni. Heng veite hian thin cancer an nei duh bik a ni.

Tun ðumah hi chuan Hepatitis B leh C te hi han chhui zau deuh i la. Hepatitis B leh C te hi virus an ni a, natna an thlen dan a inan tlangpui avangin kan han sawi kawp mai ang a, an inan lohnate a ðul angin kan han tarlang ang.

**Inkai dan:** Virus ve tho, HIV (AIDS natna hrik) te nen hian inkai dan a inang tlangpui, i.e. inchiu, sex, thisen inpek, nuin nau paiah, etc. Amaherawhchu kai awlsam dan a inang lo. Hriau invih palh tein inkai a awl em em a, Hepatitis C-te hi chu sex lam aţangin kai a awl lutuk lo.

**Natna thlen dan:** Hepatitis B or C miin a vein acute hepatitis (mîtlîam kan tih kha) an vei phawt a, hei hi Hepatitis A-te angin a na lutuk lo va. Hepatitis B leh C vei tam tak chuan an vei lai pawh hre lovin an benvawn, thin sâwng (cirrhosis) hnuah chauhte an inhre ðhin. Heng hoah hi chuan acute hepatitis kha a na lo lutuk a, an inhre lo a ni. Acute hepatitis hi chu kar hnih velah a dam leh mai a, mahse dam zo ve ta lo, a hrik pai benvawn an lo awm thei ta a.

**Hepatitis B:** Puitlingah chuan 95% aia tam an dam leh a, 5% aia tlem an benvawn ðhin.

Nausenah chuan 5% a dam leh a, 95% vel an benvawn.

Naupang kum 4 velah 40% vel an benvawn.

A awmzia chu, naupangah a benvawn duh bik.

**Hepatitis C:** -ah chuan 20-30% vel an dam leh a, 70-80% vel an benvawn ta ðhin a ni. Benvawn kan tih hian, thla ruk chhunga dam hman ve ta lote kha an ni.

Hetia chronic (benvawn) hepatitis B or C an lo vei tâk hian an hma lam hun chu a hrik leh mihring taksa inbeih danah a innghat ta a ni. Hrik ninhlei tak a nih chuan thin a khawih chhe chak a, hrik ninhlei lo a nih chuan muangchangin. Tin, taksain a hrik a lo beih danahte a innghat bawk. A tlangpuiin kum 20-30 ah 30% velah chuan an thin a lo sâwng chhe hman ðhin a ni. Hei aia hma deuh a ni thei a, tin, rei tak thin khawih chhe lovin an awm thei bawk. Zu nen an pawî khawih dan a inang a, chuvangin zu nen chuan cirrhosis hi a thleng hma hle a ni. Tin, miin hepatitis B leh C a vei kawp chuan thin an khawih chhe chak hle bawk a ni.

Kan sawi tawh angin kum 20-30 vel thin sâwng turin a duh a, hemi chhung hian tam tak chuan an vei tih an inhre lo ðhin a ni. A tam zawk chu thin sâwngin buaina a thlen hunah chauh an inhre chhuak ðhin a ni. Hetih hunah hi chuan a tlai tawh deuh a, enkawl an harsa ðhin a ni. A ðhen, a bik takin hepatitis B-te chu jaundice-te an nei zeuh zeuh a, chung aţangte chuan an lo hriat theih a ni.

Mizorama kan hriat chhuah hmate pawh hi thil dang vanga test emaw, in-test ve tawp te an ni hlawm. Chuvangin screening neih hi a pawimawh viau a ni.

**Enkawî dan:** Viral hepatitis B leh C enkawlna hian hma a sawn chak hle a, damdawia enkawlna tak tak chu 1990 hnu lamah ðan a ni.

**Hepatitis B:** Hepatitis B hrik hi timûr chhungrila a luh avangin thah zawh vek theih loh tluk a ni. Chuvangin kan tum ber chu pawî sawi thei lova a hrik kha siam a ni. Tunlaih damdawi ðha tak tak a awm nual a. Heng damdawi hian thisena hrik lang zawng zawngte hi that vekin, hepatitis B hrik kha timûr chhungah pawî sawi thei lovin a up bet thei a ni. Amerawhchu a tho leh palh thei. Taksa a lo chak loh hian a tho leh duh bik, eg. Cancer chemotherapy la-ah te, thin/kal thlâk (transplant) immunosuppressive damdawi eiah te. Hepatitis B enkawlna damdawi hrang hrangte chu: interferon- $\alpha$ , pegylated interferon- $\alpha$ , lamivudine, adefovir (dipivoxil), entecavir, telbivudine leh tenofovir, etc. te an ni.

Interferon hi chu kum 1 vel pek/chiu tur a ni a, a dang zawng hi chu a mum ei deuh char char tur an ni. Interferon hi tunlaih kum 1 atan Rs 2.5 lacs vel a ni ang a, a mum ho hi thla 1-ah Rs 600-800/- vel an ni ang.

**Hepatitis C:** Hepatitis B lakah chuan hepatitis C enkawl hi a nuam hle a ni. Mi 90-98% vel an dam ðhin, mahse cirrhosis-te a thlen tawh chuan a dam har.

Hepatitis C enkawlna hian hma a sawn nasa hle a. A hma chuan Peg interferon leh ribavarin an pe ðhin a, a man a

to bakah an toxic em em a, damloten an rui/haw thin hle a ni. Kum 2000 AD vel kha chuan Rs 6.5 lacs thlenga hepatitis C enkawl naa insengte pawh an awm. Hun a lo kal a, Rs 1.2 lacs velah a tla a.

Tunah hi chuan DAA an ti a, a mum tha tak tak a tam tawh a ni. Heng mumte hi a chiu ai khan an thawk chak zawk a, treatment chhung a rei lo zawk a, a man a tlawm zawk bawk a ni. Tuna Mizoram healthcare kalpui ang hian thla 3 damdawi hi Rs 14,000 man vel te a ni. Amerawhchu a chi dang, to deuh, tam deuh, ei rei ngai deuh, etc. te pawh a awm nual. A genotype azirte pawhin enkawl dan a dang thei bawk. Hepatitis C damdawi thenkhatte- sofosbuvir, ledipasvir, daclatasvir, ombitasvir, paritaprevir, glecaprevir, pibrentasvir, elbasvir, grazoprevir, velpatasvir, sofosbuvir, voxilaprevir, etc.

Kan hriat tur pawimawh deuh chu, anti-HCV kan test hian, a hrik a en lo va, a hrik dotu sipai (antibody) a en a ni. Heng test hi Aizawla awlsam taka kan test-na hi a ni. Heng anti-HCV test positive ho hi, an thisenah hepatitis C hrik awm leh awm loh phaiah kan thawn ta thin a ni. Enkaw l dam tawh hnuah pawh anti-HCV hi rei tak a positive theih avangin treatment la tawhah chuan he test hian awmzia a nei lo. Enkaw l dam tawh thenkhatten mahni thuin an lo test ve a, a lo positive leh a, an ngaih a tha lo ta thin a ni. A hrik test-na a ni lo va, a hrik dotu sipai test-na a ni.

HCV RNA hi a phaia a hrik kan test-tir thin hi a ni. Hei hian vei leh vei loh a test. Positive chu vei, negative chu vei lo.

A chang chuan beyond level of detection or not detected te an rawn ti a, negative an ti fawk ngam lo. Awm lo tih leh hmu lo tih hi danglam ve thei.

**Anti HCV antibody:** Hepatitis C hrik dotu sipai taksain a siam hi a ni. Positive chu hepatitis C a tawng tawh tihna. Hrik pai mek a ni thei a, pai tawh lo dam tawh a ni thei. A hrik awm tawh loh hnuah pawh kum tam tak a positive thei. A negative chuan hepatitis C a la tawng ngai lo or dam tawh tihna.

Hepatitis B ve thungah hi chuan a neuh neuh a tam lutuk a, han sawi sen pawh a ni lo. Hbsag, HBV Dna, Hbc ag, Hbeag, antiHbs, antiHbe, antiHbc, tih vel test tur a tam lutuk a, han inhrilhfiyah mai chi pawh a ni lo.

**VACCINE:** Hepatitis C tan vaccine a awm lo.

Hepatitis B tan vaccine chi hnih a awm - pre exposure leh post exposure.

Pre exposure vaccine hi hepatitis B vaccine/invenna tia kan hriat tlanglawn hi a ni. Vawi thum - Day 0, 30 leh 180 or thla 0, 1, 6-ah lak tur.

Post exposure vaccine chu hepatitis B hrik kai tir tan a ni. Eg. Hepatitis B vei nuin nau neih inhliam atangin a nau paiah a kai palh thei. Naute kha a pian tirhah pek tur a ni. He vaccine hi immunoglobulin an ti a, hepatitis B laka sipai/ antibody insiam sa kha naute-ah an chiu lut a, hepatitis B hrik a nu atanga nautea lut khan natna an siam hmian an that ta thin a ni.



# Methicillin Resistant *Staphylococcus aureus* (MRSA)

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Laldinchhana

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Antibiotics hman fimkhur tawk loh vang te, a ei hun bituk ei kim si loa tâwpsan mai te, mithiamte rawn lova mahni duhthua damdawi inchawh mai te leh chhan dang dang avangin antibiotics resistance a lo awm thin tih kan hre theuh awm e. Chung zinga kan hriat lar tak pakhat **Methicillin resistant *Staphylococcus aureus*** chungchang i han tarlang dawn teh ang.

**Methicillin resistant *Staphylococcus aureus* (MRSA)** kan tih hi natna hrik (bacteria) chi khat ***Staphylococcus aureus*** insiam danglamna avanga lo awm a ni a. He natna hrik thahna atana hman ber antibiotics damdawi Methicillin chu ngaiyah lo nei (resist)-in *Staphylococcus aureus* thah nan a hman theih ta lo a ni. Methicillin mai ni lo, antibiotics dang thenkhat te, entirnan, penicillin, amoxicillin, oxacillin, etc. pawhin an thah theih tawh loh avangin **Superbug** tiin sawi a ni bawk. Tichuan, he natna hrik lo insiam danglam ta methicillin leh a anpui antibiotics ten an thah theih tawh loh chu Methicillin resistant *Staphylococcus*

*aureus* (MRSA) tih a ni. Mihringa natna chi hrang hrang a thlente chu enkawl leh tihdam a lo harsa ta em em thin.

## ***Staphylococcus aureus*?**

*Staphylococcus aureus* hi natna hrik kan tih hnuaia Gram positive bacteria zinga mi a ni a. Natna tlanglawn thlentu langsar tak a ni nghe nghe. Mihring za zela pahnih (2%) hian pai anga chhût a ni a. Hnâr chung lam leh vunah te a awm tlangpui thin. A awm dan phung pangngai emaw, a inthlahpun nasat loh chuan mihring tana thil paw leh natna thlen a nei lem lo. Amaherawhchu, chhan hrang hrang vanga vuna hliam a lo awmin taksa chhungah a lut thin a,



tichuan inthlahpungin taksa tana pawih leh natna khirh tak a thlen thei thin a ni.

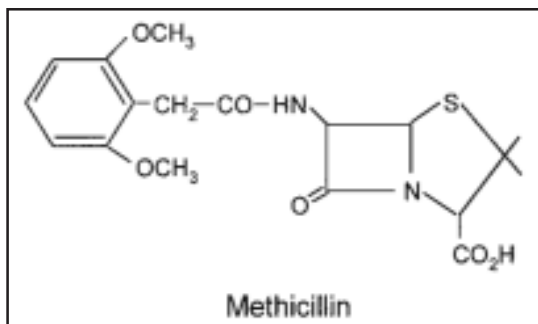
MRSA-in natna a thlen a lanchhuah dan tlangpui chu vun aţanga inţanin, vun sen deuh ţuak, sa deuh hut hut te, arngeng, khawihli ang maia vun leh taksa chhung lama tuihnang inchhêk khawl te a ni thei. Tin, khawsik, tha ná, lu ná, chauh ngawih ngawihna leh thawhah te a thlen thei bawk. Enkawł that a nih loh chuan inthlahpung zelin thisenah lutin natna hlauhawm leh khirh tak tak, pneumonia te, lung natna (endocarditis), thluak natna (meningitis) leh septicemia te a thlen thei bawk.

### Methicillin?

Methicillin hi antibiotics kan tih zinga mi natna hrik thahna damdawi tha tak mai a ni a. Kum 1959-ah hmuhchhuah niin antibiotics then hran hrang hrang hnuai -lactam antibiotics huang chhungah penicillin, amoxicillin, oxacillin, etc. te nena awm tlang an ni. Natna hrik kan sawi tak staphylococcus-in a thlen natna enkawł nan leh tihdam nana hman a ni thin.

### Methicillin Vs *Staphylococcus aureus*

*Staphylococcus aureus* leh natna hrik (bacteria) dangte hian taksa tuamtu kawr, an nun theihna atana pawimawh



tak mai an nei a, chu chu 'Peptidoglycan' tih a ni. He peptidoglycan insiam theihna atana thil pawimawh tak mai protein pakhat a awm a, chu chu 'Penicillin binding Proteins(PBP)' tih a ni. Methicillin pawh hi he Penicillin binding Proteins(PBP) hna thawk thei loa siamtu a ni. Amaherawhchu, MRSA kan tihah hi chuan *Staphylococcus aureus*-a he protein, PBP hi lo insiam danglamin, PBP pangngai aiah **Penicillin binding Proteins<sub>2a</sub> (PBP<sub>2a</sub>)** a lo awm tak avangin methicillin chuan hna a thawk thei ta thin lo a ni. Tichuan, chu natna hrik lakah chuan methicillin leh antibiotics dang thenkhatte chu hmantlak loh an lo ni ta thin.

### MRSA chu inkaichhawn theih a ni em?

Hemi chhanna chu 'aw, ni e' tih a ni. Inkaichhawn a nih theih dan han tarlang ila:

- Inkaichhawanna awlsam leh tlanglawn ber chu taksa insiktir a ni a. Kan tarlan tawh angin MRSA hi vunah leh hnâr chhung lamah te a awm thin avangin MRSA natna hrik paiin a pai ve lote awlsam takin taksa vun leh vun insik tawna aţangin a kai chhawng thei.
- Tin, kan chhehvela kan hmanraw hman leh kan chêt velna thianghlim taw lo aţangin kan kai thei bawk. A chhan chu MRSA kai mihringin a khawih hnu, heng in chhung bungrua leh inzaina atana hman thin bungraw hrang hrangah te hian hun eng emaw chen a dam theih avangin heng aţangte hian kai theih a ni bawk. Entirnan, kawngkhar vawnbân te, in chhuat, thil tihfaina hmanrua, bandage, forcep, inchiuna hmanrua leh a dang dang aţangte hian inkai theih a ni.

- Hei mai ni lovin MRSA hrik paiin kan ran vulh - ui, zawhte leh sakawrah te a kai chhawng thei a, a pai ve loten chung ran vulh aṅangte chuan kan kai ve leh thei bawk. Tin, kan ran vulhte aṅangin direct-in kan kai thei bawk.

A inkaichhawn theih dan azirin MRSA hi chi hnihah then hran a ni bawk thin, chungte chu:

- Damdawi-in leh a kaihnawih aṅanga kai chhawn (Hospital associated MRSA)
- Mipui punkhawm leh chenhona aṅanga kai chhawn (Community associated MRSA)

Damdawiin leh a kaihnawih MRSA inkai chhawn theih dan tlangpuite chu:

- Taksaa hliam tenau neite
- Inzai tâwktute
- Inzaina hmanrua leh taksa chung lama hmanraw hman ngaihna, entirnan, forcep, thisen inpek chhawn leh zun siakna hmanrua te

- Mumal lo taka antibiotics ei vang te
- Vuna hliam neih vang tein

Mipui punkhawm leh chenhona aṅanga inkai chhawn theihna langsar zualte chu:

- Mahni taksa enkawl that loh leh invawn fai tawk loh vang te
- A huhoa khawsakna, heng school, hostel, jail leh sipai awm khawm zingah te
- Taksa hliam tenau enkawl that loh leh tihfai tawk loh vang te
- Infiammite zingah taksa insik tawn

nasat vangte

- Antibiotics hman dan dik loh vang te

### **Engtin nge MRSA tih kan hriat theih ang?**

A chungka kan han tarlan tak ang khian MRSA hian natna hlauhawm vak lo nia kan ngaih aṅanga mihring nunna atana hlauhawm tak leh thihpui hial theih natna a kaichhuak thei a. Thisen, zun, khâk (sputum) leh taksa tuihnang (pus) endikna aṅangin MRSA kan pai leh pai loh a hriat theih a ni.

### **Engtin nge kan inven ang?**

MRSA chu kan kai loh nan leh inkai chhawn darh zel a nih loh nan hetiang hian hma kan la thei a ni:

- Antibiotics hman dan dik lo leh felfai lo hi MRSA awm chhan lian tak pakhat a ni a, chuvangin fimkhur takin antibiotics damdawi kan hman tur a ni.
- Kan taksa uluk takin kan vawng fai tur a ni.
- Towel, toothbrush, thawmhnaw leh incheina hmanrua te mi dang nen inṅawm loh tur.
- Inchungka kan chet velna leh kan hmanrua te kan vawng fai tha tur a ni.
- Damdawiina thawkten damlo an khawih hma leh khawih zawhah uluk takin sahbawn nen an kut an silfai tur a ni.
- Damdawiina thawkten kan hmanraw hman, heng inchiuna te, inzaina te leh room chhung kan vawng fai tur a ni.
- MRSA kai nia hriat chiente chu mi dang an kai darh zel tur ven nan dah hran.



### Engtia enkawltur nge a nih?

A enkawldan hi a natna thlen azir te, a serious dan azir te leh a natna thlenna hmun azir tein a danglam thei a. Tin, a enkawlna tur damdawi azirin a dang thei bawk. Entirnan, khawihli leh tuihnang inkhawlkhawm te chu paih fai theih a ni. Amaherawhchu, thisena a luh tawh chuan antibiotics damdawi tho, natna hrik that thei ngei tur hman a ÷ul ÷hin. Trimethoprim leh sulfamethoxazole inpawlh emaw, clindamycine leh doxycycline te hi an hman ÷hin. Antibiotics tharlam zawk oritavancin, telavancin omadacycline, tedizolid te hman ÷hin a ni bawk. Dalbavancin damdawi dang ÷henkhat hman ÷hin an ni. Tin, damdawi dang ÷henkhat, entirnan, fosfomycin, fusidic acid leh a dang te enchhin mek zel a ni bawk.

### Antibiotics leh MRSA

A tawp berah chuan kan han tarlan tak ang khian antibiotics kan hman

fimkhur loh leh a nih dan tur ang hman a nih loh pawizia kan hre thei awm e. Methicillin resistant *Staphylococcus aureus* lo awm theih chhan lian tak pakhat pawh antibiotics hman fimkhur tawh loh vang kan tih tawh kha. Hetiang bawk hian natna hrik ÷henkhatte chu methicillin leh a anpui antibiotics damdawi ÷henkhatte *Staphylococcus aureus* natna hrik thah nan a hman theih tawh loh ang hian tuna kan antibiotics damdawi hman lai hlu tak takte hi hman tlak lohah kan siam thei a ni. Mahni duh thua antibiotics inchawh chawp mai te, tlang hrileng satliaha ei mai te, a ei hun chhung tur bituk ei thleng lova tihtawp mai te hian natna hrik chu that kim lovin damdawi chu ngaiah an lo neih (resist) phah thei. Chuvangin, kan antibiotics damdawi la neih, natna enkawl nana ÷angkai leh hlu tak takte hi doctor leh mithiam ten hmanna tur an tih leh hman dan tur an tih ang takin i eiin i hman ang u.



# Intihcher Chungchang

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**T**unlai Mizoramin kawng hrang hrangah hma kan sawn hle tawh a. Hemi rual hian ei leh in lamah pawh hma kan sawnin kan ei leh in tur thlan chungchangah pawh kan fimkhur chho ve zel bawk a, a lawmawm hle a ni.

Ei leh in hi damdawi dang ang bawka kan hriselna khawih thei thil pawimawh tak a ni a. Chuvangin mi pakhatin, “Chumi damdawi chu ka ngeih lutuk, ei ve rawh,” a tih ang apiang ei hi a dik lo va; chutiang bawkin ei leh in thlan chungchangah pawh kan taksa azirin ei leh in kan mamawh zawng a inang lo thei hle a ni.

Tunlai hian Mizo zingah kan ei luat avang leh taksa sawizawi tam tawh leh si loh avangin thau lutuk (obesity) a lo tam ta hle a. Obesity avang hian a kaihhnawih dang natna, heng zunthlum, thisen sang, lung lam tha lo (heart disease) leh cancer chi thenkhat te, mita lungte awm (gallstones), khup ruh na leh natna dang tam tak kan lo neih phah thei a ni.

Heng thau lutuk intihcher danah hian kan fimkhur a ngai hle a, a tih dan tur (intihcher) dik taka kan tih chuan thau lutuk hi hlauhawm lovin kan tireh theiin, a kaihhnawih natna tamtakte pawh hi kan pumpelh thei dawn a ni. Heng

intihcher danah hian inkaihhruaina mumal tak a awm a, mahni tha tih dan emaw, kan thiante tha tih dan anga tih ve vak hi a him tawh lo a ni. Nutrition expert-te chuan a tlangpuiin mi pakhatin kar khatah 0.5-1 kg rihna hloh hi a him tawkah an ngai a ni.

Amaherawhchu, mi a natna azirin hei aia tam hreta tlakhniamtir an awm thei a, hei erawh hi chu doctor, dietician/nutritionist te enkawlina hnuaia uluk taka tih thin a ni.

A chungah kan sawi tlakhniam tur zah bithliah khi ngaih pawimawh hle tur a ni. Tlakhniam chak lutuk hian mihring taksa hriselna kawng tam takin a

khawih pawî thei a, chungte chu a tlangpui han tarlang ila:

**1) CHÈR HLENNNA A NI LO:** Kan taksa mamawh ang tawk ei lo va, ei tur kan lo inhrâk vak hian, kan taksa bung hrang hrangte hian an hna pangngai duh tawka an thawh theihna tura chakna (energy) an mamawh ang an nei ta lo va. Chuvang chuan anmahniin automatic-in chakna (energy) an hman zat chu inrenchemin an lo tihniam ve ta ùhin a. Hna ùha taka thawk ùhin khan chakna a hman tlem tak avang chuan ei leh in inhrêkin, thil tlemte te ei ùhin mah ila, kan chère phah hlei thei ta ùhin lo a ni. Hetiang in-diet dan pangngai zawm lova hun rei lote chhunga rihna tlakhniam vak/thut hian chère hlenna a thlen lo va, a hma aiin an thau chak phah zawk ta ùhin a ni.

**2) TIHRAWL (MUSCLE MASS) KAN HLOH (LOSS):** A chungka kan sawi ang chiah bawkhian rang taka chère thut hian kan tihrawl (muscle mass) kan hloh a. Kan tihrawlte hi ùha/chakna leh chet velna (flexibility) atan kan mamawh a. Kan taksa thau chhia paihna kawngah pawh hian hna an thawk ùha hle bawkh a. Kan thau (fat tissue) ai hian a let 10 laiin chakna (calories) an paih (burn) hnem zawk a, an ùuan a ùha zawk bawkh a ni. Chuvangin kan tihrawl thau paihtu tel loa in-diet kan lo tâwpsan hian a hma aia chakin rihna a pung thei zawk a ni. (Cheryl Forberg, RD Nutritionist, The Biggest Loser Show).

**3) LUNG ùHA LO:** Edward Wyatt-a'n New York Times-a article 'In Reality Show to Draw Weight, Health Can Be Lost in the Frenzy' tiha a ziah dan chuan rihna reilote chhunga tlakhniam thut hian kan lung tihrawl (heart muscle) hloh (loss) na te, thinphu mumal lo (irregular

heart beat), kan taksa potassium leh taksa tui awm te (electrolytes) tlakhniamna a thlen thei a ti a ni.

Ni tin kan mamawh ang tawk aia tlem lutuk/chak lo lutuk eia intihchèr kan tum hian heart attack neih theihna a tisáng nawn awn awn a ni. (Isadore Rosenfeld, MD Cardiologist., Professor Clinical Medicine, Weill Cornell medical College, New York).

**4) MÎT A LUNGTE AWM (GALL-STONES):** Mîta lungte insiam thlen theihna hi rihna paih thut te leh paih ùeuh te-ah a awm hma bik a. Mi a rihna thla 2-4 chhunga paih hniam thut 25% te hi a tawpah chuan mîta lungte nei ùhin an ni. (C. Wayne Callaway, M.D., specializes in internal medicine, endocrinology, and clinical nutrition, Washington, D.C).

**5) RUH TLIAM AWLSAM:** Ei leh in insum vaka chère thutna hian kan ruh chhunga minerals awmte a tichhuak a, ruhin a mamawh ang tawk minerals a hmu loin, ruh muk lam/bit lam (bone density) a tihniam a, chu chuan ruh tliam awlsam a siam ùhin a ni (Joy Bauer, Nutrition expert, Today Show and author of Joy's Life Diet). Hei bakah hian kan taksa in a mamawh ang taksa chawmtu (nutrients) a hmuh loh avangin kan taksa ral dotute an lo chak lo a, natna kai a lo awlsam phah ta ùhin a ni.

**6) RILRU LAMAH:** Rang taka rihna tlakh thut hian hormonal imbalance (hormones inbûk tawk lo) nasa tak a thlen thei a, mood swings (rilru put hmang inthlak reng) te, thil ngaihtuah thui theih lohna (difficulty in concentration), chauhna leh rilru hahna te a thlen thei a ni. ( Paul Susic CEO/ President, susic Psychological consulting, Greater St. Louis Area).

Intihchèrna atana ei tur siam bikte leh weight loss programme thenkhat te hi hriat chian loh chuan thil hlauhawm thei tak an ni a. 1970 khan Robert Linn chuan 'The Last Chance Diet' tih lehkhabu a tichhuak a (hei hi Liquid Protein Diet a ni), hralh a kal nasa a, thenkhat phei chuan kar khatah 4.5 kg an tlak phah niin an insawi a; amaherawh chu reiloteah chanchin tha lo a rawn ri thuai a. Food and Drug Administration (FDA)-in an han chhui chian chuan mi 60 vel laiin he Liquid Diet hi an thih phah tih an hmu chhuak a ni. Chuvangin chèr phut phut theihna lakah hian kan fimkhur a tha hle.

Hetih lai hian Hollywood star-te chèr thut thut kan rilruah a lo lang maithei. Christian Bale khan 'The Machinist' a chan dawn khan a rihna pangngai aţangin thla li (4) chhungin 29 kg a paih a, 55 kg-a rit a lo ni ta a. Hei hi han chhut ta ila. A rihna paih hi thla khatah 7.25 kg ang a ni a. 'Batman' chan leh a ngaih avangin rang taka a rihna belh leh a ngai leh ta a. Tichuan thla nga (5) chhungin 86 kg (55+31)-ah a rih zawng chu tihsàn a ni leh ta a. Hetiang ang ni thei tur hian doctor, nutritionist leh exercise physiologist thiam tak ten khawl tha chikim nen uluk takin an enkawl a ni. Mizorama an tih dan lo zir a, lo tawng pawng tih ve ngawt chi a ni lo.

### THAU LUTUK (OBESITY) ENKAWL DAN TUR

**1) EXERCISE:** A chung a kan sawi tawh ang khian thau lutuk (obesity) hi dik taka enkawl chuan tihsam theih a ni a. Exercise ni khatah 45 minutes, kar khatah ni 5 chhung lak thin hi thau tan

chuan a tha hle a. Exercise lak pawh hi uchuaka lak a hlauhawm thei a, hemi kawnga mithiam rawn thin tur a ni. Exercise lak nasat leh lutuk hian tum loh puiin natna dang kan neih phah thei a, lung lam tha lo leh thisen sang a kaihhnawih theih avangin nasa leh lutuka exercise late hi a tawh chauha hunbi neia exercise la thinte aiin an boral hma zawk a ni tih hi zirmiten an hmuchhuak a ni. (Source: Havard University).

US-a Livescience (website)-in 2010-a a report dan chuan 'The Biggest Loser Competition' season 8-a contestant pahnihte chu an intlansiak laiin an chau thut a, damdawiina dah ngai khawpin an awm a. Hei hi a chhan chu contestant-te hi thau lutuk leh taksa sawizawi lo rei lutuk, an zawh tawh bak exercise an lak vang ni a hriat a ni.

**2) EI LEH IN:** Ei leh in chungchang hi fimkhur ngai tak bawh a ni. Kan natna azirin ei tur bik leh ei zat tur a awm vek a, hei hi kan taksa rih zawng, san zawng, kum leh kan hnathawhte azira chhut chhuaha ei tur hi ruahman (plan) ngai a ni. Mithiam rawn a tha ber. A tlangpuiin Mizoramah chuan heng nepnawi dawra ei mai theih thil packed sa te, soft drinks te, restaurant-a eitur thenkhat te hi thau tana ei loh tur tam tak a awm a, fimkhur a ngai hle a ni.

Heng a chung a kan han ziahte hi hetiang lam kawnga harsatna neiten fimkhur phah nan hmang thei i la. Rihna paih hi thawklekhata tih thut chi a ni lo a, hun rei tak chung, muangchanga kan intihchèr hian a hrisel a, fimkhur phah nan hman tum i la a tha ngawt ang.



# Orphan Drug

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Mizoram Pharmacist Association (MPA) hian hun eng emaw chen aṅang khan magazine hi a lo tichhuak tawh a. Khang magazine chhuak hmasaah te leh tun ṭuma chhuakah ngei pawh hian damdawi chungchanga hriat tur pawimawh tak tak, mipui nawlpui leh damdawi lam thiam, healthcare lama thawkten kan ṅangkaipui tur tam tak ziah lanin a lo awm tawh ṭhin a. Tun ṭumah erawh chi chuan chutiang ang lam lo deuh, kan hriatna tizau tur leh ngaihnaawm chan chang thei deuh tur te pawh a ni ang chu, Orphan Drug chanchin i han hrut dawn teh ang aw.

Orphan drug kan tih te hi natna tlanglawn ni lem lo, natna vang tak leh mi tlemtein an vei ṭhin (orphan diseases)-te enkawlna damdawi hote hi an ni a. Khawvel pumpui chu sawi loh, keini Mizo hnam tlemte zingah pawh hian natna vang tak tak leh enkawlna damdawi vang tak tak veite kan lo awm ve leh ta zel a. Heng orphan disease kan hriat tlanglawn deuh turte chu cancer ṭhenkhat te, SLE (lupus) te, alzheimers disease te, Cystic fibrosis te leh a dang dang te pawh an ni ang. USA khu chuan heng orphan drug tia a dah ho hi Orphan Drug Act of 1983 hnuai a lang ho bik kha tiin felfai takin a thliar hrang a. Europe ramah ve thung chuan European Organization for Rare Disease



(EURORDIS) in Orphan Drug Regulation 141/2000 hnuai a mi singkhat (10,000) zela panga (5) aia tlemin an vei natna ho kha orphan drug tiin a dah ve thung. Hetiang hian ram hrang hrangin orphan drug hnuai a awm tur hi an lo ruat ve thlih thlia a ni. India erawh chu hemi kawngah hian kan la hnufum viau mai. Sawrkar lam department CDSCO (Central Drugs Standard Control Organization) kan tih te, CSIR (Council of Scientific & Industrial Research) lam leh ICMR (Indian Council of Medical Research) te hian hma an la chho ve mek a ni {Indian J Pharmacol. 2017, 49(4):267-269}. Chung damdawite chu mamawhtu an tlem avangin damdawi siamtu company-te hian an siam duh lo tlangpui lehngal a! Kum 2010-ah daih tawh khan heng natna lar lo tak tak hi chi hrang hrang sangnga (5,000) vel awm anga ngaih a ni a, kar tin hian pakhat tal hmuhchhuah belh anga chhut a ni baw a ni. {Aarti Sharma, Abraham Jacob, et.al., J Pharm Bioallied Sci. 2010; 2(4):290-299}. Chutiang natna vei tan chuan a vanduaithlak bik dawn hle mai. Engtin nge damdawi an neih theih ang?

Damdawi siamtute chuan eng vanga siam chhuak lo nge an nih, tiin han dem ngawt dawn i la, dem ngawt theih an ni bik lo. Damdawi thar siam chhuah hautakzia leh hun a hehzia hi kan hriatpui hmasak phawt a ngai ang. Tin, damdawi siamtute hi sumdawng ve tho an nih avangin, hautak taka damdawi an siamchhuah chu natna danglam bik vei mi tlemtete chuan lo lei ngei ngei dawn pawh ni se, engtikah mah an senso chu an hmu lêt lo tawp ang tih a hriat thiam theih mai ang. Damdawi siam chhuak tur hian stage hrang hrang leh research

work turu lutuk kaltlang ngai a tam em em a. Siam chhuah a nih hnuah pawh zawrh chhuah a nih hnu thlengin post marketing research tia la umzui a ngai a. Damdawi thar pakhat siam chhuah nan hian kum 15 bawr vel a duh a, tin sum sen pawh a tam na rawh e. Kum 2014-a Tufts Center for the Study of Drug Development (TCSDD)-te chhut dan chuan damdawi thar pakhat siamchhuah nan hian US dollar tluklehdingawn thum (3) thuak a ngai a nih chu! A to ngei mai! Tin, damdawi thar tura buatsaih, clinical trials thleng ho hi kum 2012 bawr velah kha chuan za zela 1.7 (1.7%) bak an hlawhtling lo baw a (<https://doi.org/10.1093/biostatistics/kxx069>). Chutiang taka hautak a lo nih si chuan mi tlemtete tur siam chhuak tur chuan damdawi siamtu company-te chu beisei ngam chi an ni ta lo phawt mai.





Chung natna veite tan chuan 'van a duai chuang, ka tuarah vanpui a chim' tia thut kun ngawih ngawih mai a awl duh hle ta ve ang. Mahse sawrkar lam a lo pen chhuak ta a, a bikin USA hian a thawh hlawk hle. Zirna in leh damdawi in hrang hrangah te, damdawi siamtu company ngeiah te pawh orphan drug thar hmuchhuak tura research an tihna turin sum leh pai tam tak a pe thin a. FDA Office of Orphan Products Development (OOPD)-te chuan orphan drug clinical trial bikahte hian funding pein man tlawm taka tihsak an ni thin bawk a ni. 1990 chho velah te phei kha chuan kum tin research grant sawmpahnih atanga sawmpanga vel an pe chhuak a, clinical trial lain chhiah (tax) 50% lai an awl bawk thin a ni. Heti taka sawrkarin a buaipui leh a tanpui nasat avang hian damdawi siamchhuah a lo nih pawhin natna veituten man tlawm tein inenkawl na an nei thei thin a ni.

Heng orphan drug kan tih ho zingah hian tunlaia kan hriat tlang lawn tur ber pakhat chu AIDS enkawl nana kan hman Zidovudine te, Zalcitabine te,

Trimetraxate gluconate te hi an ni a. Hei bakah hian cancer damdawi Bevacizumab (Avastin) kan tih te, Cancer damdawi Protein bound Paclitaxel (Abraxane) tih te hi kan hriat tlanglawn a ni awm e. Hei bakah hian USFDA leh ram hrang hrang drug regulatory authority-te chuan orphan drug list hi an nei a, India ramah ngei pawh USFDA-in an approved orphan drug-te hi kan hmang nasa hle a ni.

Keini Mizote pawh hian hnam dangin an vei ve lem loh, kan hnam bila common bik em em natnate hi kan lo nei ve reng em tih te hi kan rilru ah awm ta mai mai se la. Cancer vei kan tam bik lutuk te hi kan zuk leh hmuah, kan ei leh in kan han puh leh ngawt mai te hi a ni thei zozai tawh ber lo maithei. Kan gene lamahte hian dik lo a lo awm deuh em ni tih rum rum a awl khawp mai. Hemi kawngah hian kan mithiamten hma han la sela, ni tin natna chi thar a awm reng ang hian damdawi thar hmuhchhuah tur hi a awm reng a ni tih hriain kan thiamna zawn theuha zirbingna (research) kan luhchilh tak tak hi a ngai a ni.



# Drug Administration Legal And Ethical Aspect



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**T**he practice of nursing under a professional license is a privilege; the nurse must understand that this responsibility includes accountability for one's actions and judgments during the execution of professional duties. An understanding of the nursing act and the rules and regulations established by the nursing council for the various levels of entry is a solid foundation for beginning practice.

Before medications are administered, the nurse must understand the professional responsibilities associated with medication administration, drug orders, medication delivery systems, and the nursing process as it relates to drug therapy. Ignorance of the nurse's overall responsibilities in the system may result in delays in receiving and administering medications, and serious administration errors. In either case, care is compromised and the patient may suffer unnecessarily.

Noted as European great fathers of medicine, Carl Wilhelm and Hermann Nothnagel wrote 'All knowledge attains its ethical value and its human significance only by the human sense with

which it is employed. Only a good man can be a great physician' we may also read as 'only a good nurse can be a great nurse.'

Set in place to help guide healthcare practitioners, particularly nurses, the code of ethics, outlined by the American Nurses Association. Medication Administration guises itself under 5 - 8 basic rights :

- **The right patient** - Is this medication for this patient or someone else?
- **The right drug** - Is this the medication the provider ordered?
- **The right dose** - How many milliliters, doses, or tablets should be given?



- **The right route** - How should the medication be given? By mouth, feeding tube, or injection?
- **The right time** - What time of the day should the medication be given or taken, how often?
- **The right documentation** - Chart the time, route, etc. after giving the ordered medication.
- **The right reason** - Does the rationale for the patient taking the prescribed medication justify?
- **The right response** - Does the drug give the desired effect?

While these basic rights can serve to govern and instruct the administration of medications for nurses, there is always room for error and the potential for ethical issues to arise. Some such ethical issues include :

- Who should make health-related decisions about patients that are incoherent?
- What if a patient refuses treatment?

The code serves to, 'provide a succinct statement of the ethical values, obligations, and duties of every individual who enters the nursing profession, serves as the profession's nonnegotiable ethical standard, and expresses nursing's own understanding of its commitment to society.' The code is broken down into 9 provisions as follows:

**Provision 1:** The nurse, in all professional relationships, practices with compassion and respect for the inherent dignity, worth, and uniqueness of every individual, unrestricted by considerations of social or economic status, personal attributes, or the nature of health problems.



**Provision 2:** The nurse's primary commitment is to be patient, whether an individual, family, group or community.

**Provision 3:** The nurse promotes, advocates for, and strives to protect the health, safety and rights of the patient.

**Provision 4:** The nurse is responsible and accountable for individual nursing practice and determines the appropriate delegation of tasks consistent with the nurse's obligation to provide optimum patient care.

**Provision 5:** The nurse owes the same duties to self as to others, including the responsibility to preserve integrity and safety, to maintain competence, and to continue personal and professional growth.

**Provision 6:** The nurse participates in establishing, maintaining, and improving health care environments and conditions of employment conducive to the provision of quality health care and consistent with the values of the profession through individual and collective action.

**Provision 7:** The nurse participates in the advancement of the profession through contributions to practice, education, administration and knowledge development.

**Provision 8:** The nurse collaborates with other health professionals and the public in promoting community, national, and international effort to meet health needs.

**Provision 9:** The profession of nursing, as represented by associations and their members, is responsible for articulating nursing values, for maintaining the integrity of the profession and its practice, and for shaping social policy.

Nurses are not commended enough for the work they do and responsibility they take when treating patients. Although the health care field may be regarded as a technical field due to the precision and technology used, it is just as much a field of ethics when dealing with patients. Many who do not work in the health care field can't begin to understand ethical implications that may arise, especially when dealing with someone's well-being. One of the most challenging arenas for ethical considerations comes when dealing with Medical Administration.

Martin Benjamin, co-author of *Ethics in Nursing* writes, 'Advances in medical knowledge and technology, together with social and political changes, have raised a number of well-publicized moral dilemmas for patients, physician, and policy makers.'



# Geriatric Leh Damdawi Kaihhnawihte

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**G**eriatric kan tih chu kum upa lam tawhte hriselna sawi nan a kan hman hi a ni. Geriatric-in a tum ber chu natna leh a kaihhnawih laka kum upate ven a, tihdam a, an hriselna tihthat hi a ni. Geriatric kan tih hi greek tawng *geron* (tar) tih leh *iatros* (tidamtu) tih atanga lak chhawn a ni a, mahse medical term cuan gerontology ti pawha sawi thin a ni.



Hetia kumte a lo tama kan lo tar chhoh tak hian taksa a lo chak lo a, taksa raldotute an lo chak lo ve tawh a, an taksain harsatna tam tak a tawh chho a, natnate pawh an kai awlsam bik tawh a ni. Chutia an natna tihdam nana damdawi chi hrang hrang an ei hian an taksa a tihchak loh belhin harsatna dangte pawh a thlen belh thei a, churang chuan an damdawi hmanah pawh kan fimkhourpui hle a ngai a ni. Kum upate hi anmahni ngaihndana tha an tih angin an kal mai thin a, mahnia damdawi inchawhte hi an awlsam em em a, hei hian an damdawi ei laite pawh awmze nei loin a siam thin a, kan ngaihsak a tul em em a ni. Kum upate hian an natna sawi chhuah dante hi an thiam lo thin a, a bik takin luhai lai emaw, thuk lama harsatna an neih chang te, khawsik an neih changte hian an lute hi a hai hma bik a, hei hian tluk sualte a tiawlsam bik

a ni. Heng vangte hian an damloh deuh emaw, chian lohna an nei deuha kan hriat chuan a rang lama buaipui vat hi a ðha a ni.

**KUM UPATNAINA KAN TAKSAA DAMDAWI A LAK LUH LAIA A HNATHAWH TIHBUAI DAN (pharmacokinetic)**

**1. Taksain damdawi hipluh a tihdanglam dan (absorbtion)**

- A lak luh chak zawng a timuang thei
- A lak luh tam zawng a titem thei
- Pumpuia chaw pai ðawihtu a tihchak belh thei
- Chaw pai ðawihna kawnga chaw kal a timuang thei
- An pumpui a tisáwng/tê thei

**2. Thisena damdawi a luh hmaa thina lutte a tihbuai dan (hepatic first pass effect)**

- Thina damdawi lut tam lutuk ðhinte a titem a, hei hian taksa tana hman ðangkai tur a tihtam belh a ni
- Thin a tihtê belhchhah ðhin a ni
- Thina thisen lut leh chhuak a titem a ni

**3. Taksain damdawi semchhuah a tihbuai dan (distribution)**

**4. Damdawi tifaï tura thina lut (hepatic metabolism)**

- Thin-in damawi a tihfai a timuang thei. Hei hi thin a lo sâwng têt vang leh thina thisen lut a tlem tak vanga thleng a ni.

Entirnan: morphine, meperidine, metoprolol, propranolol, verapamil, amitriptyline, nortriptyline

**Thin-in damdawi a sawngbawl dan**

Sawngbawl dan	A thil thlen	Entirna
<u>Phase I</u> : oxidation, hydroxylation, dealkylation, reduction	Damdawi apangngaiin emaw a tichakin a tichak lo thei	diazepam, quinidine, piroxicam, theophylline
<u>Phase II</u> : glucuronidation, conjugation, or acetylation	Hna thawk thei loin damdawi a siam thei	lorazepam, oxazepam, temazepam

**5. Chuap hnathawh a tihbuai dan (excretion)**

- Chuap a tisâwng/tê
- Chuapa thisen lut leh chhuak a titem
- Chuapa nephrons awmte a titem
- Taksaa bawlhhlawh paihchhuaktu a tichak lo

Hengte hian kan taksaa bawlhhlawh paih chhuah a ti muang (glomerular filtration rate), abik takin heng damdawi atenolol, gabapentin, H2 blockers, digoxin, allopurinol, quinolones te hian taksain bawlhhlawh a paih chhuah an timuang a ni.

**KUM UPATNA VANGA DAM-DAWIIN KAN TAKSAA A HNA-THAWH A TIHBUAI DAN (pharmacodynamics)**

- Mut tichhuaktu emaw, nerve leh thluak lam damdawi reng reng upate-ah an thawk chak bik a ni.
- Narcotic drug ang chi, na chhawkna damdawite an thawk reiin an thawk chak bik a ni.



- Kum upaten zu an inin mut chhuak emaw, din ngil theih lohna a thlen sam bik a ni.
- Beta-blockers kan tih mai, lungphu tihniam thei ang chi reng rengte hi kum upate-ah chuan an hnathawh a nep bik a ni.
- Lung-a digoxin leh anti-cholinergic drug hnathawh a tichak bik a ni.

A tlangpuiin heng damdawi Opioid analgesics, NSAIDs, Anticholinergics, Benzodiazepines, cardiovascular agents, CNS agents, leh musculoskeletal agents ang chite hian ei tur chin chi bituk pangngaiiah pawh tum loh deuhin natna emaw, thil tha lo dang a thlen thei. Chung damdawi, fimkhur ngaih lehzualna chite chu Beers Criteria an ti a ni. He Beers Criteria hi doctor emaw, medical professionals kaihruaitu atana siam a ni a, damdawi siam emaw, chawha an fimkhur theihna tura duan a ni. A tlangpui hlahawm an thlen theihna nei sang zualte chu amitriptyline, chlorpromamide, digoxin >0.125 mg/d, disopyramide, GI antispasmodics, meperidine, methyldopa, pentazocine leh ticlopidine te a ni. Heng aia hlahawm thlen theihna nei tlem deuh zawkte chu antihistamines, diphenhydramine, dipyridamole, ergot mesyloids, indomethacin leh muscle relaxants te an ni.

Damdawi ei pawlh hian thil tha lo leh hlahawm tak tak a thlen thei a, a hnuuia tarlante hi chung a thlen theih thil thenkhat chu an ni:

Damdawi leh damdawiin natna a thlen ang bawk hian damdawi leh natna hian natna dang a thlen ve thei bawk a ni, a hnuuia tarlan ang hian:

<b>Damdawi in belhbawm</b>	<b>A thlen theih te</b>
ACE inhibitor + potassium	Hyperkalemia
ACE inhibitor + K sparing diuretic	Hyperkalemia, hypotension
Digoxin + antiarrhythmic	Bradycardia, arrhythmia
Digoxin + diuretic Antiarrhythmic + diuretic	Electrolyte imbalance; arrhythmia
Diuretic + diuretic	Electrolyte imbalance; dehydration
Benzodiazepine + antidepressant Benzodiazepine + antipsychotic	Sedation; confusion; falls
Calcium Chanel Blocker /nitrate/vasodilator/diuretic	Hypotension

## The Mizoram Pharmacists 2018-2019

A chung a kan hmuh tak ang hian kan damdawi pekah fimkhur a ngai tak zet a, tar leh upate damdawi kan chawh dawnin chawh dan bik kan neih a ngai a ni.

<b>Damdawi leh natna</b>	<b>A thlen theih te</b>
NSAIDs + Chronic Heart Failure Thiazolidinediones + CHF	Fluid retention; CHF exacerbation
Benign Prostatic Hyperplasia(BPH) + anticholinergics	Urinary retention
Calcium Channel Blocker + constipation Narcotics + constipation Anticholinergics + constipation	Exacerbation of constipation
Metformin + Chronic Heart Failure	Hypoxia; increased risk of lactic acidosis
NSAIDs + gastropathy	Increased ulcer and bleeding risk
NSAIDs + Hypertention	Fluid retention; decreased effectiveness of diuretics

Entirnan, damdawi kan chawh reng rengin a natna kan hmuh chhuah ngawr ngawr ngaihtuaha damdawi chawh loh tur a ni a, tlakchham emaw, anmahni hriselpuina tur leh a damdawi a zo angem tih te zir chian hmasak tur a ni. Damdawi pakhata a natna pahnih chhawk thei tur chawh tum hram tur a ni a, damawi chawh tawha side effect awmte damdawi danga tihdam tum loh tur a ni. Damdawi leh damdawi emaw, damdawi leh natnain a thlen theih ngaihtuah chung a damdawi chawh tur a ni. Taksain bawlhhlawh a paih chhuahna lama harsatna neite tan an ei theih chen tur ngaihtuhsak tur a ni a, man tlawm leh tha ngaihtuhsak hram tur a ni. Hengte hian kum upate hrsatna leh hriselna te a tihmasawn thei ang.





# Rannung Seh Natna (Scrub typhus)

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**T**un hnai maia Mizoten natna kan hriat lar leh kan ñih em em, rannung seh natna hi eng ațanga kai nge kan nih a, engtiang chiaha hlauhawm nge a nih a, engtia inven tur nge a nih mipuite hnena hriattir hi keini Pharmacists-te tih tur pawimawh tak zinga pakhatah ngaiin, ka thiam ang tawkin rannung seh natna lama kan hriatna tizautu mipuite tan a nih beiseiin he article hi ka buatsaih ve a ni.

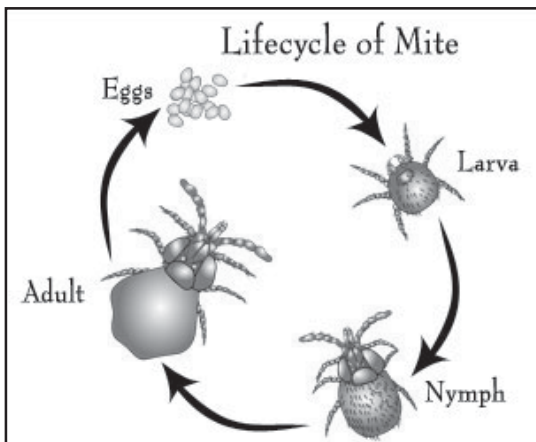
Rannung seh natna hi gram negative bacteria chi khat *Orientia tsutsugamushi*-in a thlen a ni. He natna hi kum 1930-ah Japan ramah hmuhchhuah lo

ni tawhin, tun hnai kum hnih thum lek liam taah khan keini ramah ngei pawh mi tam takin nunna an chan phah a ni.

## Natna kan lo kai dan:

He rannung seh natna hi mites (hrik chi khat)- Trombiculid mites zinga species chi khat- *Leptotrombidium deliense* -ten an theh darh a, heng mites-te hian a chungah kan sawi tak bacteria-te khi paiin, min han seh khan chung bacteria-te chu kan taksa chhungah lutin he natna hi kan lo kai ta ñhin a ni.

Heng mites-te hi an dam hun chhung hi hmun li-ah an ñhen hrang a:





1. A tui(egg)
2. A tui keu hnu, a tet lai (larva)
3. A lo ñan len hnu, chi thlah tura a puitlin tak tak hma (nymph) leh
4. Mites puitling, chi thlah thei a lo nih hnu (adult) te an ni.

A tui a lo keu hnu, a tet deuh lai hi he natna theh darhtu ber hi a ni. Amaherawhchu, heng hrikte hi hnim zinga awm an nih avangin, a tlangpuiin ramsa leh kan ran vulh te, entirnan, zawhte, ui leh a dangten heng mites-te hi kai hmasa phawtin, heng ramsa leh ran añangte hian keini'n an mites kai chu kan lo kai chhhawng ve leh ñin a ni. Mites te'n an sehna hmuamhmaah hian vun thi, rawng dum lam (eschar) a awm ñin a, hei hi doctor leh mi nawlpuite tana rannung seh tih hriat chhuah dan awlsam leh ñangkai berte zinga mi a ni.

#### **Taksaa natna lo awm ñan dan:**

He natna thlentu bacteria chi khat Orientia tsutsugamushi-te hian vunah kua zuk siamin, a kaw siamna hmunah hian an zuk inthlah pung ta ñin a ni. Bacteria inthlah pung chuan vuna kua a zuk siamna hmunah chuan vun thi (rawng dum lam), mita hmuh theih khawpin a awmtir ta ñin a ni. Protein chi khat 56kda surface protein (protein pawimawh tak, bacteria-te tuamtua awm) hian he bacteria hi mihringte cell nena a inzawm theih nan bacteria-in vuna kua a siam tur hi a pui ñin a ni. Heng bacteria-te hian mihring taksaa pawimawh em em mai, kan thluak, kal, chuap leh vun te a khawih buai nasa em em a. Heng avang hian he rannung seh hian natna tihdam harsa tak tak keng telin, thihna hial a thlen ñin a ni. He

natna hian kan thisen zamah thisen khang siamin, kan thisen zamte a hnawh a, heng thisen khangte hian kan thluak leh chuapa thisen zamte hnawhin thihna a thleng ñin a ni.

He natna hian kan lunga tihrawlte a tihchhiat bakah, kan thin (liver)-a enzymes level-te a tisang a, chu chuan thin ña lo a lo thlen ta ñin a ni. He natna hi hriat chhuah a nih vat loh chuan, natnate hian zual lam panin kan taksaa peng pawimawh tak tak, a chungka kan sawi takte khian an thawh tur ang thawk thei lovin thihna hial a thlen ñin a ni.

#### **Natna lan chhuah dan:**

1. Rannung seh natna neite hian, mites-in a sehna hmunah hian vun thi (rawng dum lam) an nei ñin.
2. Lu ná nasa tak neiin vawt an ti a, an khua a sikin pum lam ñat lohna an nei a; vunah thak, bawl chhuak si lo an nei tel bawh ñin.
3. He natna hian an ñal a ña lo zawnga khawihin, an ñal a tivung a, nghawng, zakhnuai leh kan taksa hmun dang khawi emaw laiah ñal vung hi a lo lang chhuak ñin.



4. He natna hian an spleen (lâ) a tilian a, spleen hnathawh ðhin, kan thisena Red Blood Cells upa tawh a tihthar leh te, kan White Blood cells (natna dotu) a khâwl te leh an platelets (thisen tikhangtu) a khawl ðhin chu a tihbuai mai bakah a hmaa a hnathawh dan thawk thei loin a siam ðhin a ni.
5. He natna hian zual lam a pan hnuin kan thluak a khawih buai mai bakah pneumonia a thlen bawk ðhin a ni.
6. Kawchhunga thipût siamin, an taksaa natna dotu (White Blood Cells)-te a titlem a, an thin hnathawh a khawih buai tel bawk ðhin a ni.

**He natna hi a hmuhchhuah dan chi hnih lek han tarlang i la:**

1. McConkey Agar (heihi gram negative bacteria awm leh awm loh test nana an hmanlar tak a ni), Petridish (glass plate kutphah tiat vel)-ah an dah a, damlo, rannung seh natna vei nia an rin thisen an lak chu petridish-ah chuan an dah ve leh a. Hmanrua an hman turte hi bacteria dang laka a fihlim theih nan an tithianghlim hmasa vek phawt ðhin a, thisen leh McConkey agar petridish-a an dah chu Laminar airflow-a an dah hnuah incubator-ah dahin kar khat hnuah bacteria inthlah pung a awm leh awm loh an enfiah leh a. Bacteria a lo awm hian hmel danglam, a hmaa an hmuh loh a lo awm ðhin a, chung a lo awm chuan damlo khan rannung seh natna a vei tih an lo hre thei ðhin a ni.
2. Damlo rannung seh natna nei nia an rinhlelh, thisen an lâk aţang Serum (thil tuihnang, natna dotu antibodies-

te keng tel) an la chhuak a. He Serum hi test-in rannung seh natna tana natna dotu a awm em tih an endik hnuah natna dotu rannung seh tana a lo awm chuan, damlo khan rannung seh natna a nei tih an lo hre thei ðhin a ni.

**Rannung seh natna enkawl dan:**

Rannung seh enkawl nan hian natna thlentü ber bacteria-te that turin antibiotic-te hman ðhin a ni a, rannung seh enkawl nana damdawi hman tlangpui han tarlang ta ila:

1. Heng antibiotic zingah hian tetracycline (a bik takin tetracycline siam danglam, doxycycline) hi hman ber a ni. Tetracycline emaw, doxycycline-te hian bacteria-te 30s ribosome-ah zuk zawmin, an protein insiam an zuk titawp a, chu chuan bacteria-te inthlah pung thei lovin a zuk siam ðhin a ni.

Amaherawhchu, kan hriat tur pawimawh tak pakhat a awm a. Tetracycline kan ei rual hian bawngnute kan in tur a ni lo. A ruala kan puma a thlen thlak chiah khan tetracycline leh bawngnute te chu inzawmin kan pumpui bang tuamtu (epithelial cell membrane)-ten tetracycline an hip lut emaw, an la lut tur vengin tetracycline hnathawh tur tam tak a dang thei a ni.

2. Chloramphenicol hi enkawl nana hman ðhin a ni bawk a. Bacteria-te protein inzawm zel tur ven nan protein inkara zawmtu peptide bond-te insiam tur an veng ðhin a ni.

Amaherawhchu, chloramphenicol hi raipuar tan a him lo a, naupang kum

hnih hnuai lamin an ei dawnin mithiamte rawn hnu a ei chauh tur a ni.

3. Doxycycline leh chloramphenicol te hi Thailand hmar lama mi thenkhatah a thawk tawh lo tih hmuhchhuah a ni a, a chhan chu tetracycline-te hi a hmanna tur dik lo emaw, a dose kim loa an lo ei avangin, an taksaa bacteria-te kha an lo insiam danglam tawh vang a ni. Heng ang mite hnenah hian tetracycline aiah antibiotic dang rifampicin emaw, azithromycin pek thin a ni.

Azithromycin-te hian bacteria-te 50s ribosome-ah zuk zawmin, an protein insiam tur an zuk titawp a ni (tetracycline ang thoin).

Azithromycin hi naupang leh raipuar te tan antibiotic dang aia thlan thin a ni.

Rifampicin-te hian kan DNA te RNA a in-copy (transcription) tur ven nan RNA polymerase-te hnathawh an titawp thin a, he transcription hi bacteria-te protein insiam nana kalkawng ber pakhat a nih avangin, rifampicin-te hian bacteria-te protein insiam tur a veng thin a ni.

Rifampicin leh doxycycline te hi a ruala ei hian an hnathawh tur an intihchhiat tawn theih avangin, ei rual loh tur a ni.

4. Ciprofloxacin-te hian bacteria-te insiam belh zel tur an ven theih nan, an DNA gyrase leh Topoisomerase II (DNA te insiambelh nana enzyme pawimawh) te hnathawh an tihtawpsak thin a ni. DNA-te an insiam belh theih loh miao chuan bacteria-te an inthlah pung thei lo a ni. Ciprofloxacin-te hi raipuar tan ei a himlo bawk a ni.

#### **Rannung seh laka inven dan:**

1. Mites-te awm theihna hmun, hnim zinga kan kalin kawr ban tuan leh kekawr tlawn hak a, min seh loh nana an duh loh zawng cream emaw, lotion (insect repellants) inhnawih thin tur a ni.
2. Kan ran khawite lak atang mites-te kan kai loh nan, kan rante heng mites awm theihna hmuna an kal tur khuahkhirh a, uluk taka rante enkawl tur a ni.
3. Kan chhehvel hnimahte mites an awm loh nan rannung thahna hlo (insecticides) kan hmang thei bawk a ni.

He rannung seh natna (Scrub typhus) enkawl nana antibiotic kan hmante hian, he natna thlen tu bacteria-te lakah chak loh lam an pan tih hmuh chhuah zel a nih avangin, mipuite hian antibiotic hi a hmanna tur dik takah hmangin, mithiamten a dose min chawh ang thlap a antibiotic kan ei hian, kan nunna heng damdawiten an chhan tur hi kan pui thei a ni.



# I Thil Ei Leh In Thinte Kha I Hrechiang Em?

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B. Lalzamliana

B.Pharm

Mizoram Food Testing Laboratory

**F**ood Testing Laboratory-a ka han awm lailawk ve takah chuan zawhna ka dawng ta fo mai a, chuvang chuan Food Safety & Standards Act 2006, Rules 2011, Regulations 2011 hi ka bih ve ta zeuh zeuh. A bik takin FSS Act, Rules leh Regulation-in engte hi nge kan ei/in tura telh a phal? Engte hi nge tel lo tura a tih? Hemi chemical hi eng ang zat nge kan ei/in turah awm se a pawm chin? tih te ka dawng nasa ve hle a. Chu mai bakah, engtin nge ei leh in tur him zawk kan hriat theih ang? tihte pawhin rilru a luah ta khawp mai. Chuvangin ka thiam ang tawkin kan dan bu-te ka han rawn ve a, kim takin tarlang thei dawn lo mah ila, kan hriat atana pawimawh ka tih zualpui zawr zawr chhawp chhuah ka han tum dawn a ni.

Food Safety and Standard Authority of India (FSSAI) hi india ramah chuan ei leh in tur thianghlim mipuiten kan hmuh theih nana hmalatu leh thuneitu sang ber a ni a, mahnia inrelbawl (autonomous body) niin Ministry of Health & Family Welfare hnuaiyah a awm a ni. FSS Act 2006, tlawh chhana din niin headquarters chu New Delhi-ah a awm a, Regional office paruk (6) lai a nei bawk. Hemi bakah hian Referral Laboratories sawmpathum (13) aia tam a nei a, States/

UT Laboratories sawmsarih (70) aia tam bakah Private Laboratories za leh sawm (110) chuang lai mai a hriatpui (notified) a awm tawh bawk a ni. State tinah pawh State Food Safety Authority-te awmin, chung mite chuan Designated Officer leh Food Safety Officer te kaihhrainain state chungah thuneihna sang tak neiin ei/in tur siam chhuaktu (manufacturer), sumdawng (business operators), restaurant, hawker, etc. te chena endik (inspect)-in , a tul angin FSSAI Registration

leh License an pe chhuak bawk thin. Kan state-ah pawh FDA Wing, Health & Family Welfare Department ten enkawlin an office pui ber, Directorate of Health Services, Dinthar-ah sawn Food Safety Cell a awm hrang a, Food Safety Officer-te bakah Designated Officer ten an thutthilh a ni. Tin, district tinah FDA officer-ten anmahni huam chhung theuhte an enkawl bawk a ni.

Kan hriat theuh angin kan rama ei leh in tur (a bikin packaged food items) kan hmuh ho-ah hian labelling mumal tak awm lem lo a tam em em a. Thenkhat, a bikin Burma ram ațanga kan lakluh hoachte hian kan dan (FSS Act, Rules & Regulations)-in a phut ang labelling awm lo, entirnan, Mikko, Nabati, Non-diary creamer leh thil dang tlawm tea lei mai theih tam takte hi a huam a ni. Heng food items ho hi dan ang thlapa license neia lakluh an ni lo deuh vek a, a awmzia chu India ramah eng test mah an paltlang tawh lo tihna a ni. Thenkhat phei chu Date of Manufacture/Packing, Best Before and Use By Date, Expiry Date tak ngial pawh a label-ah a chuan thin loh

avangin engtika siam nge a nih a, engtik thleng nge ei/in him ang? tih pawh a hriat hleih theih thin loh a ni. Hengte hi a labeling-ah a importer hmung pawh hmuh tur a awm thin lo va, **Misbranded Food** kan ti vek thei ang. Kan rama siam, entirnan, Rice Cake thenkhatte ngei pawh hi danin a phut anga license nei lo an awm tih a hriat reng mai. Heng ei/in turte hi engtia sawngbawl nge? Eng hi nge a him chin pela, eng tur (toxic substance) leh eng chemical hlauhawm nge tel tih hriat a nih tawh si loh avangin ei loh a him ber.

Kan dan, Food Safety and Standards (Licensing and Registration of Food Business), Regulations 2011-in a phut angin ei leh in kaihnawiha sumdawng (Food Business Operators) reng reng ten **FSSAI Registration** emaw **FSSAI License** an nei ngei ngei tur a ni. **FSSAI Registration** hi sumdawna tenau enkawltu (petty food business operator) ten an nei tur a ni a, chung mite chu heng, ei/in tur tlem tham siama zuartu te, dawrte (hawker) kan tih mai neitu te, kal kuala ei/in tur zuar thin (itinerant vendor) te, eng emaw chhung chauh atana ei/in tur



siamtu (temporary stall holder), caterer ni lo, puipun nikhua bik atana ei tur siamtu te, industry tenau (small scale industry) kum tina a sum dehchhuah che vel (turnover) cheng nuai 12 (12 Lakhs) pel lo neitu emaw, ei/in tur ni tina a dehchhuah kg or ltr 100 pel lo chin, bawngnute a nih chuan ni tin ltr 500 aia tam lo sawngbawl leh ran talhna a nih chuan ransa lian tham 2, a te deuh 10 leh ar 50 sawngbawl thin chin, te hi an ni. Tin, sumdawanna lian chin neituten FSSAI License an nei ngei ngei tur a ni a. FSSAI License hi chi hnih a awm leh a, **State FSSAI License** leh **Central FSSAI License** te an ni. Hei hi sumdawanna len zawng leh a nihphung aṭangin thuneitu (licensing authority)-ten an then hrang leh a. Sumdawanna lian tak tak enkawltu (large food manufacturers/processors/transporters)-te leh ram dang aṭanga laluttu (importers)-ten **Central FSSAI License** hi a mamawh a. **State FSSAI License** hi sumdawanna lian lutuk lo (medium sized food manufacturers/processors/transporters)-ten an mamawh thung a ni.

Kan dan, FSS (Packaging and Labelling) Regulations 2011-in kan ei leh in tur (food items) khung/dahnaa chhut lan (labelling)-a tel tur a tihte chu a zualpui zawr zawrin kan tarlang ang a, a food item a zirin danglam a awm ve bawk tih erawh hriat a ṭha. Heng kan tarlante hi kan ei/in tur leiah tarlan a ni em tih kan chik fo dawn nia.

1. Ei/in tur hming leh a nihna chiang taka tarlan tur a ni a, a nihna tifiyah tur chiang takin **English** emaw **Hindi**-in, Devnagri script-a ziah tel ngei ngei tur a ni. Chumi bakah he danin a sawite zulzuiin ṭawng dang pawh hman theih a ni.

2. **FSSAI logo** leh a hnuaiah **License number** digit 14 a awm ngei ngei tur a ni.

3. **Nutritional facts** pholanna gram 100/milliliter 100 zelah a awm tur a ni a. Tin, ei/in tur vawi khata ei (per serving) zela pholan (entirnan; Mass Gainer)-hoah chuan vitamin, protein, minerals, metals, etc. tarlan a ngai bawk a ni.

4. **Nutritional information** hi ei/in tur thenkhat, heng buh, wheat, thingpui, alcoholic beverage, chini, kurtai, packaged drinking/mineral water, thei leh thlai, sa, lui lam sa, artui, chi, cereals, spices, etc. bakah hotel leh hospital vela ei mai theih tur chaw angah te hian a ngai ve lo a ni.

5. Kan ei/in tur thenkhatah thil chi hrang hrang chawhpawh a nih chuan **List of Ingredients** tarlan tur a ni a, an hming leh a zat theuhte a tam dan indawta tarlan tur a ni. Chung zinga thenkhatte chu cheese, edible vegetable oil/fat, starch, spices and condiments, dextrose/glucose, caseinates, gum base tih leh a dangte an ni.

6. Ei/in tur **tihhmelawina (colouring agent)** emaw **tihrimtuina (flavouring agent)** telh a nih chuan List of Ingredients hnuaiah chiang taka hawrawppuia tarlan tur a ni.

7. **Non-vegetarian Food** chhinchhiahna square chhunga circle buang (brown colour) emaw, **Vegetarian Food** chhinchhiahna square chhunga circle hring (green colour) a awm ngei ngei tur a ni.

8. **Net quantity** tarlan bawk tur a ni a, a rih zawng (weight) emaw, a awh tam zawng (volume) emaw a zat (number) chu tarlan tur a ni.



9. **Lot/Code/Batch number** a awm tel ngei ngei tur a ni bawk a, hei hian chhang leh bawngnute chhe mai awlsam ho hi a huam lo a ni.

10. **Date of manufacture or Packing;** ei/in tur chu eng ni, thla leh kuma siam nge, emaw pack nge a nih a lang ngei ngei tur a ni. Ei/in tur chu ram dang aṅanga lakluh (import) a nihin importer hming leh address kimchang labelling-ah tarlan bawk tur a ni.

11. Chumi ni, thla leh kum hnuah chuan a him tawh lo thei tih kan hriat theih nan a labelling-ah **Best Before date, Use by date** emaw ei tur ṅhenkhatah **Expiry date** chiang taka tarlan bawk tur a ni.

12. Ram dang aṅanga lakluh a nih chuan **a siamtute ram (Country of origin)** a lang tel bawk tur a ni.

13. A ṅul a nih chuan ei/in tur chu dik taka hman a nih theih nan **Instruction for use** tarlan bawk tur a ni.

Heng ei/in-a sumdawngtu (Food Business Operators)-te hian FSSAI Registration emaw FSSAI License neiin khing regulation kan tarlan takte khi zawm vek mah se food safety authority-ten an enthlithlai reng a ngai a, kan ei/in quality an vawnhim (maintain) reng a ngai a ni. Chuvang chuan ei/in tur sample-te lakhawmin food testing laboratory-ah te

an thawn ṅhin a, tichuan a result azirin action an la ṅhin bawk a ni. Chu mai bakah, khing a labelling-a tarlan lem lohte khian kan ei/in tur tibawlhhlawh thei (contaminant) tam tak an lo pai thei reng mai a. Chungte zingah chuan organic leh inorganic lei tihṅhatna (fertilizers), rannung thahna hlo (pesticides), hnimhlo (herbicides), micro-organisms, natural-a lo awm thei tur (toxic substances) leh ei leh in tur vawnhimna (preservatives), etc., FSS Regulation-in him chin a tih aia nasa a lo tel reng thei a ni. Hengte hian mihring tan natna, heng cancer, kal ná, thin ná, kawchhung ná leh natna dang tam tak bakah thihna hial pawh an thlen thei a ni. Bazara kan thlai hmuh-te pawh hian khitiang chemical leh túr hlauhawm khi an lo pai reng thei a, chu chuan kan hriat lohin natna tam tak min thlen thei a lo ni.

Mizoram pawhin hma kan sawn ve zel a, Food Testing Laboratory pawh hawn fel a lo ni ve ta a. Pangngai taka run a nih theih nan khawl leh chemical mamawhte lei mek zel a ni bawk a. Chutih lai chuan Food Safety lama kan hotute pawhin hma an la mek zel a. Nakin lawkah chuan kan ram pawhin ei/in tur, a him a ni tih hriat chian ngeite kan eiin kan in ve thei vat dawn niin a lang a. Kan hriselna pawhin hma a sawn zel i beisei phawt ang.





# Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)

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Vanlalhluti  
Pharmacist  
i/c AB-PMJAY  
Civil Hospital, Aizawl

## **Thuhmahruai**

AB-PMJAY hi sorkar laipui Ministry of Health & Family hnuai Scheme thar a ni a, he Scheme hnuai hian chhungkaw pakhatin kum khatah Rs 5,00,000 (Cheng nuai nga) thleng damdawiina an inenkawlna senso an bill thei tawh dawn a ni. Mizoram-ah 1st October, 2018 aṅanga hman theih tura ruahman a ni a, Mizoram State Health Care Society, Department of Health & Family Welfare-in a kengkawh ang.

## **AB-PMJAY thil tumte:**

- (1) Damdawiina inenkawlna hautak avanga harsatna tawh ṭhinte chhâwk zangkhai turin leh tunhma aia mipuite sum sen titem zawk turin.
- (2) Awlsam zawka mipuiten damdawiina inenkawlna ṭha zawk an lo neih theihna tur leh a hma aia sum hman



chhunga Rs 1,500 (Sangkhat zanga)-a inziak lutte tan.

**AB-PMJAY hamthatnain a ken telte leh thil tul dangte:**

(1) He scheme-a inziak lut chhungkuate chuan kum khatah damdawiina inenkawl nan Rs 5,00,000 (Nuai nga) thleng an bill/hmang thei ang. Natna thlanchhuah 1,390 chuang inenkawl theihna tur leh a zat (rate) bituk sa (computer software awm sa) angin an hmang thei ang. Cheng 5,00,000 thleng hman theih ni mah se, **natna enkawl na rate bituk sa aia tam a hman theih chuang loh a ni.**

(2) Chhungkaw khata cheng/awm zat zat a ziah luh theih tawh ang. Tunhmaa panga (5) chin tih thin kha a awm tawh lo vang.

(3) He scheme-a inziak lutte chuan India ram puma sorkar damdawiinte leh sorkarin a phalsak private damdawiinah an inenkawl thei tawh ang. **Mizoramah chuan sorkar damdawiin zawng zawng leh private hospital-ah te hman theih vek tura buatsaih a ni.**

(4) Damdawiina inenkawl hian pawisa hman ngai lovin cashless-a inenkawl tur a ni ang. Amaherawhchu limit awm ang khian a ni thung ang.

(5) He scheme tharah hian enrollment hranpa a ngai tawh lo a, enrollment fee hranpa pawh chawi a ngai tawh lo ang.

(6) Damdawiina awm hma leh chhuah hnua senso huam thei tura duan a ni.

(7) **He list-a ziah luh chhungkuate chuan damdawiina an inenkawl dawnin hengte hi an keng ngei ngei tur a ni:**

(a) **Voter's ID**

(b) **Aadhaar Card**

(c) **Chhungkaw Ration Card**

(d) **Smart Card neiin SMART CARD ken tur**

(e) **Health Care-a inziak lutte tan Enrollment**

**Beneficiary Identification System** hmangin damlote finfiah ngei an ngaih dawn avangin he finfiahna an paltlang hnuah chauh he hamthatna hi an dawng/hmang thei ang.

(8) Phai lama kal mamawhte chuan a hranpaa **MEDICAL BOARD PHALNA LAK A NGAI TAWH LO VANG.** Nimahsela, phaia kal hma ngeiin **'GOLDEN RECORD'** sorkar damdawiin atangtein siam theih a ni ang.

(9) **Transportation** (veivahna man) bill theih a ni tawh lo ang.

(10) AB-PMJAY hi mipui tan tha taka kalpui anih theih nan sorkar laipuih a enkawl tur **National Health Agency (NHA)** din a ni a, state tina a enkawltu atan **State Health Agency (SHA)** din a ni bawk. **Mizoramah chuan Mizoram State Health Care Society chu SHA a ni ang.**

(11) Damdawiina inenkawl na leh bill siam chu damdawiin mawhphurhna a ni a, **Internet** leh **Computer** hmangin bill siam a ni ang.

(12) Damdawiina enkawl na chungchang emaw, harsatna chi hrang hrang nei chuan mahni biala Healthworker, Medical Officer, Chief Medical Officer emaw Mizoram Health Care Society Office-ah te thlena hriattir theih a ni ang.

**AB-PMJAY hnuaiia bill/hmang  
thei lo natnate:**

- |   |   |
|---|---|
| (1) Hospital-a admit kher ngai lo natna   | (6) Vaccine lakna senso   |
| (2) Natna kaihhnawih ni lo senso  | (7) Nunphung tibuai lo pianpui natna<br>(External Anomalies)                    |
| (3) Inhliaim vang ni lo, pianhmang<br>mawina tur atana plastic surgery<br>emaw enkawlna         | (8) Damdawi/Zu hmansual leh a<br>kaihhnawih natna.                              |
| (4) Ka chhung zai ngai lova ha enkawlna<br>(ha phawi, ha hnawh, ha tihvar, brace<br>vuah, etc.) | (9) Mipat-hmeichhiat thlakna senso  |
| (5) Natna vang ni lova serh tan   | (10) Mahni intihnat senso (Intentional<br>self Injury/Suicide)                  |
|   | (11) Nikhaw hre lova rei tak khum beta<br>mu tawh (Persistent Vegetative State) |

**I. MAHNI GOLDEN CARD SIAM TURTE TANA HRIAT TUR :**

**A. RSBY SMART CARD NEITE TANA KEN TUR:**

- a. RSBY SMART CARD (2018).
- b. ADDHAR Card (fingerprint lak a ngaih avangin anmahni lo kal a ngai).

**B. SECC leh RSSM hnuaiia awmte tana hriat tur:**

- a. SECC/RSSM-a inziah luhna phone number hriat ngei ngei tur.
- b. ADDHAR Card (fingerprint lak a ngaih avangin anmahni lo kal a ngai).
- c. RATION CARD ken ngei ngei tur.

**II. HARSATNA AVANGA LO KAL THEI LO MI DANG TANA GOLDEN  
CARD SIAM TURTE HRIAT TUR:**

**A. RSBY SMART CARD NEITE TAN:**

- a. RSBY SMART CARD (2018) (siamsak tur hming a chuan a ngai)
- b. VOTER ID (Card siamsak tur ID)/Birth Certificate.
- c. An thllak (Phone-ah lak ni se, fiah takin, áwm chin chung lam passport  
size thllak tur angin).

**B. SECC leh RSSM hnuaiia awmte tana hriat tur:**

- a. SECC/RSSM inziah luhna phone number hriat ngei ngei tur.

## **The Mizoram Pharmacists 2018-2019**

- b. VOTER ID (Card siamsak tur ID)/Birth Certificate.
- c. RATION CARD ken ngei ngei tur.
- C. HEALTH CARE hnuai a awmte tana hriat tur:
  - a. Enrollment in ziah luhna phone number hriat ngei ngei tur.
  - b. ADDHAR Card (fingerprint lak a ngaih avangin anmahni lo kal a ngai).
  - c. VOTER ID (Card siamsak tur ID)/Birth Certificate.
  - d. RATION CARD ken ngei ngei tur.

### **III. RBSY SMART CARD/SECC/RSSM-A HMING CHUANG VE LO CARD SIAM TURTE TANA HRIAT TUR:**

- i. Chhungkaw member atangin tu emaw berin GOLD CARD a neih phawt a ngai.
- ii. Chumi GOLD CARD hmang chuan siamsak tur a ni.
- iii. Mo/nausente tan Inneih Certificate/Birth Certificate ken ngei ngei tur.

### **HRIAT TUR PAWIMAWH DANGTE:**

- 1. GOLD CARD HI MAHNI NGEI KALA SIAM TUR A NI. KHAW CHHUNGA AWMTE (ZIRLAI, HNATHAWK, ETC.) TAN A SIAMSAK THEIH LOH. MAHNI NGEI KALA DOCUMENTS PAWIMAWH KENGA SIAMTIR TUR A NI.
- 2. ZIRNA, HNATHAWHNA, ETC. AVANGA HMUN/RAM DANGA AWMTE TAN ERAWH GOLD CARD HI A SIAMSAK THEIH.
- 3. KAL THEI LO NATNA/KHUMBETA AWMTE TAN GOLD CARD HI A SIAMSAK THEIH.



# Clinical Trials

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Rema Vanphawng  
Pharmacist

Clinical Trials awmzia chu damdawi emaw, natna enkawl nana hmanrua emaw mihringa zirchianna neih hi a ni. Clinical trial-in a tum chu, damdawite leh hmanruate mihring natna enkawl nan hman a him tawk leh tawk loh dan te, a hnathawh dan te, a thatna leh that lohna lai te zawn chhuah a ni.

Researcher-in damdawi atana hman theih tur thil tha deuh lo hmu chhuak ta se, natna enkawl nan chu a thil hmuhchhuah chu damdawiah siamin vawilekhatah mihringah hman nghal tawp theih a ni lo a, zirchianna neih hmasak a ngai thin a ni. Ransaah emaw timur (cell) lak hranahte emaw zirchian hmasak phawt thin a ni a, hei hi Pre-clinical studies tih a ni a, hun rei tak

chung neih a ngai thin. Pre-clinical studies-ah hian, damdawi chu tur hlauhawm a ni nge ni lo tih te, taksaa a hnathawh dan te, eng anga siam danglam (formulate) nge tha ang tih te leh thil dang tam tak an zir thin a ni. Tichuan, pre-clinical studies result-te a lo that viau chuan, hma lam pan zelin Investigational New Drug Application thuneitute hnenah an thelut leh ta a, an dilna remtihsak a nih chuan, Clinical Trial neih chhunzawm theih a lo ni ta thin a ni.



Clinical trial hi phase 4-ah then a ni tlangpui a, tun hnaiyah USFDA inkaihhraina milin Phase 0 an siam belh a, mihring 10-15 velah damdawi pharmacokinetics (taksaa a inluh dan, insem darh dan, insawngbawl dan leh inpaih chhuah dan) zirrate neih thin a ni. Phase dangte chu a tlangpuiin lo thlir ila-

**Phase I:** Hetah hian damdawi enchhinna turin mihring (mi 20-80 vel) hrisel pangngai in-volunteer thei te, sum leh thil dang hlawhin an ruai thin a, thla eng emaw zat neih thin a ni. Uluk takin mihring in-volunteer-te hnenah chuan an damdawi enchhin chu a dose him ber zawn chhuah te, lung lam, thawkna lam, kal, thin-a a hnathawh dante leh damdawi chuan lu hai, luakchhuak leh nguainate a thlen em tih te an zir thin. A tlangpuiin he phase-ah hian researcher-te thil zir 67% vel chauh hi phase dang han kai chho leh tur result tha a awm thin a, a bak 33% velte erawh chu mihring hman atan a him lo tih an hriat chhuah thin avangin an tawpsan mai thin.

**Phase II:** Phase hmasaa result nei tha ho kha an han zirchiang chhunzawm leh ta a, tun tumah chuan a hmaa mihring hrisel pangngai in-volunteer thei ho bakah mihring damlo 100-300 vel an ruai tel thin. Thla eng emaw zat atanga a kuma kumte pawh hun a duh hial thin a ni. An damdawi kha damlote natnaah engtin nge a thawh dante leh inthlahchhawanna (genetics) lamah damdawi hnathawh kha a danglam em tih te an zir chiang thin a ni. A hautak em avangin damdawi an zirchian 45% vel chauh result tha a awm thin tlangpui.

**Phase III:** Huang an han zauh leh a, hmun khatah chauh zirna kalpui tawh loin CT neihna hmun hrang hrangah mihring damlo mi 1000-3000-ah damdawi zirchianna he phase-ah hian neih thin a ni. A hautak em em a, an damdawi enchhin 5-10% vel chiah hlawhtling thinin kum 1-4 lai hun a duh bawh thin a ni. Damdawi hnathawh dan

kha zau zawkin an zir leh a ni ber a, damdawi awm sa kan hman laite nen khaikhin reng a ni bawh a; tin, a hmaa an hmuhchhuah lem loh, damdawi hnathawh tha lo takte pawh he phase-ah hian an hre chhuak bawh thin a ni.

Phase III thleng damdawi an enchhinin a paltlang tawh chuan, mihring tana hmantlak tawh tura ngaih a ni a, chuvangin New Drug Application thuneitute hnenah an han thehlut leh ta a, tichuan, an niin rem an lo tihsak chuan damdawi thar chu zawrh chhuah theih a lo ni ta a ni.

**Phase IV:** He phase hi chu Pharmacovigilance kan tih ang kha a ni deuh ber a. Damdawi zawrh chhuah tawhte a hma phase-a that lohna awm si lo, mahse, mihring tam zawkin an hman hnua nghawng tha lo awm theite va zawn leh hmuhchhuah a ni. Entirnan: cerivastatin, troglitzone, rofecoxib te pawh eng emaw chen kan hman hnua, an that lohnate hmuhchhuah leh an nih avangin FDA lamin zawrh khapin damdawi company-ten an lakir leh a ni.

Clinical trial hi a hautak a, sum, tha leh hun senso a nasa em em a ni. Mihring tel turte hi anmahni duhthlanna lak hmasak thlap thin niin, enkawlna uluk tak hnuaiah medical team-ten an vil thin. Contract Research Organization (CRO) an tih hian CT neihna tur hmun leh bungruate a chhawp chhuak thin a, chu chu damdawi siamtu company, biotechnology leh medical device siamtu company ten an hmang tangkaiin an thil hmuhchhuah zirchian nan an lo hmang thin a ni.



# From Research To Healthcare: Your Pharmacist Is At Your Service

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**P**harmacist kan tih hian kan rilrua lo lang chu damdawi siam thiam emaw, damdawi zuar emaw a ni awm e; a dik reng a, mahse, chu mai chu a ni ringawt lo va. Kan hmuh phâk mai piah lamah nasa takin hna an thawk a, a hnuaiia kan thu ziah aţang hian eng nge an nih a, eng nge an tih theih leh an ţangkainate kan hre thei dawn a ni.

A hmasa berah chuan kan thupui ami ‘Research’ tihah hian kan lut ang a. Heta Research-in a sawi tum chu damdawi hmuhchhuahna (drug discovery) tih zawng pawhin kan sawi thei ang. Damdawi chu engtia hmuhchhuah tur nge ni ang? Damdawi hi thlai leh thei, thing hâwng, zung leh a hnah aţang te, ramsa leh tuia awm ţhin hnim leh lui sa chi hrang hrang aţanga lâk te niin, thilnung te tak te te (micro organisms) aţanga siam (antibiotics)-te pawh a awm bawk a. Heng aţangte hian chemicals pawimawh, natna tidam thei ngei tura ngaihte chu lakchhuah a ni ţhin a. Chemicals-te hi a inang lo em em a, a ţhen chu

tui nena chhuan so bawrh bawrha lak chhuah theih chite a nih laiin tui nena intawh hleka chhe mai thei te, sa ngam lo em em te leh chhe hma tak te a awm ţhin avangin kan chemical mamawh ber nih dan phung chu chiang taka kan hriat a, a lak chhuah dan chi hrang hrangte chu chiang taka kan hriat a ngai a ni.

Kan damdawiin dik tak leh a nih tur ang taka hna a thawh theihna turin kan taksa peng leh a hnathawh hrang hrangte hi uluk taka zir chian vek a ni. Damdawi hmuhchhuah nana kan mamawh chauh han tarlang ila- kan taksaah hian damdawi a in-bind (bah t n)-na tur hi



receptors (dawngtu a ni mai ang chu) chi hrang hrang a awm a, chutah chuan damdawi chu in-bind-in a hnathawh tur a thawk thin a. Damdawi chi hrang hrang hian hnathawh dan hrang a nei vek a, taksaa a thil thlen pawh receptor a hran angin a hrang ve zel bawk a ni. Entirnan, pumpui ulcer damdawi lar tak pantoprazole, omeprazole te hi pum a thur (acid) pek chhuahna proton pump an tihah hian in-bind-in acid chhuak tur chu a titawp ta thin a. Chuvangin kan damdawi duh tak hmuchhuak tur chuan eng ang receptor nge kan target tur kan hriat a, chumi mil chemical structure-a kan zawn emaw kan siam a ngai a, tala leh chahbi ang maia inmil a nih a ngai a ni. Hei hi thil awlsam a ni lo a, tun hma deuh phei chuan hun a awh rei bakah zawn chhuah a har a, mahse tunah chuan computer (in-silico) hmangin kan target receptor-ah damdawi hrang hrang chemical structure chu kan en chhin thei tawh a ni.

Damdawi siam dawn hian a damdawi hlang chauh hian a siam theih ngai loh a, a bawlhlo (exceptients tia sawi thin a ni), entirnan, damdawi mum pangngai tablet-ah hian mum tha taka a chhuah theih nana tihlawmtu (binder) te, a khawl banga bet a awm loh nan (lubricant), pum a thlena a keh sawm vat theih nan (disintegrant) te, a dose a tlem viaua tablet-a siam tham a nih loh chuan

a titamtu (diluent) te, tablet loah pawh a vawn thatna tur (preservative) te; heng zawng zawng hi a thianghlimin damdawi hnathawh tidanglam thei a awm tur a ni lo. Heng excipients-te hian a damdawi hnathawh tur dik tak a tibuai tur a nih loh avangin a telh tur zatte uluk taka chhuta enfiah vek a ngai a, hetah tak hian Pharmacist thiamna hman a ngai ta thin a ni.

Damdawi chu siam a nih tawh hnuah enchhinna hrang hrang paltlang ngai a awm a. Damdawi chu engtia reiah nge a keh sawm? (a mum, tablet leh capsule tan) Engtia rei nge a insemdarh?(ka atanga puma lut tan) Minute engzat chhungin nge hna a thawh hman ang? Engtia rei nge hna a thawh ang? Engtikah nge taksa atangin a inpaih chhuah zawh ang tihte hi tih dan (method) leh khawl tha tak tak hmangin enchhina chhut thin a ni. Heng zawng zawng hi a pawimawh em em vek a, a chhan chu hna a thawh har a, a inpaih chhuah leh vat chuan damdawi eiin awmzia a nei dawn lo a, tin, a hnathawh chhung a rei loh lutuk pawhin awmzia a nei tam lo ang a, taksa atanga paih chhuah a harsa a nih phei chuan taksa peng thenkhatah natna dang a thlen thei dawn a ni. Damdawi dam hun chhung (shelf life)/thih hun (expiry date) pawh chhut a, chiang taka tarlan thin a ni. Heng zawng zawng hi damdawi siamna hmupui (drug industry)-a an tih



ṭhin anga zir a ni a, Pharmacist-te chu industry-a thawk thei tura thil chhût kawngah te, a khawl hriat chungchangah te, a dahṭhat lam kawngah te buatsaih an ni.

Damdawi hmuhchhuah hi thil awlsam a ni lo kan tih tawh kha. Natna tidam turin a ṭha tawk ngei a ni tih kan hriat hnu chuan pre-clinical studies neih a ni a. Hetah hian enchhinna chu mihring ni lo, ransaah emaw neih a ni a, damdawi chu a hlauhawm leh hlauhawm loh te, taksaa a hnathawh dan tlangpui te, a hman zat tur (dose) hlauhawm ni pha si lo, hnathawh nei tur si te chu enchhin vek a ni. He enchhinna hi a paltlang a nih chuan Clinical trials (I,II,III,IV) a lut a, chungte chu-

I. Mi 20-100 inkar, mi hrisel pangngai hman an ni a, damdawiin taksaa a hnathawh tlangpui bakah lung, chuap leh thin-ah te hlauhawm a thlen em tihte en a ni.

II. Mi 100-500 inkar, natna vei mekah enchhin niin a hnathawh chak dan zawng leh hman zat tur (dose) te en a ni.

III. Mi 1000-5000 inkar damlo hman an ni a, stage II-a ṭha fua lang si, stage III paltlang thei lo damdawi eng emaw zat a awm a, mihring a ngaih tam tawh avangin mi chi hrang leh hnam hrangah te chuan damdawi hnathawh dan a lo danglam a, chuangte pawh chu a ni thei a ni.

IV. Stage III paltlang hnu chuan damdawi chu hralh chhuah a ni ta a, chuangin stage IV chu post-marketing surveillance tih a ni a. Damdawi hralh a nih chhung chu enchhin a ni a, hlauhawm nia hriat a nih chuan lâk lêt a, hralh khap a ni dawn a ni.

Heng zawng zawng hian kum 8-15 vel awhin cheng nuaih chuang fe sen a ngai a ni.

Damdawi hmuhchhuah leh a siam lam mai bakah hian food testing, ei tur chi hrang hrang, ram chhunga siam chhuahte chu a ṭhain a him tawk em tih enchhinnaah hian kan ṭangkai ta hle mai a. A chhan chu khawl hman turte hi kan hmelhriat lâwk tawh a nih deuh vek vang a ni a, a tih dan (method) pawh kan zir hnute niin food testing hrim hrim hi damdawi enchhinna nen a inzawm tlat a, thil ṭhenkhatah phei chuan ṭhen hran theih a ni lo - kan taksaa lut a, hna thawk tur ve ve a nih avangin. Heng test mai bakah hian dan hrang hrang zir a ni a. Hnathawhna emaw, test neihna laboratory emaw enkawl danah dan hrang hrang - Good Laboratory Practices (GLP), Total Quality Management (TQM), International Organisation for Standardisation (ISO) leh a dangte awmin khawvel ram pumpuiah heng dante hi standard/quality a awm theih nan hman a ni.

A tawpna berah chuan kan thupui ami 'Health Care' tihah kan lut leh ang a. Hemiin a sawi tum ber chu khawtlang nun a hrisel nana Pharmacist-in kan tih ve theihte a ni ber ang chu. Pharmacist chuan damlote hnenah awareness-te pein patient counseling (damlo kawm) hmangetin damlote kan pui thei a ni. Patient counseling-a Pharmacist-in damlo hnena a hrihte chu-

- Damdawi hming leh a hmanna tur
- Damdawi ei dan tur dik tak leh a hunbi te
- A dah ṭhatna bik tur a awm a nih

chuan (entirnan, refrigerator-a dah ngai te)

- Damdawi dang ei pawlh miah loh tur chi emaw, chaw leh thil dang a ei pawlh loh tur te
- Side effects awm thei tur
- Natna dang nei lai a nih leh nih loh. Entirnan, kal (kidney) tha lo a lo nei a nih chuan damdawi paih chhuaktu ber a ni si a, a paih chhuah zawh theih loh chuan damdawi chambang khan natna dang a thlen thei dawn a. Chuvangin a damdawi dose tihhniam a ngai dawn a ni
- Ei hmaih palha a tih tur leh tih loh tur te
- Eng emaw tih tur bik a awm chuan (entirnan, tui tam tak in tel tur tih ang chi te)

Heng bakah hian thil ngaih-mawhawm tak, damlote bum kan nih fona chu damdawi inang chiah chiah (generic name inang) an zawrh chhuahna hming (brand name) inan loh avanga a man inang lo awm thin hi a ni. A siamtu company-te an inan loh thin avangin damlote hian damdawi inang reng si-ah sum tlem zawk an sen theih nan hrilh hriat an ngai hle a ni.

Damdawi chawh dan dik lo laka venhim hi kan ngai takzet baw k a. Damdawi reng reng hi inhal thei a nih avang hian damdawi tam tak vawi khata ei leh hman hi a him lo a, a inhal (drug-

drug interaction a awm) a nih chuan hna a thawh loh mai bakah natna hlauhawm a thlen thei a, chuvangin Pharmacist-in Chiang takin damlo damdawi ei tur a enpui a ngai thin a ni. Tin natna zawng zawngah hian damdawi hmang loa tih theih hram dan emaw, a tlem thei ang ber hmanga tih dan Pharmacist chuan a ngaihtuahpui thin a, a chhan chu damdawi zawng zawng hian nghawng tha lo (side effects) a neih vek vang a ni. Kan ei laiin hre kher lo mah ila, kan taksaah a lo inkhawlkhawm ve hret hret a, chuvangin damdawi nihna hre Chiang chuan a tlem thei ang ber hman an tum hram hram thin a ni. Pharmacist hna pawimawh em em chu damdawi hman dan dik lo (irrational drug use) laka ven a ni. Entirnan, doctor chawh ni miah lo, mi dangin an ei avanga ei ve mai chin te, natna hrang hranga damdawi chi khat ei reng mai te hi a tha lo em em a, theihtawpa awareness pek hi Pharmacist mawhphurhna a ni.

Hetiang a damloten hrilh hriatna tha an dawng a nih chuan damdawi, dam nana ei reng si, dik lo taka hman a nih nate a lo tlahniam ang a, damdawi vanga natna dang lo thleng leh te pawh a tlahniam thei ngei ang. Kan sawi tak angin damdawi hmuh chhuah, a sawngbawl leh a hmanna kawngah te, mipui hrilh hriatna thlengin Pharmacist hian tangkaina kan nei a, I mamawhnaa pui tur che in kan awm reng e-Your Pharmacist is at Your Service.



# Vaihlo - Sim Theih A Ni

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## Thuhma:

Vaihlo vanga harsatna hi khawvelin a buaipui nasat ber pawl a ni. Thihna thlentut tam ber niin kum tin mi maktaduai 7 vel an thi ziah anga chhât a ni a, heng zingah hian maktaduai 6 vel chu anmahni'n vaihlo an hman vanga thi an ni a, a bak mi 8,90,000 vel chu mi dangte meizial zuk khu an hîp vang a ni. Vaihlo zuk leh hmuam ti nasate hi ram rethei leh hnufualte an ni tlangpui a, vaihlo vanga natna leh thihna a thleng nasa em em a ni. Vaihlo vanga harsatna tawk leh nunna hlu tak an lo chan hian an kalsan tâk, an chungte tan harsatna tam tak a thlen chhunzawm thei a; ðhenkhatah chuan sum lakluhna a tâwp a, ðhenkhatte pheih chu leiba tam tak nen an kalsan ðhin a ni. Kan hriat theuh angin medical bill sang tak kan nei chho rengte pawh hian kan ram economy a tibuai pha hial ðhin a ni.

Mi thenkhatin kan hnam nunphung nena kan hmehbel luih tlat, vaihlo zuk leh hmuam hi uar zawka a ðat lohzia inzirtir kan la mamawh hle a. Zuk leh hmuam chungchangah hian duh angin hma kan sawn chak lovin, ðhenawm khawveng inkawm nan leh rualpawl na atana kan hmatheh ber hmun ðhenkhatah chuan a la ni fo tlat a ni. Amaherawhchu, thiamnate a lo sangin a lo zau zel a, hriatnate a pungin a darh ve zel a, hriselna lam kawngah ngei pawh

mipuite kan lo harh ve ðan ta deuh deuh hi a lawmawm hle a ni. Mipuite pawh kan lo changkang chho zel a, kan hriselnate kan ngai pawimawhin taksa sawizawi leh ei tur lamah pawh ðan kan la nasa ta hle a ni. Tunlai ðhangthar zingah pheih chuan nunphung hrisel zawk nei tura hma la an tam ta hle a, kan intihhmuh deuh deuh pawh a pawimawh hle a ni. Zawi zawia kan harh chhohna hian rah ðha pawh a chhuah ve zel a, Global Adult Tobacco Survey-ah pawh 2009-

ah 67% nena pakhatna dinhmun luah thin kha, 2017-ah chuan pahnihna niin 58%-ah kan tla thla ve thei ta a ni. He hmasawna duhawm takah hian office, mimal leh pawl anga hmalatute mai piah lamah mipuite tanrualna leh hmasawn duhna rilru kan put chhoh deuh deuh vang a ni a, a lawmawm takzet a ni.

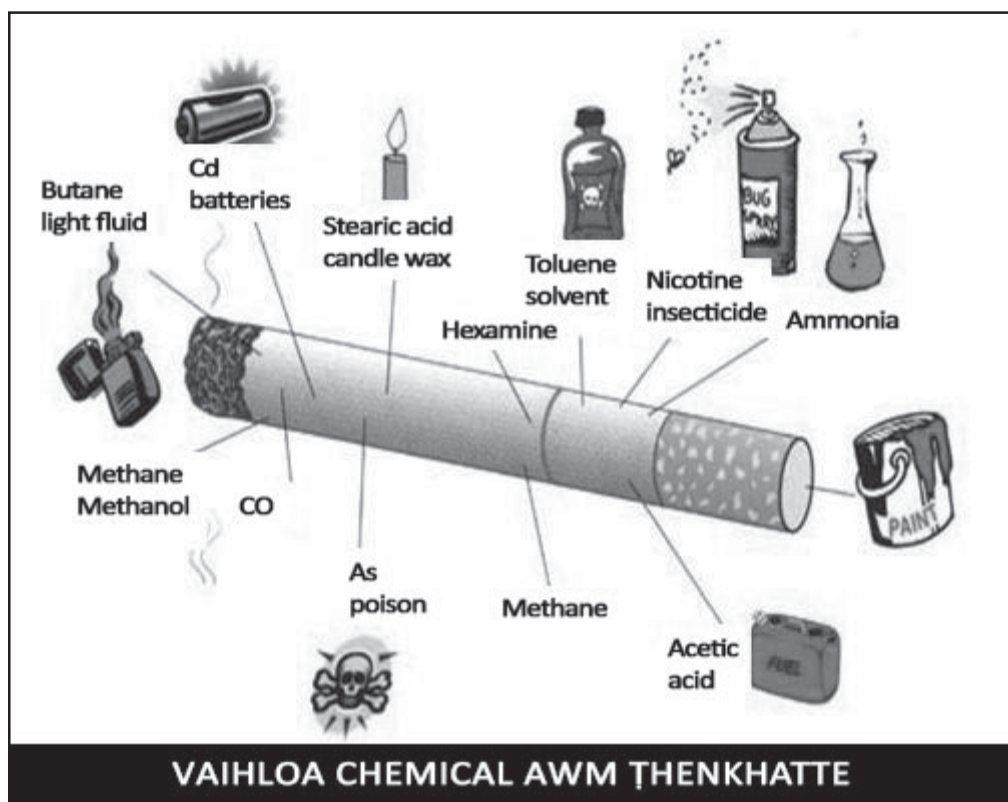
**Vaihlo - Gateway substance:**

Vaihlo hi kan ven theih leh dan theih reng ni si, natna leh thihna thlentu zinga langsar ber a ni a. Amaherawhchu, chutiang taka tha lo leh hlauhawm a ni tih hre reng chung hian mi tam tak chuan kan thlah phal lo a, kan la ui bet tlat mai chu a nih hi. Mithiamte chuan vaihlo (zuk leh hmuam) hi **‘Ruihlo tha lo zawkte tih chhinna kailawn’ (Gateway substance)** an lo tih hial lai hian keini

pawhin mi fing zawkte tih dan anga kan tlanan a, mi dangte zirtirna uar lehzuala kan pek theuh a pawimawh em em a ni.

Vaihlo-ah hian ‘chemical’ hlauhawm chi hrang hrang 7,000 chuang a awm a, chung zinga 80 aia tam mahte chu cancer thlen theitu niin, Polynuclear Aromatic Hydrocarbons (PAHs), N-Nitrosamines, Aromatic Amines, Aldehydes, Benzene, Vinyl chlorides, Arsenic, Beryllium, Cadmium (battery siamna hmanrua), Lead (rawng siamna), Nickel leh Radioactive Polonium-210 te hi a hlauhawm zualte an ni.

Vaihlo khu-ah hian boruak hlauhawm (poisonous gases) tam tham tak a awm bawk a. A langsar deuhte chu Hydrogen Cyanide (chemical weapon atana hman thin), Carbon Monoxide



(motor mei khu chhuahna ațanga lo chhuak țin hi), Butane (gas lighter tuiah an pawlh țin), Ammonia (bathroom leh toilet tihfaina hlo) leh Toluene (rawng hnawihna thinner siamna hmanrua) te an ni. Arsenic (rannung thahna hlo) leh Chromium (steel siamna hmanraw pakhat) te hi vaihlo khu-a thil sakhat hlauhawm (toxic metals) awm langarte chu an ni bawk.

Vaihlo zuk leh hmuam ti ținnten vaihlo hi sim har an ti em em țin a, hei hi a chhan chu vaihlo-ah hian drug chi khat Nicotine a awm vang a ni. Nicotine hi cocaine leh morphine ang bawkin ngaih (addict) a awl em em a, he nicotine hian ngawlveina mihring thluakah a thlen a, a lovin an awm thei ta lo țin a ni.

### **Vaihlo sim dan kawng pawimawh zualte:**

A hmaa kan sawi ang khian, Mizote zingah hian hmasawna hmuh tur a awm ve ta zel a. Vaihlo zuk leh hmuam nghei tum an tamin, sim hlen ta pawh an tam ve ta hle a ni. Vaihlo sim tur hian 'Mahni' kan pawimawh ber a, kan rilru kan hneh a ngai a ni. Vaihlo sim duhte tana hriat tur pawimawh zualte chu-

1. Tumruhna kan neih a pawimawh.
2. Vaihlo zuk leh hmuam hi harsatnaah kan pawm tur a ni. Miin vaihlo zuk leh hmuam hian harsatna a thlen a ni tih a pawm thiam phawt a, a tana ținangkaina nei miah lo ngawl a vei a ni tih a hriat chian chuan vaihlo sim duhna thinlung a lo piang ngei ngei țin.
3. Chhungkuaah leh ținante hnenah **“ka sim tawh dawn a ni”** tia puanzar ngam hian chona min pe thei a ni.

4. Kan hman hun chhungte chhui lêtin, țin lova sum chuangtlai senso zat chhêt chiante hian sim duhna rilru nasa takin a siam thei a ni.

5. Vaihlo sim tur chuan sim țin ni/hun tur ni leh thla te tiam lawk/siam fel hi a ținangkai khawp mai.

6. Vaihlo zuk leh hmuam sim tur chuan inrintawkna hleihluak neih loh tur a ni.

7. Nunphung pangngai te, ni tina kan thil tih țin dan dan pawh kan siamrem a pawimawh.

8. Vaihlo leh a kaihhnawih thil zawng zawng (meizial, lighter, ashtray, etc.)-te kan hmuh phak lohah dah bo tur.

9. Ngaihtuahna fim kan hman fo a ținangkai bawk. (Tih leh mai kan châk lai tak khan rilruah thil dang ngaihtuah hram hram a pawimawh)

10. Tui in hnem, exercise hahthlak vak loa lak te, thei leh thlai lam ei hnem te a ținangkai bawk.

11. . Kim lo riaua inhriatnate a awm thei a, ka chung ruak lutuk ven nan nepnawi/kamram hrisel pangngai leh mouth wash hman te hi a ținangkai em em bawk a ni.

12. Vaihlo zuk leh hmuam sim tur chuan ținian/thawhpui vaihlo ti ve ngai lote bula awm tamte a ținangkai mai bakah zuk leh hmuam simna kawnga min pui thei tur mithiamte rawn hreh loh a pawimawh khawp mai.

Vaihlo hi drug chi khat a nih avangin, a tituin a tih loh chiah hian mihring taksa chuan nasa takin a lo țininglet ve ta a, vaihlo châkna te, mut țin that theih lohna te, rilru pek theih lohna te, thinchhiatna te,



rilru hnualna te, awm hle hle theih lohna te, rilru tâwtna te leh harsatna chi hrang hrang a thlen fo thin a ni. Chuvangin, vaihlo sim hlen kan duh tak tak a nih chuan ‘mahni hrehawm pawisa lovin’, kan hma hun hrisel leh tha zawka kan hman theih nan kan awmna lum nuam tak hi kan thawhsan a ngai ve a ni.

### **Vaihlo simna kawnga puitu:**

Mithiamten zuk leh hmuam that lohzia an zirchhuah belh zel avang leh kan harsatna tawh hi thapui thawha beih ngai a lo nih tak avangin sawrkar atang pawhin hmalakna a rawn awm chho ta zel a. Tun dinhmunah Mizoram chhunga District Hospital zawng zawngah vaihlo sim duhte puihna hmun (Tobacco Cessation Clinic) bun fel a ni tawh a, Mizoram State Cancer Institute, Zemabawkah TCC hi din a ni bawk. Heng sawrkar hmalakna bakah hian kohhran pawhin an member-te puala clinic hawng turin hma an la chho ve mek zel a, tun dinhmunah chuan Chhinga Veng leh Ramhlun Venglai Presbyterian Kohhran te hian TCC an kalpui mek a ni.

Vaihlo sim duhte tan puihna tha tak tak siamchhuah a lo tawh a. Counselling pek mai bakah a tul anga hman turin Nicotine replacement therapy leh Non-Nicotine replacement therapy te pawh a rawn awm chho ta zel bawk a ni. Vaihlo sim duhte puitu tur ‘Pharmochotherapies’ kan tihte chu hengte hi an ni:

#### **1. Nicotine Replacement Therapy**

a) Nicotine Gum: Nicotine Gum-ah hian chi hnih a awm a– 2mg leh 4mg. 2mg hi ni khata meizial tlawn 20 emaw, a aia tlem zute tan a ni. 4mg hi ni khata meizial tlawn 20 aia tam zute tan a ni.

Nicotine gum hi a a tlangpuiin kar 12 chhung hman tura duan a ni.

b) Nicotine Patch: Nicotine Patch-ah hian 21mg, 14mg, 7mg te a awm a. Meizial tlawn 20 emaw, a aia tam emawah 21mg kar li chhung, 14 mg kar li chhung, 7mg kar li chhung hman tur a ni. Meizial tlawn 20 aia tlem emawah chuan 14mg kar li chhung, 7 mg kar 8 chhung hman tur a ni.

#### **2. Non NRT- Bupropion, (Verni-cline, Selegeline, Nortryptiline)**

Bupropion hi 150mg OD ni thum chhung lak phawt a, chumi hnuah 150mg BD kar 7 emaw, kar 12 emaw chhung hman leh tur a ni.

Heng a chunga kan tarlante hi mahni thua lo inchawh ve mai lovin, clinic-a kan mithiam zawkte rawn chunga an kaihhraina hnuaiia tih a tha ber a ni. Thil pawimawh tak, hriat reng atana tha churuihtheih thil ‘drug’ nghei tur chuan a aiawhtu tur pawh awm mah se, a aiawhtu a inngah tawp ai chuan mahni inhneh a, tumruhna nena hma lam pan a tha ber a ni.

Tun hnaiah vaihlo simna kawnga puitu tha ni awm taka mipuite hnena hralh chhuah, thil chi thar Electronic Nicotine Delivery System (ENDS), hming dang ‘E-Cigarette’ tia an sawi thin ni bawk hi kan hriat chian a pawimawh a. **World Health Organisation chuan e-cigarette hi vaihlo sim duhte puihna tur atana hmanraw him a ni tih fiahna a awm lo tih hi an pawm mek dan a ni.** Hre Chiang lovin vaihlo sim tumna kawngah hmanrua berah kan lo hmangin mi dangte pawh kan lo kawhmuh palh ang tih a hlauhawm a.



Tin, vaihlo zuk leh hmuam hi kan sim duh a nih chuan, mithiam rawn theih tur an awm a, chung mite chu rawnin hma kan lak a fuh ber zawk a ni.

### Secondhand Smoke (SHS):

Meizu lovin mi dang meizuk khu an hîp hi Second Hand Smoke chu a ni. Second Hand Smoke hi a hlauhawm em em a, thihna hial a thlen thei a ni. Hei vang hian sorkar pawhin dan siamin mipui pun khawmna hmunah reng reng mei zuk phal a ni lo va, zu an awm chuan Rs 200 thleng chawitir theih an ni.

Second Hand Smoke hian puitlingah chuap leh lung natna te a thlen thei a, naupang pheï chu puitling aiin an lungphu a ran zawk avangin meikhu hi an haw bik em em a, natna chi hrang hrang an vei phah ðin a ni. Second Hand Smoke vang hian naupangten chuap leh lung chak lo/þha lo an nei thei a, bronchitis te, pneumonia te, asthma te, beng kherh te, rim hriatna þha lo te, naupang awm dan (behaviour) dik lo te, naupang rilru chak lohna te, puitlin hnua cancer theihna hial te a thlen thei a ni.

Hetiang a ni chung hian Mizoram-ah hian mahni in chhunga secondhand smoke la tuar ðin, mahni in chhung ngeia mei zuk la phal tlat hi 84.1% (Global Adult Tobacco Survey 2016-2017) lai a la ni hi a manganthlak hle a, kan chhungkua, kan hmangaih berte awmna hi tihbawlhhlawh kan hreh lo ber lawi si hi kan inngaihtuah chian a hun a ni. Mahni in chhung ðeuh hi vawng thianghlimin, meizial khu hlauhawm tak lakah hian i tifihtmlim hram ang u.

### Tlangkawmna:

Hriselna lam kawnga thawktu te, a bik takin Doctor, Nurse, **Pharmacist**, Technician, Health Worker, ASHA, etc. te ngat pheï chuan kan dinhmun pawimawhzia leh mawhphurhna kan neih nasat bikzia hi kan hriat thar fo a ðul a ni. Khawpuiah emaw, thingtlang lamah emaw kan awm a nih pawhin kan awmna hmun ðeuhah mipuite zirtirna kan pek a pawimawh em em a, thawktute kan nih ang ngeiin kan ngaihðan leh kan thusawi, kan nun dan zawng zawng nen mipui nawlpuite chuan chîk takin min lo bûk/teh reng ðin a ni tih hi kan hriat thar fo a pawimawh em em a, chuvangin keimahni ngei pawh vaihlo zuk leh hmuam lakah kan inthiarfihtmlim a pawimawh em em a ni.

Kan awmna hmun ðeuhah ðhahnemngai taka hma kan lak chhonzawm zel chuan nasa takin mipui vantlang hriselna dinhmun pawhin hma a sawn zel dawn a, thil lian tham tak aþang kher lo pawhin; **hun rei lote kan lo pek belh leh ðawngkam tawi fel taka kan lo hrilh** mai aþang pawhin hmasawmna nasa takin a thleng thei a ni tih hriain a bik takin hriselna lama thawktute (Health Care Providers) pheï chuan ðan i la deuh deuh ang u.

**Vaihlo hi ngaih (addict) theih a nih ang bawkin sim theih a ni tih hi kan hriat chian a ngai em em a, harsatna leh bawrhsawmnain min tihbuai hma ngeia kan sim hi a pawimawh takzet a ni.**



# Naupai Leh A Damdawi Kaihhnawihte

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**N**aupai laia damdawi thawh dan leh taksain a lo dawnsawn dan chungchang kan hriatte hi a tlangpuiin ransaa zirna leh enchhinna aṅanga kan hriat an ni a, mihringah chutiang tak chu a ni em tih erawh hriat chian a ni lo. Naupai lai hian taksaah inthlak danglamnate a lo awm ṭhin avangin damdawi thawh dan chu a lo inthlak ve thei a, chutiang bawkin a nau pai lai chuan nih dan phung fel tak a neih ve avangin damdawi thawh dan leh a lo dawnsawn dan chu a inang lo ve thei bawk a ni.

Naupai lai hian hormone pakhat, Progesterone kan tih chu a lo sang hle ṭhin a, hei hian pumpui leh ril che vel chu timuangin, taksain a lo lakluh emaw, hip luhna chu a timuang thei a ni. Naupai lai hian taksa tui awm chu a lo tam a, chu chuan thisena tui (plasma) pawh a lo tisang bawṭ ṭhin a ni. Tin, rai lai hian thau a lo insiam hnem deuh bawṭ ṭhin a, hengte hian damdawi insem darh dan a lo tidanglam thei bawk a ni. Naupai lai hian ṭhin lam aṅanga insiam enzyme ṭhenkhatte chu an siam chhuak hnem bik a, hei hian kan taksain damdawi a lo sawngbawl dan chu a tichak thei bawk a ni. Taksa tui a tam avangin zun pawh a lo titam a, hei hian zun aṅanga paih chhuah theih damdawite chu a paih chhuak rang bik bawk a ni.



Damdawi thenkhatte chuan a nau pai laiah thil tha lo a thlen thei thin a, chu chu a damdawi nihphung vangte, a damdawi pek dan leh a zat te, a rai lai hun azir te, nu hriselna dinhmun azir tein a lo awm thei a ni. Naute insiam tirh aṅanga ni 16 vel chung hi Pre-implantation stage an ti a, chumi aṅanga ni 56-na vel thleng hi Period of organogenesis an ti bawk a, hemi pahnih hun chung hi First trimester an tih chu a ni. Hetih lai hian damdawi lakluhah fimkhur hle a ngai a, damdawi thenkhatte chuan nau insiamna chu tibuai theiin, nau chhiat te hial a thlen thei a ni. Heng hun zawhah hian Second leh Third trimester te chuan a zui a. Hetih lai hian naute chu thangin, a nihphung tur ang ni tura a insiam chhoh lai a ni a, damdawi thenkhatte chuan that lohna leh harsatna a thlen thei thin a; taksa pêng insiamna kawngah te, thluak leh nungchang thlengin a nghawng thei a ni.

Chutiang harsatna laka kan fihlim theih nan damdawite chu US FDA chuan felfai takin a rawn then hrang a:

Damdawi thenkhat, a hlauhawm ngei a ni tih hriat chian tawhte leh an thlen theih natnate han tarlang ila-

**Methotrexate:** CNS and limb malformations.

**ACE inhibitors:** Prolonged renal failure, renal tubular dysgenesis, decreased skull ossification.

**Anticholinergic drugs:** Neonatal nicotium ileus.

**Antithyroid drugs:** Fetal and neonatal goiter, hypothyroidism.

**Carbamazepine:** Neural tube defects.

**Cyclophosphamide:** CNS malformations, secondary cancer.

**Danazol and other androgenic drugs:** Masculinisation of female fetus.

**Diethylstilbestrol:** Vaginal carcinoma and other genitourinary defects. Lithium: Ebstein's anomaly.

**Misoprostol:** Moebius syndrome

**NSAID:** Constriction of the ductus arteriosus, necrotising enterocolitis.

**Oral hypoglycemic drugs:** Neonatal hypoglycemia.

**Phenytoin:** Growth retardation, CNS defects.

**Psychoactive drugs:** Neonatal withdrawal syndrome.

**Systemic retinoids:** CNS, CVS, craniofacial defects.

**Tetracyclines:** Anomalies of teeth and bones.

**Thalidomide:** Limb shortening, internal organ defects.

**Trimethadone:** Malformed ears, cleft palate, cardiac, urogenital and skeletal defects.

**Valproic acid:** Neural tube defects.

**Warfarin:** Skeletal and CNS defects, Dandy-Walky Syndrome



Naupai lai hian damdawi inchawh leh a ei chungchangah fimkhur hle tur a ni a. Natna lian tham vak lo chu damdawi tel loa enkawl tum hram tur a ni. Damdawi ei ngei a ngai a nih chuan, a him ngei a ni tih hriat leh hun rei tak chhunga an lo hman tawh damdawi ngei a ni tur a ni. Damdawi chawh kher ngai lova lei mai theihte pawh ei loh hram a tha a, tin, hmeichhia naupai kum 15-45 tan chuan eng damdawi mah hi a him ngei a ni tih a sawi chian theih loh tih hriat tur a ni.



# Damdawi Vawn That Dan

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**D**amdawi hi mihringte tana thil țangkai leh pawimawh em em pakhat a nih avangin damdawi zuartute pawh an tam a, chhung tinte pawhin mahni ei lai a ni emaw, mamawh huna ei atan kan in theuhvah kan kawł țha thin a ni ti ila kan sawi sual awm lo ve. Hemi a nih avang hian damdawi vawnțhat dan hi kan inzirtir țhat leh zual a țul em em a ni. Damdawi kan vawnțhat dan hian damdawi a nihna leh a chaknaah thui takin nghawng a nei a, kan vawnțhat danin a zir miao loh chuan a nihna leh chakna nasa taka hlohvin, mihring tana a hnathawh tur ang thawk thei lovin a awm phah thei a ni.



Damdawi zuartute emaw, damdawi hmangtuten kan hriat tur pawimawh tak chu damdawi vawnțhat dan dik tak hi a ni a. Damdawi siamtu company-ten uluk taka damdawi an zir chian hnuin

mihringte ei theih turin an siam chhuak a, an damdawi siam chu tuam lehin a kawmah chuan thil pawimawh tak tak, mipuite tana țangkai tur an ziaak leh țhin a ni. Heng an thil ziah (label) zingah hian damdawi vawnțhat dan (storage) a tel ngei ngei țhin a, hei hi uluk taka chhiarin kan zawm țhin tur a ni.

## **Engtin nge damdawi chu kan vawnțhat ang?**

Damdawi vawnțhat loh avanga damdawi nihphung thlak theitu thil hrang hrang tlangpuite chu sik leh sa (temperature), boruak (air), boruak hnâwng (moisture) leh ni sâ/êng (sunlight/light) te an ni a. Damdawite hian

nihna (properties) hran an neih avangin vawnthat dan pawh an nei hrang theuh a, damdawi vawnthatna chungchanga hriat tur pawimawh hrang hrangte chu:

1. **'STORE AT ROOM TEMPERATURE'** emaw **'AMBIENT TEMPERATURE'** tih a inziak a nih chuan 15°-25° C (59°-77° F)-ah vawnthat thin tur a ni a, hmun hnawngah emaw, refrigerator-ah heng damdawite hi dah loh tur a ni.

2. **'STORE IN REFRIGERATOR'** emaw **'DO NOT FREEZE'** tih a inziak chuan refrigerator-ah 2°-8° C (36°-46° F) a dah thin tur a ni a, freezer-ah dah loh tur a ni. Entirna thenkhatte chu- mit leh beng thlawr (Chloramphenicol, Lantonoprast/Timolol, Cyclopentolate), reconstituted antibiotics (amoxicillin, erythromycin), damdawi mum/tablet (Leukeran, Ritonavir), insulin injections leh vaccines chi hrang hrangte an ni.

3. **'STORE IN FREEZER'** tih a inziak a nih chuan freezer-ah -15° C (4° F) emaw, a aia hniamah vawnthat thin tur a ni. Freezer-a vawnthat ngai damdawi hi a tam lutuk lo va, Zoster vaccine (Zostavax) leh Varicella vaccine (Viravax) te hi entirna thenkhat a ni.

4. **'STORE BELOW 25° C'** emaw **'STORE BELOW 30° C'** tih hi damdawi tam zawk tablets, capsules, oral liquids, etc.-ah a inziak tlangpui a, a inziak dan azirin 2°-25° C emaw 2°-30° C inkarah vawnthat tur a ni. Kan ram sik leh sa nen a inmil avangin vawnthat pawh a awlsam a, chutih rual chuan hmun hnawngah leh ni sa hnuai a awm loh nan fimkhur a pawimawh hle tho a ni.

5. **'STORE IN COOL AND DRY PLACE'** tih inziak chu hmun ro, dai leh faiah 15°-25 ° C emaw 30° C aia sang

lovah dah thin tur a ni. Refrigerator-a dah lovin, almirah-ah emaw pawhdawha dahthat mai thin zawk tur a ni a, damdawi dahna tur bik bawm phui tha tak neih hrante pawh hi a remchangin a finthlak em em a ni.

6. **'PROTECT FROM LIGHT AND MOISTURE'** tih inziakna damdawi chu ni sa-in a chhun theih lohna hmun leh hmun hnawngah lovah dah thin tur a ni. Ni sa leh thil hnawngte hian nasa taka damdawi nihna a tihdanglam theih avangin kan damdawi dahna hmun hi fimkhur a ngai hle a ni. Damdawi zuartute pawhin kan damdawi zawrhte ni sa chhun theih lohna leh ruahui emaw, thil hnawngin a tihbuai theih lohna turin uluk takin kan vawngtha thin tur a ni. Acyclovir, Tetracycline, Erythromycin, Isotretinoin, etc. te hi entirna thenkhat an ni.

Heng a chung a kan tarlan zawng zawng bakah hian damdawi kan vawnthat hun chung hi a pawimawh em em baw a, thenkhat chuan mahni in lamah rei tak takte damdawi kan kawl thin a, **expiry date** uluk taka en thin tur a ni. Kan damdawi kawlaite a thih tawh chuan paih vat thin tur a ni a, a la thi lo a nih pawhin a rawng leh a rim a danglam emaw, a khem leh a keh te, a hma aia a nem emaw, a sak zawk anga a awm a nih chuan paih thin tur a ni. Tin, kan damdawi ei laite eng emaw avanga doctor-in min tihtawpsak a nih chuan kawla reng lovin paih vat thin tur a ni. Kan damdawite a dahna emaw, a intuamna bawmah ngei dah thin tur a ni a, naupang khawih theihah dah reng reng loh tur a ni. I damdawite uluk takin vawngtha thin la, damdawi hman dan emaw, damdawi vawnthat chungchang-ah harsatna i nei a nih chuan Pharmacist rawn thin ang che •

# Naupanga Damdawi Hman dan (Pediatrics)

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Zatluangpuii  
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**P**uitlinga damdawi kan hman ang zawng zawng hi naupang tan hman ve a him em? Puitling damdawi kan pek zat ang kha naupangah pek theih a ni em? Pe ta i la eng nge thleng thei? Hetianga naupanga damdawi hman dan zirna hi a Sap tawngin Pediatrics tih a ni. Pediatrics tih chuanin nausen pianghlim a tanga naupang kum 18 chinte an hriselna a lo that zawk nana enkawl te, natna lak a tanga venhim te leh an natnate damdawi hmanga enkawl te hi a huam a ni.

Mihringte leh thilnung dangte hi timur (cell) te reuh te te a tanga insiam puitling (developed) tura duan kan ni a, chuvangin mihringah phei chuan nausen taksa leh puitling taksa chu a lo danglam hlei em em tawh a; naupang taksaah hian a nih tur ang la ni lo leh a thawh tur ang la thawk pha lo, la puitling chho zel tam tak a awm a ni. Heng taksa peng la puitling lote hian damdawi hnathawh danah nghawng tam tak a neih theih avangin kan zir chian a ngai a ni.

Aw le, tunah chuan chung taksa peng la puitling lote leh damdawi hnathawh

dana nghawng an neih theihthe chu i lo zir chiang dawn teh ang.

## **1. Damdawi thisena a luh danah (drug absorption):**

Damdawi kan ei leh injection emaw, kan taksaah lut reng rengte hi hna thawk thei tur chuan thisen zama an luh phawt a ngai a. Nausen, kum thum la tling lote pumpui hian an thil eite pai tawih tu tur (acid secretion) an la pe chhuak tlem a, tin, damdawi an eite tisawm a, thisena an lut tur lo puitu (enzyme) an la neih tlem avangin damdawi thenkhatte thisena an lut tur a tlai thei a ni.



Chubakah, an pumpui hnathawh leh chet dan a la muan avangin pumpuiiah an thil ei leh damdawi eite rei tak a châm a, chuvangin damdawi thenkhat, rîl aţang chauha thisena lut tura đuan damdawi (enteric coated drugs)-te hian rîl an thleng har a, thisenah an luh har avangin an hnathawh pawh a lang har thin a ni.

**2. Damdawite taksa peng hrang hranga a insemdarh danah (drug distribution):**

Hetianga damdawite taksa peng hrang hranga sem darh tur hian tui (water) emaw, tuiril (fluid) te hi an pawimawh em em a. Naupang kum 2 hnuai lamte taksa hmun 100-a 70 hi tui (water) a ni a, chuvangin damdawite an insemdarh zung zung thei a ni. Naupangte hian puitlingte aiin an taksaah tui an nei tam zawk a, thau an nei tlem zawk thung a. Hemi avang hian tuia ral thei damdawi (water soluble drugs), entirnan, ampiciline te an mamawh tam zawk a, thau-a ral thei damdawi (fats soluble drugs), entiran, diazepam te an mamawh tlem zawk thung a ni. Tin, naupangah hian an damdawi eite thluaka lut tur vengtu (Blood Brain Barrier) a la insiam puitlin loh avangin damdawi an ei kha an taksa zawng zawngah thluak thlengin an thlen avangin fimkhur a  ul hle a ni.

**3. Damdawite siam danglam an nih danah (drug metabolism):**

Damdawite hi kan taksa aţanga paih chhuah an nih theih nan enzymes hmangin thin, kal leh lung-ah te siam

danglam (metabolized) an ni thin a, damdawi thenkhat (prodrug) erawh chu siam danglam hnua hna thawk thei chauhte an awm bawk. Heng damdawi siam danglamnate hi naupangah chuan an la puitlin tawk loh avangin enzymes an la pe chhuak tam thei lo a, damdawite taksa aţanga paih chhuak mai lovin a inhh ekkh awm ta thin a, chu chuan nghawng tha lo a nei ta thin a ni. Entirna pe lawk ta i la, naupang (kum 2 hnuai lam)-in chloramphenicol a ei hian a metabolized-tu tur enzyme (glucuronyl transferase) a la neih tlem avangin a taksaah a inhh ekkh awm a, chu chuan thisen hniam te, luakchhuak, pum puar, th awk buai,  ek hring, hmui, tin leh vun duk te thlenin thihna hial pawh a thlen thei a ni.

**4. Damdawite kan taksa aţanga paih chhuah a nih danah ( drug elimination):**

Zun,  ek, th aw leh thlan te hman hian kan taksa aţangin damdawite paih chhuah an ni thin. Naupang (thla kua la tling lote) hian zun kawng la puitling lo tak an neih avangin damdawite an taksaah a inhh ekkh awm thei bawk.

Hengte hi naupang taksain damdawi hnathawh a nghawng theih dan thenkhatte an ni a, heta  ang pawh hian puitlinga damdawi kan hman leh kan hman zat ang kha kan hman thei lo tih a Chiang awm e.

Mithiamte chuan puitling damdawi ei zat tur (dose) aţanga naupang ei zat tur chh t chhuah dan formula hrang hrang an duang a, chungte chu:

1. Naupang kum zat azirin:

$$(a) \text{ Naupang dose} = \frac{\text{Naupang kum zat} \times \text{Puitling dose}}{\text{Naupang kum} + 12}$$

He formula hi Young's Formula tih a ni a, naupang kum 12 hnuai lam tan hman thin a ni.

$$(b) \text{ Naupang dose} = \frac{\text{Naupang kum zat} \times \text{Puitling dose}}{20}$$

He formula hi Dilling's Formula tih a ni a, naupang kum 4-20 inkar tan hman thin a ni.

$$(c) \text{ Naupang dose} = \frac{\text{Naupang thla zat} \times \text{Puitling dose}}{150}$$

He formula hi Fried's Formula tih a ni a, naupang kum 1-2 inkar tan hman thin a ni.

Heng formula-te hi naupang thantha pangngai, an kum, san zawng leh rih zawng inbûk tâwkte tan rintlaka ngaih a ni.

2. Naupang rih zawng azirin:

$$\text{Naupang dose} = \frac{\text{Naupang rih zawng (pound)} \times \text{Puitling dose}}{150}$$

He formula hi Clark's Formula tih a ni a, naupang than pangngai lo, chêr lutuk emaw, thau lutuk emaw tan pawh hman theih a ni a, tin, kum zat azira chhut aiin a rintlak zawk baw.

3. Naupang taksa-in hmun a luah zau zawng azirin (body surface area):

$$\text{Naupang dose} = \frac{\text{Naupang taksa hmun luah zau zawng} \times \text{Puitling dose}}{\text{Puitling taksa hmun luah zau zawng}}$$

Taksa-in hmun a luah zau zawng chhut dan –

$$\text{SQR taksa rih zawng(kg)} \times \text{San zawng (cm)} \\ 3600$$

Puitling taksa-in hmun a luah zat hi 1.72 m<sup>2</sup> a ni tlang pui.

Naupang, a bikin nausente taksa hi dim an ngai em em a, chuvangin damdawi hman danahte kan fimkhur a, mithiam zawk – pharmacist te, doctor te leh damdawi lam thiam te kan rawn fo thin a tul a ni.



# Zu Leh Damdawi

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**T**unlain Mizoramah kawng chi hrang hrangin zu kan buaipui nasa khawp mai a, kan ram rorelna in sang ber thlengin kan sawi chhuak fo chu a nih hi. Hetiang aṅanga thil Chiang lo lang chu, Mizote zingah zu in kan tam hle tih hi a ni. A ṅhatna leh that lohna emaw lam sawi lovin, buaipui dan dang deuhin i han tarlang ve teh ang.

Mi zawng zawng hriselna hi engtik nih ah emaw pan thei, damlo thei ṅheuh kan ni a, zu in mi emaw, in ngai lem lo pawh tiamin, damdawi mamawh hun kan nei ṅheuh ṅhin. Mamawh huna kan damdawi ei chu a ṅangkaiin a hlu em em ṅhin a nih hi. Damdawi hlu leh ṅha tak ni si chu kan hman tam lutuk emaw, ṅul lova kan hman chuan nghawng ṅha lo tak tak kan taksaah a awm ṅhin a, fimkhur pawh a



ngai em em reng a ni. Zu in thin tan phei chuan fimkhur a ngai lehzual a. Zu leh damdawi tam tak hi a rual emaw, hun inhnaih lutuka hman a hlauhawm em em a, miin ruihna atana zu leh damdawi a hman pawlh phei chuan a hlauhawm lehzual. Kum reilote kal taah pawh khan tleirawl thenkhatin damdawi ruih theih leh zu chikhat (grape wine, etc.) an ei/in pawlh avanga muhil kaihtawh theih lohva nunna chan ta pawh an awm kha. A pawh a, a pawh takzet a ni.

Kan taksaah chaw emaw, thil eng pawh kan lakluh reng reng hi taksain a hman ban emaw, hman lem lohte chu taksa atanga a inpaih chhuah ngei ngei a ngai a, inpaih chhuak zel lo se chu a dam rei theih hauh lo vang. Chutianga inpaih chhuak zel tur zingah chuan damdawi leh zu hi a tel ve a. He mite pahnih phei hi chu taksain a mamawh leh a lo sawngbawl theih bak taksa chhunga a awm reng chuan a pawh thui thei a, taksa

peng hrang hrang tan a pawh theiin, nunna chan mai hlauhawmin mi a awm pah theih a ni. Damdawi leh zu chu kan taksa atanga paih chhuak thei tura sawngbawltu taksa peng hrang hrang a awm a, chutianga zinga langsar ber leh thawh hlawk ber chu kan thin (liver) hi a ni. Thinah hian kan taksa kan thil lakluh hrang hrang te, zu leh damdawi pawh telin, taksa chhunga chambang reng lovin awlsam taka zun chhuah emaw, êk chhuah theiha siam danglamtu (metabolising enzymes) a nei a, chumite zinga pawimawh em em chu Cytochrome P 450 (CYP450) enzymes a ni a.

CYP450 hi chi hrang hrang a awm leh a, a chi azirin an damdawi/zu taksa atanga paih chhuah theiha an siam pawh a inang lo thin a ni. Taksa atanga zu a inpaih chhuah theihna tur atan chuan CYP2E1 a pawimawh em em a, CYP3A4 leh CYP1A2 pawhin hnathawh a nei nia hriat a ni. Zu ang chiah hian damdawi chi hrang



hrang pawh hi taksa aṅanga paih chhuah tura siam danglamtu CYP450 chi hrang hrang a mamawh ve avangin, miin zu leh damdawi a rual emaw, hun inhnaih lutuka a eiin CYP450-te kha an inchuh (competitive metabolism) ta ṭhin a, chu chuan damdawi tam tak kha taksaah la chambang turin a awmtir phah thei a, hei hian damdawi nghawng ṭha lo pui pui a thlentir vak thei a ni. Kawng dang lehah chuan, damdawi chu a nih dan tur pangngai aia tam inpaih chhuaka siamin damdawi hnathawh a tlakhniam duai phah thei bawk. CYP2E1 hmang ve damdawi hovah nghawng duhawm lo a tam zual. Hei bakah hian damdawi ṭhenkhat thluaka hna thawk chi, mut tichhuak thei nena zu hman a nih chuan an hnathawh a intichak tawn a, nghawng duhawm loh ber, thihna hial a thlen phah thei!

Zu (ethanol) hi miin a in hian chemical chikhat aldehyde (chemical hlauhawm, cancer thlen thei)-ah a insiam danglam a, aldehyde aṅang hian rang takin chemical hlauhawm lo deuh hlek zawk acetate-ah insiam lehin tui (H<sub>2</sub>O) leh carbon dioxide-ah a inthlak leh ta ṭhin a ni. Damdawi ṭhenkhat disulfiram, metronidazole, chlorpropamide, etc. te hian zu aṅanga insiam chemical hlauhawm tak aldehyde chu hlauhawm lo zawka thlak danglamtu (ALDH1&2) a tihbuai theih avangin taksaah harsatna, heng hmai leh nghawng vel sen leh vual nasa, luakchhuak, luhai, thisen hniam, thinphu rang dut dut te a thlen thei a ni. Ziah zel dawn chuan a thui lutuk dawn

e, tih vek vek sen ni lo mah se zu nena HMANPAWLH RENG RENG LOH tur damdawi ṭhenkhat i han tarlang teh ang.

NACHHAWKNA - Paracetamol, Aspirin, Ibuprofen, etc.

KAIH DAMDAWI - Phenytoin, Gabapentin, Clonazepan, Pregabalin, etc.

BP SANG DAMDAWI - Amlodipine, Enalapril, Losartan, Hydrochlorthiazide, etc.

THAU PAIHNA DAMDAWI - Atorvastatin, Rosuvastatin, Niacin, etc.

RILRU LAM ENKAWLNA - Alprazolam, Diazepam, etc.

DEPRESSION DAMDAWI - Escitalopram, Amitriptylin, Phenelzine, etc.

ZUNTHLUM DAMDAWI - Metformin, Glipizide, Chlorpropamide, etc.

KHUH DAMDAWI - Dextromethorphan, Codeine, etc.

MOTOR RUIH LOHNA DAMDAWI - Meclizine, Promethazine, Dimenhydrinate, etc.

PUM DAMDAWI - Cimetidine, Metoclopramide, Ranitidine, etc.

ANTIMICROBIALS/ANTIBIOTICS - Nitrofurantoin, Metronidazole, Azithromycin, Isoniazid, etc

Damdawi reng reng fimkhur leh dik takin hmang la, DAM LA, HIM LA, HLIM RAWH.



# Ui Seh Tih Reng Mai Hi!

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## Mizote leh Ui vulh

**K**an pi leh pute aṅanga ui vulh ṭhin ni mah ila, hun rei tak chung chu ṭhenkhat phei chuan kan ui vulhte 'Ui cho' tia kovin ram kalna vela hruai bak chu inah an awm awmin kan chenpui a ni deuh ber a. Ui fing lem lote phei chu vulh thau deuh hnuah talhin a sa an ei mai bawk.

Ama'rawhchu, khawvel hmasawna mila kan ui vulh dan pawh changkang chho zelin, hma kan sawn ta hle a. Ui note lei nan cheng sing aṅanga cheng nuai chuang sen hreh lo an awm ta nuk mai. Chubakah, an hriselna, chaw ṭha leh

kamram (*treats/snacks*) mamawh atan lah sum kan inseng ui lo ta viau. Hetiang a nih mek lai hian ui vulh chungchangah inhrilhhriat leh infuih nawn fo erawh a ṭul hle thung.

## Chanchintha leh ui seh!

Ui vulh kan uar tial tial a, ui ṭha an pung tual tual a; uin mihring a seh deuh reng bawk si. Veng hrang hrang Local Council-te hmalakna azarah ui khuahkhiri an nih laiin, ui seh tuar tawh an awm reng thung. Uin mi a seh tawh chuan, mi tam zawk rilruah chuan ui kha hri danna pek pawh ni se, hri that tura inchiu kha tihmâkmawh a ni ta ber.

Zingkar chanchintha ngaithla ṭhin chuan chanchintha puan karah damdawi-in hrang hrang aṅanga 'ui seh'



enkawl zat an puan kan ngaihthla fo vang a. Heng ui seh zawng zawng hi ui ä hri vang a ni em? Ni hauh lo mai! Ui seh tuartu zawng zawng hian ui ä hri vei dawn ta ni se, hri danna la lo ho chuan ui ä hri an vei nasa tawh khawp ang le!

Ui seh vanga damdawi-in pan ngai tam zawk hi chu ui enkawl that loh vang a ni. Uin mi a seh tawh chuan, 'a va pawitak em' tiin a neitu'n thupha chawi eng ang mah se, hliam tuartu tan chuan ui seh hliam nâ a tuar der tawh a; ui ä hri vei hlauh palh hlauhthawn avangin ui ä hri danna hmanga chiu an la hmabak zui a. Chu achhapah, ui ä hri danna lah damdawi-in zawng zawngin an la kawlo zui!

Ui chu ranvulh an nih avangin, mihring thununna leh enkawl na hnuai a awm tur an ni. Ui seh tam zawk hi, ui thiam loh aiin a neitute thiam loh a ni zawk.

### 'Ui a awm, fimkhur rawh!'

He thuziak hnuai ui kawlh hmel zet mai thlalak, chenna in luhkaah emaw, kawngkhar bula intar hi hriattirna tha leh tangkai tak a nih rualin, mi ina leng tur tan chuan ngampa taka len luh mai a tihuphurhawm viau thin. Ui ngaina lo leh hlau mi tan ngat phei chuan a theih chin china ui vulhtute ina len/kal loh hram duhna chhan a tling awm e. Tin, ui ngainatu tan pawh, ui mizia hriat chian loh chu nêl mai an harsa hle bawh.

A ni teh tak e. Kei ngei pawh hi kum eng emaw zat chhung chu ran chenpui, ui leh zawhte (companion animals) hriselna lam zir a, an damdawi leh chaw siamna hmuna hna ka thawh ve lawp

lawp hnuah, duh tawh mai lovin ka kut ngeia ui leh zawhte enkawl thlangin hun ka hmang ta zel a. Ui entir tura an rawn hruai reng reng, an tet lai leh an len hnuah an mizia ka hriat chian an nih ngawt loh chuan vawi khat mah ka khawihsak ngawt ngai lo. Fimkhur a tul tlat.

### Ui ä hri (Rabies)

Ui ä hri (Rabies) hi a hri vei mek (ui, zawhte, ramsa leh mihring) seh atanga natna kaichhawn theih niin, taksaa a lanchhuah tawh chinah chuan eng damdawi maha enkawl dam theih a ni tawh lo. Natna dang aia ngaih pawimawh a nih chhan chu, mihring nena natna inkaichhawn theih (zoonotic disease) a nihna chu thuhuran ni se, mihring nunna atana natna thibaiawm, hrehawm tak tuara thihna thlentunin, ran leh ramsa tam zawkin an vei leh inkaichhawn theih natna a ni a. A bik takin thingtlanga ui vulh, ram hnuai hruai thintin ui ä hri an kai theihna a sang bik - ui ä hri pai ramsa nena an insual atangin.

### Engtia inkaichhawn nge?

Ui ä hri natna kai tawh chil bawm (salivary gland) chhunga natna hrik inhâwrkhawm chu, an ngho/ha-ah bet telin, an sehna hmuamhmaah a lut tel thin a. Ui ä sehna hmuamhma atangin zawi zawiin hriatna thazam zuiin thluaka lutin awmhmun an khuar hnuah ui ä hri natna a lang chhuak mai thin.

Khawvel pumpuiah ui ä hri vangin minute nga dan zelah nunna an chan nia chhinchhiah a ni a. Tin, ui ä hri vanga nun chan za zela sawmkua pakua (99%) hi ui ä-in mihring a seh atanga kaichhawn a ni. Ui ä hri vanga mihring



nunna chan sawm zela pali hi naupang an ni bawk. Kan hriat tur pakhat: *Ui ä hri hi an seh (chil telin) ațang chauha kaichhawn niin, ui ke tinin an ham pilh ațang kaichhawn theih a ni lo.*

### **Uiin a seh hlahu che chuan...**

Eng amah hmam hlahuawng ngawt suh. Buai phili lovin heng hi tih hram ni se:

- i. Puibawmtu an awm emaw, awm loh hlahu paw'n, tui haw (*running water*) ngeiah sahbon hmangin ui sehna hmuamhma silfai tur a ni a. Thi chhuak a awm phei chuan thichhuak tır kha tuia tleuh fai ngei ngei tur.
- ii. Ui sehtu hri danna lak dan enfiah vat ni se; hri danna lak țhat a nih pawhin hridanna petu Vety Doctor hriatpuina lak phawt ni țhin se.
- iii. Mihring kan inang lo va. Hri danna a hun dik taka lak fel thlap pawh ngaih țha thei hauh lo leh hlahuawng an awm a. Heng tan hi chuan Medical Doctor pan vat a, Doctor-te thurawn zawm mai a him.

### **Engvangan nge a sehtu ui enthlak a țul kher?**

Uiin a ât vanga mi a seh a nih hlahu chuan, ni 10 chhungin natna vanga thi ngei tura ngaih a ni. A chhan chu, *ui ä hriin an thluak a khawih buai tawh avangan anmahni inthunun thei tawh lovin, an pute hial pawh an seh duh mai țhin a. Hetianga mihring emaw, ran dang leh an pi/pute ngei an seh ațang hi chuan ni thum emaw ni li hnuah an taksa a zeng (paralysed) a; tui takngial pawh in thei lovin, ni li ni nga chhungin hmuh hrehawm takin an thi mai țhin.*

### **Engtik hunah nge a lanchhuah?**

Ui ä hri veiin mihring a seh in thluak ațanga taksa peng, a sehna hlat dan azirin natna a langchhuak rangin a muang thei. Entirnan, ke zungpuia seh leh nghawnga seh chu, natna hrik thluaka lut thleng tur chuan a inthlau thei viau. Hei vang hi a ni, *'ui a hri chu kar khat ațanga kum khat hnuah pawh a lang chhuak thei'*, an lo tih țhin ni.

### **'Ti nge tui an hlahu?**

Ui ä hri veiin (ui emaw mihring) tui an hlau tih hi, tui an hlau tak tak ni lovin, *ui ä hri thlentu natna hrik (virus) kha an chil bawm (salivary gland) chhunga a inhâwrkhawm nasat vangan, chau/tui lemna puitu tihrawl (masticatory muscles) ho chet a buai ta țhin a. Ui a hri vei, taksa chau tawhten tui an in khan hrawk leh a chhehvel tihrawl inpawt khawngin a na em em a; kha a chih a, engmah lem a theih ta lo a. Chuvangan, tui in tur an hmuh ngawt paw'n, tui in vanga na an tawrh tur hre lawkin tui hlau niawm takin tui hlau hmel an lantir mai zawk a ni.*

### **Ui i vulh chuan...**

Ran an nih avangan vulh fing viauin inhre mah la, i awm loh lai emaw inthunun theih loh chang an nei thei - an bul vela thil thleng emaw, mi'n an chhah/fiam emaw vangan. Ui hian mi an seh in chhan hrang hrang a awm thei. Fiam an tum vanga an nghoin a bah/tai palh te, anmahni inven nana lo seh mai te, an taksa na an neih vanga tihnat an nih inrin vanga mi an seh te a tam ber a ni a. *Ui ä hri an vei vanga an seh erawh khawpuia ui vulh tam zawkah hian a vang viau thung.*

I phak tawh leh tlin tawh hria ang che. Tlangram awih leh hmun rem lo takah kan cheng a, a bikin Aizawl khawpui phei chu mihring chengte pawh kan chêpin ni tin lirthei inhnawh tawt reng renga kan buai laiin, ui pawh an pung ve zel a. India ram chhung mai ni lo, ram dang hla tak tak ațangin ui chi țha tak tak kan chah lut reng bawh.

Ui țhenkhat, chhungkua leh thenawm tana hnawksak lem lova in chhunga chenpui theih an awm laiin, țhenkhat erawh thahrui ngah leh tha za em em, an ni tin taksa mamawh insawizawipui ngai niin, an pianphung hrim hrim pawh hmun rualrem, zau țha taka cheng leh hun hmang tura taksa leh pianhmang nei an ni. Chuvangin, computer leh internet ațanga kan hmuh ang ringawt awta ui lei mai hi a fuh tawh lo thei. Ui kan lei hmain chhungkaw dinhmun, chenna in leh a vel, mahni ina cheng nge mi in luaha khawsa kan nih, kan țhenawmtan an ning ang em tih thlenga kan ngaihtuah lawk a pawimawh hle.

### Chhungkaw țangrual

Tu leh faten an duh leh an ngainat na na na chu nu leh pa, pi leh pute chuan an leisak leh mai țhin bawh a. Mahse, naupang leh țhalai tam zawk chuan, ran enkawl tak tak erawh an peih lem lo; a buaipuitu ber chu an nu leh pa, pi leh pute an ni fo.

Ran mah ni se, ui hian an pi leh pute mitmei, lawm leh hlim hmel, chetzia zawng zawng an hrethiam ve vek si a. Chenpuitu zinga an ui vulh ning em em leh eng emaw hleka kut thlak mai duhtu an awm te hi a țha lo khawp mai. Nunna

nei, ngaituahna leh rilru nei; mihring anga țawng thei lo an ni mai si.

*An pi leh pute (a enkawltu ber) an awm loh hlana ui thunun theih loh te hi thenawm khawweng tana ui ninawm chawrchhuahna hnar pakhat a ni a. A chang phei chuan chetsualna hial thlengin, mi dang laka pawisawina thlen mai bakah, ui seh hliam na tuar bakah sum leh pai senga inenkawl a țul phah țhin. A pawis hle.*

### Ui fiam/chhahih dan tawh thiam a țul

Ui kan ngainat vang ngawtin ui zawng zawngin min ngaina lêt kher lo. An chenna leh lalna ram (territory) chhungah ngat phei chuan him lova an inhria emaw, anmahni tina tur anga an hriat chuan inven nan mihring emaw ran dang beih let mai an ching ve fo. Chuvangin ui chinchang hriat chian loh leh an mizia hriat loh chhahih emaw khawih tum ngawt hi a him lo thei, fimkhur a țha.

A bik takin hemi chungchangah hian nu leh pa, fanu-fapa la naupang deuh neite tan fimkhur a ngai zual. Naupang chuan ui duhawm tak chu chhawmchhahih a, kuah mai te an ching țhin. Hetia ui thunun an tumna lamah hian, ui țhenkhatin hre thiam lovin an hap/seh mai țhin. A pawis hle.

Tin, kan hmelhriat leh kan nêl sa pawh, an dinhmun tawn azira fiam dan tawh kan thiam a țul tho. Kan hriatpui lohva na tawrh lai emaw, taksa nawmsam loh lai an nei thei; an sawi lang ve thei si lo va. An taksa na/nuam lo lai kan khawihsak emaw vangin min seh mai thei bawh.

**Ui ä hri danna (anti-rabies vaccine) lak eng nge a ñangkaina?**

Ui ä hri hi hri danna hmang chauhva ven theih, vei tawh erawh enkawl dam theih loh natna a ni. Ui ä hri vei rinhlelhin ui emaw, mihring emaw a sehin, a seh ni la lain hri danna pek tur a ni a. Hri danna lak chhonzawm leh enkawl zel dan erawh Doctor-te thurawn ang ngeia chhonzawm ñhin tur a ni.

Ui natna kan hriat lar ber leh hri danna kan pek tam ber chu ui ä hri hi a ni a. Sawrkar paw'n ngai pawimawhin Vety department kaltlangin man tlawm zawkin ui ä hri danna (*anti-rabies vaccine*) hi an pek bakah private clinic hrang hrang paw'n an pe ve reng baw. Ui ä hri venna lak ñhat si a, uin a seh palha hri danna man chawi leh tho si hi insen thlawna mai mai a ni lo'm ni ti an awm ta nawk mai.

Hri danna hian ui ä hri vanga thihna a ven bakah hri inkai chhawng zel tur a veng thei. Chuvangin, a hun taka hri danna lak hi ui vulhtuten kan tih ngei tur a ni. Zawnha lar ber leh chhanna pawm har tak a ni. Hei erawh hria ila: *Ui ä hri venna kan chiu hi uin mihring a seh hrim hrim vengtu a ni lo va, ui ä hri laka vengtu a ni.* Mahse, uin mi a seh zawng zawng vengtu a ni lo tih erawh hre nawn ang u. Ui kan vulh duh a nih chuan hri danna lak hi kan mawhphurhna a ni a, tin, mi dang tana hnawksak lo turin kan enkawlin kan thunun ngei tur a ni.

**Local Council mawhphurhna**

Aizawl khawpui chung kan sawi lo thei lo va. Ui vulh leh khuahhirh dan chungchangah hian AMC lahin an mawhphurhna leh hmalakna turah an

ngai chiah lo pawh a ni mahna. Veng ñhenkhatin dan khauh tak mai zamin, ui vulhtu leh ngainatu tan pheih chuan 'an ti mah mah lo maw' tih tur hialin. Chutih rualin, veng ñhenkhatin erawh hmalakna awm lo tlukin ranvulh an chhuah zalen thung si a. Aizawl khawpui veng laili ñhenkhat kawngpui leh kawngsira ui êk tam lutuk te hian ui vulhtute hmasawna mamawhzia a tilang chiang hle awm e. Hmalakna ñha leh rual tlang zawk chu Aizawl khawpui hian a mamawh tak zet a ni. Hawh u, kan him tlan zawk nan hma i sawn zel teh ang u.

**Eng pawh ni se...**

Kan sawi lan tawh ang khian, uin mihring a seh chhan tam tak a awm a; *ui ä hri veiin mi a seh thung chuan a vulhtu leh a pu ber pawh thliar hrang thei tawh lovin a seh mai ñhin, natna hrikin a thluak a tihbuai/thunun tawh vangin.* Chuvangin, ui seh nazawng hi hlauh ngawt tur a ni lo va, mahse ui chanchin hriat chian lohin min seh a nih erawh chuan Doctor rawn vat ñhin ni se.

Aizawl Civil Hospital Record section añanga thu dawn danin, kumin chung hian ui seh avanga Casualty thlang mi 100 chuang an chhinchhiah tawh na a, chung zingah chuan ui ä hri vei ta emaw record a awm lem lo! Ui leh mihring tan hri danna (*Ui tan kum tina chiu leh, mihring tan seh hnua chiu*) kan lak ñhat vang a nih theih rualin, ui ä hri hi khawpui chungah ui vulh zingah hian a tam lem lo niin a lang, a awm lo chu a tih theih hauh lo ang a. Chuvangin, ui seh palh vanga hlauhthawn em em ringawt hi a ñul ber lo va, mi tin erawh kan fimkhur a ñul thung. Thufingin, *'Tihdam aiin inven a ñha'* a tih kha.



# Medication Therapy Management (MTM)

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## INTRODUCTION

Mizote zingah natna benvawn nei, enkawl harsa leh khirkhkan tak tak kawl kan tam ta hle mai. Zunthlum leh Bp sang te pawh milian natna kan tih thin kha, tunah chuan chhungkaw tin deuhthawin kan kawl ta. Kum upa leh naupang, thalai a thliar tawh bik lo. HIV positive leh cancer kan pung telh telh bawk nen. Kum upa, thalai leh naupang thlenga Bp sang damdawi ei ngai, dam chhunga ei tawh tur kan awm ta nawk mai. Kal tha lo, ruhseh, cancer, HIV kan pung tial tial bawk nen. Kan ram zim te hi damdawi siam chhuahna ni loin damdawi ei ralna hmunpuiah kan siam chu a ni deuh ber tawh chu a nih hi. Heng kan han tarlan tak natnate enkawl tur chuan damdawi pahnih khat ei mai a lo tawh thin lo a, sawm chuang dawn lai, a aia tam thleng pawha damdawi ei ngai te a lo nih tawh thin avangin leh, heng damdawite hi fimkhur ngai tak tak leh en zui ngai te mai bakah side effect ngah leh damdawi dang mai pawh ni lo, kan ei leh inte nen thlenga inhal thei te an nih avangin fimkhur an ngai leh zual em em a. Damna dawit tura kan hman kha thihna dawiah an chang thei reng a ni tih kan hriat a tha awm e. Chuvang chuan kan damdawi hman kawnga kan fimkhur deuh deuh a, kuhva khawr lei anga lei a, duh hun huna ei mai mai chi a ni lo tih kan hriat a tul tawh takzet a ni.

## MEDICATION THERAPY MANAGEMENT CHU ENG NGE?

Medication therapy management-in a tum ber chu damloten an damdawi ei leh hman chungchanga hriat tur pawimawh leh kimchang, chiang leh mumal zawk, dahthat a, a tul hun apianga en let zung zung theih tura ziaka inhrialfiahna a ni ber a. Damloten a him thei ang ber leh tha thei ang bera treatment an lak hi a tum ber

pakhat chu a ni. Kan hriat si loh, kan damdawi ei avanga tawrhna hi a tam em em a, damdawi hman dik loh avanga thihna hial thleng pawh sawi tur a awm nual tawh a ni. Chutiang taka hman fimkhur ngaite an nih avangin, engvanga kha damdawi kha hmang nge kan nih a, a ei dan tur leh ei hun chhung tur thlenga chiang zawk leh zia ngeia inhrilhriatna a ni a. Chu mai bakah, a damdawi ei laiin a thlen theih side effect awm theite leh damdawi inhal, taksa tana paw theite ziah lan vek thin niin, damdawi inhal thei pawh a kar awl tlemte siama ei mai theih an nih dante thlenga inhrilhriatna a ni a. Damdawi thenkhat chu kan electrolytes level tisang/tihniam thei te, chutiang bawkin blood pressure, glucose level, kidney function, liver function, heart rhythm khawih danglam theite an nih thin avangin hman fimkhur an ngai em em a. Monitor tur pawimawh zual bik, a damdawi azira inhrilhriatna thlengin MTM hian a tum chu a ni. Hei hian damlote inentir tura an kal leh hunah pawh doctor-ten awlsam zawka treatment an siam theih nan nasa takin a puil mai bakah a hlawkna tel tur chu mipuite/damlote baw an nih dawn avangin mipuite hriselna kawngah leh kan damdawi hman kawngah nasa takin hma kan sawn phah ngeiin a rinawm a ni.

### **TUTEN NGE MTM SERVICE HI PE THEI?**

Medication Therapy Management hi ram changkang zawk leh healthcare system changtlung zawk USA, UK, New Zealand, Australia, Canada, etc.-ah te chuan tha takin an lo practice tawh a. India ramah pawh kum 2016 khan hemi chungchang pilot study hi Dr. Narahari M.G., Associate Professor, Deptt of Emer-

gency Medicine hnuaiiah JSS Medical College Hospital, Mysore-ah neih niin a hlawhtling hle a. Kan rama damlo, natna khirh tak tak vei tamzia leh damdawi kan hman nasatzia ngaihtuah chuan he MTM hi kan mamawh hlein a hriat a. Hemi hna thawk thei tura ram changkang zawkten an hman tangkai ang baw Doctor of Pharmacy (Pharm.D.) zir chhuakte kan nei ta nual bawk nen. Heng mite thiamna hi kan hman tangkai a, kan rama Pharmacy Profession chawisan nan leh kan healthcare system-in hma a lo sawn lehzual nan a tangkai dawn em em a ni. MTM hi Clinical Pharmacist/Consultant Pharmacist Licence neiten an pe thei a. Clinical Pharmacist ni tur chuan Doctor of Pharmacy (Pharm.D.) emaw, Ph.D. Pharmacy Practice an ni tur a ni a, Pharmaco-Therapeutics expert mai bakah hospital experience nei an ni tur a ni.

### **TUTEN NGE MAMAWH?**

- Damlo, damdawi 5 leh a aia tam ei te.
- Damdawi side effect ngah leh fimkhur ngai zual ei te-ah.
- Hun rei tak chhung damdawi lo ei tawh, a natnain a ziaawm phah chuan si lohah te.
- Doctor hran hran pan thin te-ah.
- Drug regimen (eg. Anti-viral drug, anti-cancer, anti-hypertensive, etc.) thlaksak an nihin.
- Kum upa lam damdawi ei nasaah.
- Hospital aṅanga chhuakte mai bakah, hospital-a awm laiahte pawh doctor-in a ṅul a tih chuan.
- Nu, naupai mekte damdawi eiah.
- Damdawi leh túr (poison) lama hriat chian duh nei te-ah ☐

# Ramhmul/Mizopa/Tualto Damdawi Leh Tunlai Damdawi (Allopathic Medicine) Inkungkaihna

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**R**amhmul damdawi hi hmakhawsang aṅanga hnam tinten damlohna chi hrang hrang enkawl nan an lo hman ṭhan ni mah se, thiamna sang zelah mipui nawlpui hian kan ngainep chho ta zel emaw tih tur a ni a. Zopa-in, 'He hnim hi chumi khami natna damdawiah a ṭha a nia,' an han tihte hian, ṭhalai tam zawkte hi kan nuih a za ta lek lek ṭhin niin a lang. Tam tak chu lem tak takte leh mi bumnate pawh a lo awm theih ṭhin rualin a lo ṭhat ngei theihna chance pawh a tam viau tho tih hria ila. Tun thleng hian WHO-in Basic and Essential Medicine list (damdawi pawimawh zual bik list) a siamah damdawi 252 an awm a, chung zinga za zela sawmpakhat (11%)-te





chu ramhmul aṅanga lakchhuah an ni a. Tun kum 30 chhunga damdawi thar, mihring natna enkawl nana an pawm thar za zela sawmnga (50%)-te hi ramhmul aṅanga lakchhuah an nih loh pawhin ramhmul aṅanga lakchhuah, an khawih danglam leh an ni.

Tunlai chhanah kan damdawi ṅha antibiotic-ten (tun hma aṅanga kan lo hman sual nasat tawh avangin) natna hrik tam tak an tihlum hlei thei tawh lo va. Heng natna hrik tuarchhel (super bugs) lo do lētna atan hian damdawi thar hmuh chhuah tuma beihna a nasa hle a ni. Mizoram hi biodiversity hotspot-a kan awm avangin thil nung chi hran hran kan ngah em em a, ramhmul damdawi ṅha tak, la zir chian lem loh, Mizo zirnite tana zir nahawm tak takte a la awm ṅeuh a rinawm a. Kan ram leilung hausakna hi zir chian an nih theih nan a theih anga hma lo sialtu kan ni ṅeuh thei a. Chumi atan chuan kan hma zawna kan thiamnate mi dang tan phawrh ui lova inpuih tawn zel a pawimawh em em a ni.

Tunlai damdawi kan tih mai, allopathic medicine tam tak (tablet, capsule, etc.) hi ramhmul damdawi an lo hman aṅanga a ṅha tih an hriatchhuah leh an lakchhuah a tam mai a, chung lar zual tlemte chu han tarlang ila:

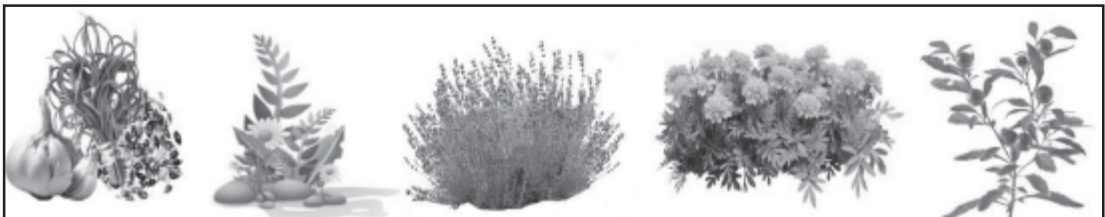
**1. MALARIA DAMDAWI:** Malaria damdawi lar tak kha thing chi khat, Cinchona ledgeriana háwng (bark) aṅanga

lakchhuah a ni. He thlai aṅang bawk hian lung lam damdawi (antiarrhythmic drug), quinidine chu lakchhuah a ni bawk. Malaria damdawi dang ṅha tak, Artemisinin pawh hi thlai, Artemisia annua aṅanga siam a ni.

**2. CANCER DAMDAWI:** Cancer damdawi ṅha tak pahnih, vincristine leh vinblastine hi Kumtluang kan tih mai, Vinca rosea (Madagascar periwinkle) aṅanga lakchhuah a ni. Vincristine hi thisen cancer enkawl nan hman lar a nih laiin vinblastine hi phîng, thluak leh thil dang enkawl nan hman ṅhin a ni. Cancer damdawi dang taxol pawh hi Taxus brevifolia thing háwng (bark) aṅanga lakchhuah tho a ni. Heng bakah hian cancer damdawi dang teniposide te, topotecan, podophyllotoxin te hi ramhmul damdawi aṅanga lakchhuah vek an ni.

**3. NA CHHÂWKNA:** Opiod analgesic an tih mai morphine, tramadol, codeine, fentanyl te hi opium thlai, Papaver somniferum aṅanga lakchhuah an ni. Ephedrine lah thlai chi khat, Ephedra sinica aṅanga lakchhuah a ni bawk. Salicin, na chhâwkna, khawsik sang damdawi pawh hi thing chi khat, White willow aṅanga lakchhuah a ni. Local anaesthetic, cocaine pawh Erythroxylum coca thlai aṅanga lakchhuah a ni bawk.

**4. LUNG LAM DAMDAWI:** Digitalin, digoxin leh digitoxin te hi ramhmul, Digi-





talis purpurea (purple foxglove) aṅanga lakchhuah an ni a, acetyl digoxin leh deslanoside te hi Digitalis lanata aṅanga lakchhuah an ni thung.

**5. ZUN TAMNA (Diuretic):** Theobromine leh theophylline te hi Theobroma cacao thlai aṅanga lakchhuah an ni.

**6. THISEN SANG DAMDAWI:** Thisen sang damdawi lar tak, reserpine leh rescinnamine te hi ramhmul damdawi, Rauwolfia serpentina aṅanga lakchhuah an ni.

Hengte hi a lar zualte an ni a, heng lo pawh khi tam tak a la awm tih hriat tur a ni. Heng damdawi chak tak takte hi thlai, tunlai ṅawng takin 'natural' aṅanga siam an ni a, hman thiam loh chuan hlauhawm tak tak vek an ni thung a. Tam takin, hei chu thlai aṅanga siam a ni a, chemical tel lo, hlauhawm loh an tih hi awih loh tur a ni bawk. Heng kan damdawi tarlante hi chemical vek an ni a, thlai tinte hian

chemical compound chi hrang hrang an pai ṅeuh tih hriat tur. Chemical a awm loh chuan side effect awm lo, effect pawh awm lo tihna a ni mai.

Ramhnim thlaite hi damdawi ṅa tak tak lakchhuah nan engtin nge hman nachang an hriat kan tih chuan, an pi leh pute aṅanga an rochun, ramhmul damdawia an Zopa hriatna kha an hmang ṅangkai a ni. Chuvang chuan ṅhalai lehkhia thiam zawkte hian kan Zopate thiamna hi sirah hnawl lovin, zir chian tumin thawkho zawk ila, rah ṅa a chhuah zawk ngei ka beisei a. Amaherawhchu, heng Zopa damdawi kan tihte hian, a siam hun azir te, a siamtu azir te, a thlai lak hun azir te, a siamna atana hmanrua an hman, an dah rei chung azir tein an danglam nasa viau thei tih hriat tur a ni a. Tunlai thiamna nen ṅangkawpin, heng kan ramhmul damdawi tam taka Zopa hriatna hi hma kan sawntir thei a ni.



# Northeast India-a Pharmacy Zirna Hmasawn Dan

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Lalduhsanga Pachuau  
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**K**um 1930-a Drugs Enquiry Committee dinin report an pek hnuah India rama Pharmacy zirna leh Pharmacy hmanga eizawna (profession) hmasawna turin hma nasa taka lak a ni a. Khatih hun laia damdawi siamna leh a zawrh chhuah dan khuahkhirhna tha taw lo avang khan damdawi lem leh damdawi him taw lo a tam avangin mipuiten harsatna an taw nasa hle a ni. He enquiry committee-in kum 1931-a report an thehluh hnu lawkah Banaras Hindu University (BHU)-ah B.Sc. (Pharmaceutical Chemistry) course zirna chu Prof. M.L. Schroff-a'n bul a tan ta a. Kum 1937-ah BHU-ah baw hian India rama B.Pharm zirna hmasa ber bul tan niin, India-in independence kan hmuh hmian B.Pharm zirna hi hmun thum - BHU, Punjab University leh LM College of Pharmacy, Ahmedabad-ah te a lo awm tawh a ni. Kum 1940-ah Drugs and Cosmetics Act passed zui a ni a, 1948-a Pharmacy Act kan neih hnu phei chuan Pharmacy zirna leh eizawna hi mumal takin kalpui chhoh a ni ta a ni. Hetianga India ram hmun danga Pharmacy zirnain hma a sawn chhoh zel lai hian Northeast India-ah erawh hma a sawn chak meuh lo thung.

## **Pharmacy zirnaa thuneitute**

India rama Pharmacy zirna khuahkhirh a, thununtu hi pahnih a awm a. Pharmacy Act 1948-in thuneihna a pek angin, Pharmacy College-te chung a thuneitu ber chu Pharmacy Council of India (PCI) a ni. PCI hi Pharmacy zirna hawn phalna leh phalna a pek tawhte pawh sut leh thei a ni a. PCI-in a pawm ngei Pharmacy College atanga zir chhuakte chauh Pharmacist ni tura ziah luh, register theih an ni. Pharmacy zirna hi technical course a nih angin All India Council for Technical Education

(AICTE) hian Pharmacy zirna atana mamawh leh zirlai chungchangah thuneihna a nei a. Class room zau zawng te, zirlai zat mila zirtirtu awm tur zat thlenga kaihhruaina dan a nei a ni. PCI leh AICTE bakah hian Degree petu University leh Diploma chinah state sorkar-a technical education department-ten thuneihna thui tak an nei bawh. Heng roreltu/council kal tlang lo chuan Pharmacy zirna in din ngawt theih a ni lo a ni. Tin, India rama Pharmacist ni tura inziaklut tur hian D.Pharm emaw, B.Pharm emaw, Pharm.D. emaw thiamna nei chauh phal a ni a. Heng thiamna eng emaw ber nei an nih loh chuan tumahin Pharmacist hna an thawk thei lo a ni.

### **Northeast India-a Pharmacy zirna hmun hmasa**

Northeast India-a Pharmacy zirna hmasa ber ni turin kum 1962 khan Assam Medical College hmunah Diploma in Pharmacy (D.Pharm) zirna, Institute of Pharmacy, din a ni a. Mizote zinga Pharmacist senior kan neih thahnem takte hi he hmun aṅanga D.Pharm. zir chhuak te an ni. Hemi hnuah hian Silchar Medical College leh Gauhati Medical College-ah te D.Pharm zirna hi hawn chhunzawm a ni a. Tin, kum 1979 aṅang khan Regional Pharmacy Institute (RPI) chu D.Pharm zirna atan Agartala hmunah hawn a ni a. RPI hi 1997 khan Regional Institute of Pharmaceutical Science and Technology (RIPSAT) tia thlak a niin B.Pharm zirna hawn tel zui a ni bawh. Heng bakah hian Himalayan Pharmacy Institute (HPI), Sikkim leh RIPANS, Aizawl-ah te D.Pharm zirna hawn a ni bawh. Heng Institute hrang hrang aṅang te hian vawiina kan phar-

macist senior leh thiam tak takte hi an lo inzir chhuak a ni.

B.Pharm leh M.Pharm course te hi Dibrugarh University, Assam aṅanga bul ṅan a ni a. Kum 1983-ah Northeast-a B.Pharm zirna hmasa ber chu Dibrugarh University-ah ṅan a ni a. Hetiang bawh hian Dibrugarh University hian 2002 khan Northeast-a M.Pharm zirna hmasa ber a hawng bawh a ni.

### **Tun dinhmuna Degree course chin zirna**

Kum 1983-a Dibrugarh University-in B.Pharm zirna a ṅan hnu hian hun rei tak chhung chu Northeast-a B.Pharm zirna in awm chhun a ni a. State hrang hrang ten quota neiin zirlai an t̄ir ṅhin a. 1997-ah RIPSAT, Agartala leh HPI, Sikkim ten B.Pharm zirna hawng lehin 2004-ah RIPANS, Aizawl-ah B.Pharm zirna hi bul ṅan a ni bawh. Tun hnuah Girijananda Chowdhury Insitute of Pharmacy (GIPS), Guwahati, Assam University, Silchar leh Assam Downtown University, Guwahati-ah te hian B.Pharm a zir theih ta bawh a. Tun dinhmuna hian Northeast-ah M.Pharm zirna hmun 5, Dibrugarh University, Assam, RIPANS, Aizawl, Tripura University, Agartala, GIPS, Guwahati, leh HIP, Sikkim-ah te M.Pharm a zir theih mek a ni. Northeast-a state 4, Arunachal Pradesh, Manipur, Meghalaya leh Nagaland-ah te hian Pharmacy zirna in a awm lo thung.

AICTE leh PCI data aṅangin Northeast-a Pharmacy Institute hrang hrangten B.Pharm zir tur kum khata an admit theih zat hi zirlai 408 a ni a. M.Pharm zir tur an admit thar theih zat belhkhawm hi 175 a ni thung. Hetiang a nih avang hian Northeast-a B.Pharm zir

chhuak, M.Pharm zir duh 50% aia tam hian Northeast chhungah admission an chang thei dawn lo tihna a ni. Zir zawm duhte chuan khawpui dangah an zirlai an chhunzawm a ngai a, zirlai tam tak, sum leh pai avanga harsatna nei, zir chhunzawm thei lo an awm mek a ni.

India ram state lian zawkte nena khai khin chuan Pharmacy zirna in hi Northeast-ah hian a la tlem hle a. Maharashtra state chhungah ringawt hian AICTE-in a pawmpui B.Pharm zirna institute 233 a awm a. Kum 2011 census aṅanga chhut chuan Maharashtra state-a mipui nuai 5 (5 lakhs) zelah B.Pharm institute pakhat awm ang a ni a. North-east-ah erawh chuan mipui nuai 50 (50 lakhs) zelin B.Pharm zirna in pakhat kan inṅawm ang a ni.

### Tlângkawmna

Pharmacy institute-te hi damdawi leh hriselna kaihnawih thiamna nei tura mi rintlak chherchhuahna hmun a ni a. Tunlai khawvelah damdawi chi hrang tam tak a rawn chhuah mek bakah, a siam dan leh hman dan thar a lo awm zel avang tein damdawi lam thiam mamawhna hi a sang chho zel dawn a ni. Kan changkan ang zelin damdawi siam leh zawrh chhuahna lam khuahkhirhna dan te khauh zawka kenkawh a ni zel bawk a, nakin lawkah chuan hetiang lam thiamna nei chauh

tan lo chuan he profession-ah hian lo tel ve a rem lo ang. Tin, mipuite pawhin Pharmacist-te thiamna hi an chhawr ṅangkai chho mek bawk a ni. Heng piah lamah hian Northeast hmunah ngei, Guwahati leh Sikkim-ah te damdawi siamna hmunpui, Pharmaceutical Industry lian tak tak din a ni mek a. Heng Industry-ahte hian Pharmacy zirchhuakte tan hna a inhawng chho mek bawk. Mahnia eizawmna bul ṅan (entrepreneur) tum tan Pharmacy course kal tlang hian thiamna/skills zir chhuah tur tam tak, entirnan, foods leh cosmetics lam thiamna pawh, a inphum hnem hle. Hengte hi hai chhuak a, mahni kutkawih ngeia ei zawng duh tan chuan hma lakna tur a tam hle a ni.

Northeast India hi ramhmul damdawi leh a hman ṅangkaina kawnga thiamna (Traditional system/practice) neiḥ ṅhatna hmun a ni a. Heng ramhmul damdawi hausakna hai chhuak a, a tak taka zirbingna, research nei tura thiamna leh training nei chu Pharmacist-te hi an ni. Damdawi ṅha lo leh ruihhloin a paltlang fona hmun chu Northeast India hi a nih miao avangin, damdawi hmansual laka mipuite venghim turin Pharmacist-te hi an pawimawh hle mai bawk. Chuvangin Pharmacy zirna in ṅha leh changtlung tam zawk, mithiam leh hmantlak chherchhuak tur hi Northeast India hian a mamawh belh viau lo maw?



# Damdawi Chungchanga Hriat Tur Pawimawh Thenkhat

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**T**un ÷umah hian damdawi chungchanga kan hriat leh zawm tur pawimawh tak takte ka rawn sawi dawn a ni.

A hmasaberin ‘damdawi’ kan tih hi eng nge a nih tih tawi tein han sawifiah phawt ta ila. Hmasang kan Mizo hmasate khan a hming pawh hi an lo phuah thiam khawp mai a. Dam leh hrisel taka kan awm a, natna enkawlna leh natna laka kan fihlim theihna hmanrua, natna hmuhchhuahna, natna laka min veng theitu, dawí ang maia hnathawk thei thil a nih avanga ‘damdawi’ tih hming an puttir hi a inhmeh hle a ni.

Damdawi hi damdawi a nihna chhan chu mihring taksa emaw, taksa chhunga natna hrik emaw kha damdawia chemicals-in a that emaw, a tidanglam thei a; hei vang hian chemicals kha damna thlen theitu, a hming ‘damdawi’ lo ni ta a ni. A nihna takah chuan a tawk tea hman chuan damna, a tawk chiah aia tam deuh a nih erawh chuan tichhetu a ni hlauh thei thung a ni. Heta a tawk chiah kan tih hi damdawi ei zat tur bithliah (dose) kan tih hi a ni.

Damdawi chungchanga kan hriat tur pawimawh tawi te tein han sawi ila.

1. Damdawi dose chungchang hi sawi hmasaber ta ila. Dose kan tih chu damdawi ei emaw, in emaw, inchiu a ni emaw, vawi khata hman zat tur bithliah a ni mai a.

Damdawite hi damna thlentu an ni a, an pawimawh em em laiin kan thih theihna leh kan taksa awlsam taka tichhe mai thei a ni tih kan hriat a ÷ul hle a. Chuvang chuan taksa tidam thei tawk tur kha chhutchhuah lawk vek a ni a, taksa tichhe lo thei ang ber turin a hman dan siam a ni ta ÷hin a ni. Mahse vawi khata miin a ei/hman vak chuan taksa na

lai tidam mah se, taksa peng dangah thil tha lo a thlen thei thung. Hengte avang hian wawi khata mum 2, mum 3 ei maite hi kan ching tur a ni lo a, ei dan tur hrilh kan nih ang thlapin kan ei tur a ni.

2. Damdawi ei hun chungchangah lut ta ila:

Dawktawr hnenah kan inentirin kan natna azirin damdawi chi hrang hrang hman kan ngai thin; damlo pakhatin damdawi chi khat aia tam kan hman a ngaih chang a awm fo. Damdawi ei hun chungchang hi tha taka kan vawn a pawimawh hle. Damdawi kan eia kan taksa hna a thawh theihna tur chuan, damdawi khan kan thisen zama a luh a ngai a, chumi tur chuan kan pumpui leh ril te a kal tlang a ngai phawt thin a ni. Hemi avang tak hian kaw ruah lai chauha ei chi damdawi a awm a, thenkhat erawh kaw ruah laia ei miah loh tur an ni thung.

Hei hi a chhan chu chaw hian damdawiin kan thisen zam a luh hun a nghawng theih vang a ni. Tin, damdawi thenkhat erawh chuan kaw ruah laia kan eiin pumpui leh taksa peng dangah harsatna a thlen thei a, chutiang damdawi chu chaw nen emaw, chaw ei khamah chauh ei thung tur a ni. Tin, chaw ei kham kan tih hian minute 10 atanga 15 tal nghah thin hram tur a ni.

Damdawi ei hun vawn dik a pawimawhna dang leh chu, damdawi chi khat aia tam a ruala kan ei hian damdawi nghawng tha lo emaw, damdawi hnathawh tur anga thawk lo a awm phah thei a. Hei hi damdawi zawng zawngah ni vek lo mah se fimkhur a ngai hle a ni. Damdawi pakhat aia tam kan ei dawn a nih chuan damdawi lama thiamna nei Pharmacist emaw, doctor te rawn hmasa

thin ila, rawn mai tur an awm lo a nih chuan kan damdawite chu darkar chanve atanga darkar khat danah tal ei thin tur a ni.

Damdawi hi a course dik thlapa ei a pawimawh thu kan hre tawh awm e. Kan damdawi hmante hi thisenah kan taksa mamawh tawk a chambang reng tur a ni a, a tam lutuk erawh chuan a pawi thei hle. Hei vang hian darkar bithliah thlapa ei thin tur a ni. Ni khata wawi hnih ei a nih chuan darkar 12 danah ni se, ni khata wawi thum a nih chuan darkar riat danah; chutiang zel chuan bithliah mumal tak siama ei thin tur a ni.

Damdawi ei hun leh kan damdawi ei chungchang hrim hrim kan hriat chian hi damlote chanvo leh mawhphurhna a ni a, chuvang chuan damdawi min chawhtu doctor-te leh damdawi enkawltu pharmacist-te chiang taka zawhfiah thin tur a ni. Doctor-te leh pharmacist-te pawhin an mawhphurhna a ni tih hriain damlote hnenah damdawi chungchang fiah fai takin a hrilhfiah thin tur a ni.

3. Mi tam tak chuan mahnia damdawi inchawh mai kan la ching hle. Thenawm nu damdawi hi mahni tan kan la hmang uar hle mai a, hei hi thil tha lo tak a ni. Natna hi a lanchhuah dan inang tak anga lan chang awm thin mah se, natna awm chhan kha a dang daih thei tih hriat a tha. Hei vang hian doctor-in damlo hnena damdawi a chawh reng rengin a nat chhan tihbo kha a tum a ni fo thin; chuvang chuan kan nat chhan hre chiang si loa kan nat ang deuhva na vete damdawi kan lo ei ve ringawt hi a pawi thei hle. Khawvela mihringte zingah hmel leh pianphung inang chiah chiah kan awm lo ang chiah hian, kan taksa chhungril pawh a danglam theuh a ni.



Hei vang hian mi chi hrang hrang taksain damdawi a lo dawnawn dan leh damdawi hnathawh lanchhuah dan pawh a danglam phah thin a, damlo natna leh damlo azirin damdawi hman tur bik, a dose, ei hun chhunte a danglam thluah thin a, mahni thua lo ei ve ngawt thin loh tur a ni. Tul miah lova damdawi kan ei hian kan taksa kan tihchhiat zual phah theih mai bakah, tul lova pawisa senralna mai a ni tih hriat a tha hle.

4. Chhungkaw tinin damdawi pakhat tal inah kan kawl theuh awm e. Kan damdawi kawlte hi dik taka kan wawn that a pawimawh hle a ni. Damdawi hi a nih dan tur anga wawn that a nih loh chuan a chakna a tlak hniam phah theih avangin a hnathawh tur ang thawk pha loin a awm phah thei a. Hei mai bakah hian damdawi vawnghimtu 'preservatives' an tihte hnathawh a tlak hniam phah a, damdawiah natna hrik a awm phah thei a ni. Chuvang chuan a tlangpuin ni sa em mai theiha dah loh tur a ni a, hmun hnawng emaw, tuin a tihhuh mai theih lohna hmunah dah thin tur a ni. Tin, damdawi zawng zawng hi fridge-a dah tur emaw kan ti fo thin. Fridge-a kan dah avang hian fridge chhung boruak vawt tak avangin damdawi kan tikhawlo vek thei zawk a ni. Ina kan kawl damdawi tlanglawn tam ber hi chu hmun hul, ni sa em theih loha dah mai kha a tawk em em a, naupang ban phak loh, chhuar chhung emaw, hmun remchang dangah dah thin tur a ni.

5. Mihring pawh kan kumhlun lo ang chiah hian damdawite pawh hian thih hun an nei thin tih kan hre theuh awm e. Damdawi hi a thih tawh chuan ei loh tawp tur a ni. Hei vang hian Kan damdawi kawl zingah thi (expired) tawh a awm a

nih chuan rang taka paih thin tur a ni. Damdawi mum a nih chuan a tuamna atanga la chhuakin thil ei chakawm loh, entirnan, thingpuife hman hnu emaw, chirhdiak nena pawlhin tha taka fun hnuah bawhlawh bawmah paih mai thin tur a ni. Hei hi a pawimawhna chu, kha damdawi thi tawh hnu kha mi dangin emaw, naupangin hmun danga an lo chhar palh pawha ei tichakawm lo tura siam a ngaih vang a ni. Kum rei vak lo kal taah pawh khan khaw pakhatat damdawi thi tawh chu a hlawmin a tuamna nen paih a ni a, naupangten chu damdawi chu an lo ei avangin harsatna duhawm lo tak a thlen phah tawh a ni. A tui lam chi a nih chuan kawr velah leih baw mai loin, êkin commode-ah leih buak mai thin tur a ni.

Kan damdawi thi tawh hnu funna kawr chu kan paih nghal mai loh va, thil dang dahna atan kan hman duh a nih chuan a kawr, damdawi chungchang inziak (labelling) kha tichhiain kan thil dah kha eng nge a nih tih kan ziak thung tur a ni. Hei hi a pawimawh hle a, hman kum lawk khan tui-amah mitthi ruang tawih lohna (formaldehyde) dah chu tui emaw tia in palh avangin nunna hlu tak kan chan phah tawh a nih kha.

Awle, damdawi chungchanga kan hriat tlan tur ka ngaih pawimawh zual tlem te chauh ka'n sawi a ni a, kan sawi takte kha ngai pawimawhin zawm tum hram i la, fimkhur leh dik taka damdawi hman hi mi zawng zawng mawhphurhna a ni. Damdawi chungchangah hriat fiah duh kan nei a nih chuan Drug Information Centre, RIPANS emaw, kan bul hnaia Pharmacist-te kan rawn thin dawn nia □



# Damdawi Chungchang Kan Hriat Fuh Tawk Loh Thenkhat

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**Pumpui Chakna:** Damdawi kan hman nasat ber zing ami chu Mizoten 'pumpui chakna' kan tih mai hi a ni awm e. Pum ṭha lo enkawlna atan hian damdawi chi hrang hrang, damlo dinhmun azirin hman a ngai ṭhin a, a ei hun, ei hun chhung leh ei dan tur pawh damlo leh damdawi azirin a danglam nawk a ni. Pumpui chakna hi kan uarin kan ei nasa hle a, amaherawhchu mi tlanglawnin pumpui chakna tia a hming kan vuah hi a dik hlel deuh a, Mizo ṭawng hi a la naupangin a la hausak tawk loh vangte pawh a ni ang. Pumpui chakna tia kan sawi zingah hian pumpuia chaw pai ṭawihna atana ṭangkai em em thur/ acid (HCl) insiam tur dangtu *proton pump inhibitor*, *pantoprazole*, *omeprazole*, *rabeprazole*, etc. ang chi leh pumpui thur pawlh daltu *antacids*, *sucralfate*, *magaldrate*, *aluminium hydroxide*, etc. a awm a, company brand kan hriatlar zingah chuan digene, ulgel,

oxygel tih ang chi hi kan huam tir vek mai a. Pumpui chakna anga kan hriat miau avangin mi tam tak chuan chaw eikhamah te kan tlak leh pup mai thin. Anihna takah chuan pum thalo tan pum hnathawh, thur siamchhuah tihniamtu leh pawlh daltu, pumpui hnathawh tichaklotu a ni zawk a, chu chu pum thalo nei tan a tangkai em em a ni a, heng damdawite hi kawruahlaia ei tura duan a ni (*dexlansoprazole* tihloh chu).

A hming pu zo leh dik chu pumpui chakna ti a kan sawi thin zing ami tho chaw paitawih puitu, *digestive enzymes* ho a ni thung a, chutiang erawh chu chaw eikham velah ei thin tur a, hei pawh hi a siamtu company a zirin sumdawinna hming hran hran an nei a ni.

**Nachhawkn:** Hei pawh hi kan hmang nasa khawp mai, nachhawkn tih mai chuan a huamzau thei em em a, paracetamol atang morphine thlengin a

huam thei. Mi tlanglawnin nachhawkna kan tih mai hi chu *NSAIDs* damdawi ho hi a ni a, *paracetamol*, *diclofenac*, *aceclofenac*, etc te hi a ni. Hei pawh hi damlo leh a natna a zira hman tur a ni a, na zawng zawngah ei tur a ni chuango. A hnathawh kan duh lutuk a, na a awm reng kan duh silo pumnaah te mi thenkhat chuan ei mai kan ching thin, hetiang nachhawkna ho hi pumin a haw em em zawk tih hriat a tha hle a, pumna enkawl na atan chuan damdawi dang daih hman a ngai zawk thin. Tin *NSAIDs* nachhawkna tam zawk hi pumin a huat avangin kawruakah eiloh a him ber a, loh theihloh a kawruaka ei a ngai a nih chuan tui thianglim no hnih/thum tal nen ei/ in thin tur a ni. Tin tunlaiin mi tamtakin zu an in a, zu in tuk pentawng (*hang-over*)-ah *paracetamol* mi tam takin an ei thin a, thil thalo tak a ni, zu leh *paracetamol* hi thin tan a thalo em em a, hun inhnaih lutuk a miin a ei/in khan a thin tan a hlauhawm zual thin. Nachhawkna tlanglawn kan lei mai theih zingah hian rai lai tan emaw naupang leh pum thalo nei sa tan pawh *paracetamol* hi a him ber a ngaih a ni.

**Side Effect Awm Lo:** Chanchinbu, Tv leh hmun dangah damdawi *side effect* awmlo tih kan hmu in kan hre fo awm e, tunlai science thiamna hmanga damdawi zirna, *Allopathy* thlirna atang chuan damdawi in hna a thawk a nih chuan taksaah engemaw nghawng dang a nei ngei ngei thin tih a ni. *Side effect* a awmluh chuan *effect* (hnathawh) pawh a neilo tura ngaih a ni a, *side effect* awmlo ti a sawi thin hi chu a dikhlel deuh a, zirchianna a awmluh vang zawk pawh a ni thei. *Allopathy* damdawi reng reng (*food supplement* nilo) chu a damdawi hnathawh bakah nghawng thalo

engemaw a neih palh theih thin avangin mipui hman theih a chhawpchuah a nih hma in a kumsawm chuante zirchian thin a ni a, a nghawng thalo tlem thei angber, hnathawk tha si, a *dose* dik thei angber, a hmandan tur dik thei angber leh tul dangte zirchian a nih vek hnuah chauh mipui hman theih a pawm thin a ni a, mipui hman theih a a awm hnuah pawh *pharmacovigilance* hmangin zirchianna neih a ni reng thin a, damdawi thenkhat chu an thatna laiah tha viau mahse a nghawng duhawmlo avangin hman phal tawhloh tak a awm a, tin a hmanna ber thlak danglam tak daih te a awm thin a ni.

*Side effect* awmlo tih thin hi chu a diklo a, *side effect* a awm hriat a nilo, zirchianna a awmlo tihin dawngsawng thin ila a tha zawk ang. Hetiang ang damdawi ho hi thlai leh thildang chi hrang hrang atanga siam a ni tlangpui a, tha tak tak pawh a awm nual ngei ang, mahse fimkhur erawh a tha hle. Tin, damdawi pangngai a inenkawl mek kan nih chuan hetiang damdawi kan ei avang khan kan damdawi hman lai kha thlah chuanloh tur a ni.

**Chaw Ei Khama Ei:** Damdawi hi nikhata vawikhat ei, vawihnih ei, vawi thum ei te a ni tlangpui a, nikhata vawihnih ei hi a tam ber a ni awm e. Engvangin nge hetia vawikhat aia tam ei a ngaih thin kan tih chuan a damdawi nihdanphung, thisena a luh hun leh a hnathawh hun chhung leh damlo natna a zira bithliah a nih thin vang a ni a, Mizote hian nikhatah vawihnih ei ngai a nih chuan tukthuan eikham leh zanriah eikhama ei turah hian kan ngai mai thin a, mahse chaw eikham ni mai lovin a darkar bi a ei thin zawk tur a ni, nikhatah

vawi hniah a nih chuan darkar 12 danah, vawithum a nihin darkar 8 danah chutiang zel chuan. Hei hi a bikin natna hrik thahna atana hman *antibiotics*, *antiviral*, *antiprotozoal* leh *antifungal* hovah a pawimawh zual em em a, *nachhawkna*, *vitamins*, *calcium* leh damdawi thenkhat chu chaw eikhram velah emaw kawruaklo a ei ngai ni mahse damdawi kan hman tamber zawk hi darkar bithliah a hman thin tur a ni, hei vang hi a ni damdawiin a awm nge nge chu hun biah tak damdawi min pe thin a, ngaih a tha kan tih thin hi. Hemi chungchanga mipui zirtirna tha pek kawngah hian damlo enkawltu *doctor*, *pharmacist*, *nurse* leh hriselna lama thawktu hrang hrangte pawhin tan la thar ila a lawmawm hle ang.

**Hritlang Damdawi:** Ziahlan tur tam tak awm mahse a tawpna atana pawimawh em em chu mi tam takin hritlang damdawi kan hriat dan leh kan hman dan chungchang hi a ni. Boruak inthlakthleng leh tlang hrileng avangin hritlang neih hi a awlsam em em a, hun engtik emaw atang khan Mizote hian *antibiotics* zinga tangkai tak pakhat *Azithromycin* hi hritlang damdawi

hriatin kan hre tlat mai a, thil pawitak a ni. A tula hman hun chu a awm ngei mai, mahse hritlang damdawi a nilo tih kan hriat a tha. Natna hrik, *bacteria* thattu damdawi tha tak a ni a, miin a chuap emaw a awmbawrah natna hrikan harsatna a thlen hunah chauh *azithromycin* emaw *antibiotics* damdawi dang hmanga enkawl tur a ni a, hritlang satliahah mi tam takin ei mai kan ching hi thil thalo tak a ni, hritlang enkawl na atan chuan a nat dan a zirin damdawi dang tha tak tak a awm. Tin, hritlang tam zawk hi virus natna hrik avanga awm a ni fo a, *azithromycin* emaw *antibiotics* hmanga in enkawl chi a ni lo a, taksa tihchak that a, taksa raldo khawl (immunity) tichak thei tura ei leh in leh thil danga inenkawl mai a taw em em a ni. Tunlai a damlo enkawl na a harsatna thlen nasa em em chu kan tarlang tawh thin *antibiotic resistance* a ni a, *azithromycin* diklo taka kan hman hian *antibiotic resistance* a tihluar zel thei a, hei vang hian natna hrik, *azithromycin* emaw *antibiotic* damdawi dangin in a tihhlum theihloh, enkawl harsa tak a thlen pahin a ti punlun zel thei a ni.

