Happy Diwali and Prosperous New Year

A man only learns in to ways, one by reading, and the other by Association with smarter people

A successful man is one who can lay a firm foundation with the bricks others have thrown at him

Dr. Bipin M. Patel
President

Dr. Jitendra N. Patel
Hon. State Secretary

Dr. Devendra R. Patel
Hon. Treasurer

I.M.A.G.S.B. NEWS BULLETIN

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INDIAN MEDICAL ASSOCIATION, GUJARAT STATE BRANCH

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STATE PRESIDENT'S MESSAGE

Speech delivered at Annual Conference, Surat by President.

Dear Friends,

I welcome you all in this annual conference of IMA at Surat.

Had you told me 17 years ago I would become IMA president one day, I would not have believed you.

I am thankful to all of you to elect me unanimously as a president of IMA GSB. Again thank you all very much.

I assure you that I will work day and night to fulfill the responsibility and faith you all have put in me.

At the onset let me thank our beloved mentor **Dr Ketan Desai** who is constantly a guiding force for all of us.

I am also thankful to **Dr Jitubhai Patel,** president elect for IMA headquarter for the coming year for his continuous guidance.

IMA GSB remains in constant touch with its members through its bulletin and journal.

For updating the knowledge of its members, branches of IMA are arranging CME on various subjects.

It also runs various schemes for the benefit of its members like social security scheme, professional protection scheme, health scheme and many more, you all are aware about it.

With the effort of IMA we were able to convince the Government to pass the "Assault on doctors" bill in the assembly of the state and now it is notified.

Now, let me come directly to the points which I feel that is a need of the day and IMA should work on it and I would like to initiate few things during my tenure as a president during this year.

(1) Affordable health care:

IMA believes in building partnership in Healthcare and promise to provide affordable, accessible and quality healthcare with sincerity, integrity and honesty.

For this I propose that branches of IMA should start IMA hospitals in each and every city, in which members will be attached and it should serve the needy patient on no profit –no loss basis.

IMA has proposed to central and state government to increase expenditure on healthcare from 0.9% of the GDP to 4% of the GDP.

(2) For Establishment of medical college:

I urge to the government that they should establish medical colleges in various areas so that students of Gujarat don't have to go in other state for study and the deficiency of doctors in the state is filled. For that, any kind of help required from IMA we are ready to give. In this medical colleges meritorious students should get schlorship.

(3) Aao Gaon Chalen project:

As you all know this project was started by **Dr Ketan Desai,** I urge all the branches to adopt a village and implement this project.

(4) Membership drive:

I urge each and every member to motivate the doctors who are still not a member of IMA. At present IMA headquarter is giving discount on membership fees, so those who are not member can take benefit of this.

Dear members today I want to share few things from this dais what I feel which needs your attention.

Friend's, one of the great gifts of being a doctor is how your patients change you. Just as you have an impact on them – comforting them, hopefully curing them – they leave an indelible mark on you. And it's not just the patients, but also their families.

During my travels over the past years as secretary I've been struck by just how many doctors feel dis-empowered. It's not hard to imagine why? After all, we are living through some of the most dramatic changes to Indian health care system, like introduction of new laws and guidelines on Quality of care, health insurance, Accreditation of hospital, new norms on patient of drugs and clinical trials, regulation of cost of drugs ,etc to name the few, there are many more which is affecting our working pattern. You all are aware and many of you are affected by it.

Doctors fear losing their autonomy. They fear that crucial health care decisions will be dictated by the government, or administrators, or health insurance companies. They fear someone else will tell them how to practice medicine ...someone who has never sat next to a patient and give treatment.

I will not stand here today and tell you that change is not upon us. I will not deny that the ground is shifting beneath our feet. But I will tell you this: our foundation is solid.

IMA GSB is having more than 24000 members and 115 branches. To put it simply, that the **IMA has collective voice – the voice of IMA** – had the power to make a difference.

This platform is powerful. It was powerful 65 years ago. And it is powerful today. So yes, right now we are living through historic change. And some may lament that fact. But I say, we are lucky. Because the great thing about living through history, is we don't have to just witness it. We can shape it.

Let me tell you something about Toyota's philosophy. They focus on two key areas: respect for people, and "kaizen" – or striving for continuous improvement.

Each Toyota team member takes ownership of their part of the production process. If a problem emerges, the team member has the ability to stop the production line and fix it before sending it on. Moreover, team members actively contribute to process of improvement. In fact, the company adopts more than 90,000 employee suggestions every year.

The Toyota Way is about innovation. It's about each individual bringing their own unique perspective, and working with the group to continually advance the end product.

Just imagine if we took a similar approach to health care today. Imagine what we could accomplish if we face the challenges before us head on. Together we can ensure that a solo practiser in rural area and corporate hospital in big city have equal chance at prosperity.

. Together we can foster innovation in medicine, so future doctors are better prepared for the realities of 21st century health care.

By standing together, united in vision and commitment, doctors can shape the health care system this country needs. The fact is, each and every day – each and every one of us – has the opportunity to make a difference.

Never forget the tremendous influence doctor carry in our communities. We are considered the indisputable authorities on health care. Whether it's in the , the local civic organization, or the government, we bring something to the table no one else can – that is "the doctor's perspective."

Of course those two words – "doctor's perspective" – can mean a lot of things. During this contentious time there are plenty of opinions to go around. So what exactly is the doctor's perspective? And how do we agree on the best path forward?

If we want to improve the system, we need to step outside our silos and learn to connect to each other in a meaningful way. Together we increase efficiency and improve outcomes. Together, we accomplish what none of us could have alone.

Colleagues, these days "change" has become something of a dirty word. Something to be resisted at all costs. But the reality is –change breeds opportunity…and more often than not, progress.

My fellow doctor's, change can be scary. But we must never forget: change can also be good. Today we stand at a crossroads in the history of health care in this great nation. Behind us lies a century of failed attempts to improve the system. Ahead of us lie two distinct paths.

One is the path of inaction. Of glorifying the past, succumbing to partisan politics, and thwarting any attempt to move forward. The other is the path of action. Of collaborating, innovating, and leading the drive toward productive change.

Our challenges may be new. The instruments with which we meet them may be new. But those values upon which our success depends - honesty and hard work, courage and fair play, tolerance and curiosity, loyalty and patriotism - these things are old. These things are true. They have been the quiet force of progress throughout our history. What is demanded then is a return to these truths.

Friends, The future belongs to those who believe in the beauty of their dreams.

Colleagues, I think you know which path we belong on. And I look forward to walking it with you in the year ahead. Let's do right by our patients. Let's leverage the power of organized medicine. And let's never forget… The future of India's health care . . . is in our hands.

I would end my speech with a quote,"Never tell me the sky is the limit, when there are foot prints on the moon"

Together we can achieve nothing is impossible.

Not taking much of your time, again I am thankful to all of you.

Have a wonderful stay at Surat and have a pleasant evening ahead.

Jai Hind .

Long live IMA.

Yours Truly,

Dr. Bipin M. Patel
(President, G.S.B.,I.M.A.)

HON. STATE SECRETARY'S MESSAGE

Hello friends,

At the outset, I would like to express my deep sense of gratitude from the bottom of my heart for giving me the opportunity to serve this great Association as Hon. State Secretary. I am thankful to all my mentors, friends, philosophers and guides for putting trust and faith in me.

At the beginning of my journey as Hon. State Secretary, Gujarat State Branch, I congratulate whole team of GIMACON-2013, Surat branch for putting their full effort in making this conference a huge success.

At this juncture, how can I forget the herculean work accomplished by our own Dr. Bipinbhai Patel as Hon State Secretary for last more than 15 years. I am fortunate that I have got the same person as President of GSB so I can have enough support from him in fulfilling my duties. My best wishes are always with him and I assure my wholehearted support during his tenure.

DR KETANBHAI DESAI. There is nothing what cannot be said in the praise of the greatness and caliber of this gigantic personality who has been recently declared as PRESIDENT (ELECT), WORLD MEDICAL ASSOCIATION-2015. WMA is a prestigious body established in 1947 with medical associations of 109 countries as members including USA, UK, Japan, Germany, Russia, France, Australia, China and Canada. His name was proposed by members of Japan and supported by USA and Australia. He is a continuous source of inspiration, motivation, guidance and support to me. His blessings are

always with us. On behalf of all members I wish him a huge success during his tenure.

My heartfelt congratulations and best wishes are always with our own **Dr. Jitubhai B. Patel** who is going to cater his services on bigger platform at IMA, HQ from beginning of next year.

My special thanks to the person because of whom I have achieved many milestones at our great Association is none other than **Dr. Mahendra B. Desai.** I feel it is impossible to fill the space which has been created by his voluntary retirement from the post of Managing Director of PPS. But we are fortunate that he has agreed upon to extend his services though he is not on any post.

New Year- New Team-New Thinking-New Possibilities-New Actions-New Results-New Success. Let us all make a common resolution for this year that we all will contribute towards raising the membership strength of our GUJARAT STATE BRANCH to new height.

I assure you all that I will work to the fullest of my capacity for taking our association to newer height with support and guidance of you all.

I wish all members and family members **A VERY HAPPY DIWALI AND PROSPEROUS NEW YEAR.**

Eager to serve,

Yours Truly,

Dr. Jitendra N. Patel
(Hon. State Secy., G.S.B.,I.M.A.)

STATE PRESIDENT-HONY. SECY. & OFFICE BEARERS TOURS/VISIT

29/09/2013 Dr. Pragnesh C. Joshi; President, Dr. Bipin M. Patel; Hon. State Secretary and Dr. Ashok D. Kanodia; Convener Family Planning Centre attended Rasostsav programmed at Rajkot

13/10/2013 Dr. Bipin M. Patel; Hon. State Secretary attended installation ceremony of I.M.A. Mehsana Branch

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CONGRATULATIONS

ડૉ. નીતીનભાઈ સુમનચંદ્ર વોરા

આપણા એસોસીએશનના વિદ્યમાન સભ્ય ડૉ. નીતીનભાઈ સુમનચંદ્ર વોરા જેઓ કામદાર રાજ્ય વીમા યોજનામાં તબીબી સેવાઓના નિયામક તરીકે ફરજ બજાવી રહેલ છે, તેઓનો સચિત્ર પ્રથમકાવ્યસંગ્રહ "અર્થની શોધમાં" તાજેતરમાં સંસ્કાર સાહિત્ય મંદિર દ્વારા પ્રકાશિત થયો છે. જેના માટે તેઓ અભિનંદનના અધિકારી છે અને એસોસીએશન તેની સહર્ષ નોંધ લે છે. ડૉ. નીતીનભાઈ વોરાના આ અગાઉ "ખામોશી" શીર્ષક હેઠળ વાર્તાઓનો સંગ્રહ અને ત્યાર બાદ "બોધ્ધ દર્શનમાં પારમતા" પુસ્તક પ્રકાશિત થઈ ચૂક્યા છે.

એક તબીબ તરીકે બહુમુખી પ્રતિભા ધરાવતા ડૉ. નીતીનભાઈ વોરાને વધુ સાહિત્ય સર્જન માટે ખૂબ ખૂબ શુભેચ્છા.

* * * * *

❖ **KRUPALI daughter of Dr. Bhagyesh Patel ; Gandhinagar**

She Holds The Official World Record fastest time to Mentally 150 random division sums for the year 2013 by "Limca Book of Records (" is the copy right of the coca-cola company, "Limca" is the registered trademark of the coca-cola company. This certificate does not necessarily denote an entry into Limca book of records)

❖ **SAMARTH son of Dr. Bhagyesh Patel ; Gandhinagar**

He Holds The Official World Record for the fastest time to calculate 10 math problems involving form digit addition and subtraction by "Limca Book of Records " (is the copy right of the coca-cola company, "Limca" is the registered trademark of the coca-cola company. This certificate does not necessarily denote an entry into Limca book of records)

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ACADEMY OF MEDICAL SPECIALITIES IMA-GSB

(Reported by Dr. Vidyut J. Desai; Chairman Dr. Dilip B. Gadhavi; Convenor)

Dear Colleagues,

Happy Diwali in Advance

CME on Diabetes Updates was arranged on 13/10/2013, at AMA Hall from 10.00 am to 12.30 pm. There were three emiment speakers who delivered their lectures on the effect and management of diabetes on different systems Dr. Ramesh Goyal gave lecture on diabetic neuropathy. Dr. Samir Dani, Cardiologist gave lecture on diabetes and coronary arterial disease and treatment. Dr. Abhay Khandekar delivered his lecture with video on Erectile dysfunction in Diabetic patients, its evaluation and management according to symptoms.

There were more than 120 delegates present in this CME. They took active participation session at the end in question answer. All the delegates were happy with the lecture of faculties and their answers of the questions

This CME was organised by Academy of Medical Specialty of IMA, GSB.

NEW LIFE MEMBERS

I.M.A. GUJARAT STATE BRANCH

We welcome our new members

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LM/22815	Dr. Dalal Nishad Navinchandra	Surat
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LM/22958	Dr. Naik Vismay Dineshbhai	Ahmedabad
LM/22959	Dr. Ganatra Yatrik Ashvinkumar	Ahmedabad
LM/22960	Dr. Patel Hiren Mahendrabhai	Ahmedabad
LM/22961	Dr. Leuva Tejas Maheshbhai	Ahmedabad
LM/22962	Dr. Patel Manthan Prafulchandra	Ahmedabad
LM/22963	Dr. Patel Alpesh Ramanlal	Ahmedabad
LM/22964	Dr. Patel Hitesh Dinubhai	Ahmedabad
LM/22965	Dr. Mehta Kruti Jayeshbhai	Surendranagar
LM/22966	Dr. Shingala Prakash Ashokbhai	Jetpur
LM/22967	Dr. Vasava Parul Jethabhai	Rajpipla
LM/22968	Dr. Patel Saurin Nareshbhai	Mehsana
LM/22969	Dr. Patel Ravi Harshadbhai	Mehsana

* * * * *

88TH ALL INDIA MEDICAL CONFERENCE

88th All India Medical Conference (IMACON-2013) will be held at Shrinivasa Hospital, D.No.6-2-15, Nyapathivari Street, Rajahmundry (A.P.) on 27th & 28th December, 2013

COMMUNITY SERVICE

GANDHIDHAM

15/07/2013 Inter school General knowledge QUIZ (written paper)

MORBI

05/09/2013 Save Girl Child programme

08/09/2013 Eye Donation Camp

08/09/2013 'Sarva Rog Nidan Camp' Total 127 patients examined with free medicines to all

14/09/2013 Vaccination programme, Typhoid Vaccine was given to all 82 students of Vikas Vidhyalay, free of cost (School Health programme)

PALITANA

28/09/2013 'Thalassemia Awareness programme' for all college girls 350 college students were convinced for their blood check up with the help of IEC.

05/10/2013 'Bone mineral density awareness camp' was held Palitana Red Cross Society. Total 150 patients were screened and 38 Palitana Red Cross members participated actively

* * * * *

BRANCH ACTIVITY

AHMEDABAD

04/09/2013 A press meet was called to launch project of “Adolescent Counselling, Sanitation” etc. supported by SEWA and Ahmedabad Municipal Corporation.

07/09/2013 First programme of adolescent counselling was held on area near Mira Talkies. Dr. Monaben Desai initiated the project. There were about 200 participants. Audio Visual presentation was given to them about basic health education.

08/09/2013 A felicitation programme was organized for Ahmedabad City Police Mega Health Check up Project and for those who have contributed to the various programmes of AMA during 2012-13. Dr.Pragnesh Joshi,President of GSB IMA was chief guest at the function.

08/09/2013 A unique programme “Zindagi Na Milegi Doobara” was organized. It was attended by more then 350 members, the whole hall was jam packed and members enjoyed the Subjects like: Musical Presentation of Life of Mr.C Vs Mr.D,how to manage marriage life and world around us from learned speakers like Dr. Bhavesh Patel,Dr.Mrugesh Vaishnav and Dr.Sunil Mehta. The kids did wonderful role play in the presentation.

12/09/2013 Update on viral fever was arranged by AMA in association with Association of Physicians, Academy of pediatrics and Ahmedabad Family Physician Association. The whole programme was planned in discussion format and well attended by doctors from various specialties.

AMRELI

21/09/2013 "Long term outcome of venous vs. Arterial conducts in CABG" by Dr. Anil Jain

Aortic valve repair : "A new and feasible approach" by Dr. Rajan Modi

GANDHIDHAM

19/07/2013 "Combined approach to GERD and related conditions" by Dr Jignesh Mehta

"Vitamin D3 deficiency" by Dr. Shrinath Goswami

03/08/2013 "Management of Hypertension" by Dr. Vineet Sankhla

"Recent Update in Cardiac Surgery" by Dr. Dhiren Shah

21/09/2013 "Awareness And Treatment of DENGUE" by Dr Vikas Goyal

KALOL

17/09/2013 "Management of CHD" by Dr. Urmil Shah

"Update in Pediatric Cardiology interactive panel discussion and Question / Answer session" by Dr. Kashyap Sheth

01/10/2013 "Common skin diseases" by Dr. Amita Mittal

"Management of Migraine" by Dr. Bhagwati C. Patel

KHAMBHAT

19/06/2013 "Peripheral diabetic neuropathy" by Dr. Ashvin Bhatt

04/07/2013 "Diabetic foot, surgical aspects" by Dr. K.G. Bhavsar

01/08/2013 "Snake bite, practical aspects" by Dr. Bharat Patel

08/08/2013 "ECS guide line for Myo INF" by Dr. Hemant Malhotra

"Care discussion in neurology" by Dr. Ravi Khetan

05/09/2013 "Past, Present & Future in O&G" by Dr. Vinod Rawal

10/09/2013 (A) "How to investigate and treat Young Diabetic Patients,"

(B) "Approach to a patient with short stature" by Dr. Pankaj Patel

"Basic of Lasik treatment" by Dr. Shailesh Patel & Dr. Piyush Unadkat

17/09/2013 "Trigeminal Neuralgia – how to approach" by Dr. Nirav Sanghani

"Spontaneous Intra cranial Haemorrhage – an update" by Dr. Sanjay Teelala

PALITANA

28/09/2013 Dermatitis and eczema how to have a decent management by Dr. Tushar Shah

12/10/2013 B12 Deficiency, metabolism and smooth management by Dr. Pradip Joshi

SAVARKUNDLA

24/07/2013 "Common head injuries & their primary management at peripheral centre" by Dr. Dijesh K. Shah

04/09/2013 "Vaccination procedures in pediatrics" by Dr. Nitin Trivedi

VISNAGAR

24/07/2013 "Radical approachs in Benign Gynaec Condition" by Dr. Deepak Limbachiya

"Barbaric Overview" by Dr. Manish Khaitan

26/07/2013 "Management of upper G.U. Bleeding" by Dr. Rajiv Bansal

"Recent Trends in Urology" by Dr. Kandarp Parikh

08/08/2013 "Recent management in menopause" by Dr. Jignesh Shah

13/09/2013 "Neurointervention – Edge without Knife" by Dr. Sandip Modh

"Trigeminal Neuralgia: What is best option?" by Dr. Tejas Patel

19/09/2013 "Hypertension Update and Reemergence of Chlorthabnlidone" by Dr. Urmil Shah

"Past Present and Future : Cardiac Surgery" by Dr. Dhaval Naik

"Protocol base management of polytrauma patients" by Dr. Sanjay Shah

Family Planning Centre, I.M.A. Gujarat State Branch

Respected Members,

Indian Medical Association, Gujarat State Branch runs 9 Urban Health Centers in the different wards of Ahmedabad City.

These Centres performed various activities during the month of September 2013 in addition to their routine work. These are as under :

01-09-2013 to 30-09-2013	:	Intra domestic house to house survey by the centers of Ahmedabad
15-09-2013 to 17-09-2013	:	Migratory Polio Vaccine by the centers of Ahmedabad
12-09-2013	:	Jamalpur (Ambawadi) Medical Camp Total Patients: 130
10-09-2013	:	Khokhra (Amraiwadi) Medical Camp Total Patients: 145
24-09-2013	:	Bapunagar (Potalia Ward) Medical Camp

Rander - Surat : Vitamin 'A' Solution - Children, Iron : 1000 tables & Calcium - 250 tablets, were distributed.
Nanpura - Surat : Vitamin 'A' Solution - 50 Children, Iron : 1000 tablets & Calclum - 2000 tablets, were distributed.

The total number of patients registered in the OPD & Family planning activities of Various Centers is as Follows : **SEPTEMBER- 2013**

No.	Name of Center	New Case	Old Case	Total Case
(1) Ambawadi	(Jamalpur Ward)	1035	647	1682
(2) Behrampura	(Sardarnagar Ward)	1234	489	1723
(3) Bapunagar	(Potalia Ward)	1786	724	2510
(4) Dariyapur	(Isanpur Ward)	1607	620	2227
(5) Gomtipur	(Saijpur Ward)	1647	558	2205
(6) Khokhra	(Amraiwadi Ward)	2653	650	3303
(7) New Mental	(Kubernagar Ward)	1019	169	1188
(8) Raikhad	(Stadium Ward)	539	1078	1617
(9) Wadaj	(Junawadaj Ward)	1072	230	1302
(10) Khambhat		—	—	—
(11) Junagadh		----	----	----
(12) Rander-Surat		----	----	----
(13) Nanpur-Surat		----	----	----
(14) Rajkot		468	308	776

SEPTEMBER - 2013

No.	Name of Center	Female Sterilisation	Male Sterilisation	Copper-T	Condoms	Ocpills
(1)	Ambawadi (Jamalpur Ward)	29	—	91	11100	650 P
(2)	Behrampura (Sardarnagar Ward)	21	—	59	6800	1222
(3)	Bapunagar (Potalia Ward)	54	—	83	13100	60 U
(4)	Dariyapur (Isanpur Ward)	25	—	30	20300	800 P
(5)	Gomtipur (Saijpur Ward)	18	03	42	1220	326 P
(6)	Khokhra (Amraiwadi Ward)	25	03	45	12000	162
(7)	New Mental (Kubernagar Ward)	16	—	38	10140	401 P
(8)	Raikhad (Stadium Ward)	29	—	43	10860	1051 P
(9)	Wadaj (Junawadaj Ward)	16	—	45	12500	1077
(10)	Khambhat	02	—	33	—	22
(11)	Junagadh	10	—	45	2500	228
(12)	Rander-Surat	21	—	36	2100	55 P
(13)	Nanpura-Surat	26	—	58	3000	120 P
(14)	Rajkot	16	—	74	1500	280

GUJARAT STATE COUNCIL FOR BLOOD TRANSFUSION
Established by the Health & Family Welfare Department, Government of Gujarat
O-1 Block, New Mental Hospital Complex, Meghaninagar, Ahmedabad – 380016
Phone: 079-22680211-12-13 Fax: 079-22680214
Email: gscbt.gov@gmail.com Website: www.gscbt.co.in

નં. જીએસસીબીટી/ ૧૩૮૬-૮૮૦/૨૦૧૩-૧૪
તા. ૨૬/૦૬/૨૦૧૩

પ્રતિ,
બ્લડ બેંક ઇન્ચાર્જ
(તમામ બ્લડ બેન્કો)

વિષય: થેલેસેમિયા, સીકલસેલ એનિમિયા અને હિમોફિલિયાના દર્દીઓને ફ્રી બ્લડ ટ્રાન્સફ્યુઝન આપવા બાબત

ઉપરોક્ત વિષય પરત્વે જણાવવાનું કે, બ્લડ બેંકો દ્વારા નાકોની ગાઇડલાઇન મુજબ થેલેસેમિયા, સીકલસેલ એનિમિયા અને હિમોફિલિયાના દર્દીઓને કોઇ પણ સર્વિસ ચાર્જ લીધા વિના બ્લડ આપવા માટે જણાવેલ છે અને બ્લડ બેંકો દ્વારા આ દર્દીઓને સર્વિસ ચાર્જ લીધા વિના બ્લડ આપવામાં પણ આવે છે. પરંતુ હોસ્પિટલ તરફથી આ બ્લડ ચડાવવા માટે દર્દીઓ પાસેથી ટ્રાન્સફ્યુઝન ચાર્જ લેવામાં આવે છે.

ગુજરાત સ્ટેટ કાઉન્સિલ ફોર બ્લડ ટ્રાન્સફ્યુઝનની તા. ૧૭/૦૮/૨૦૧૩ ના રોજ યોજાયેલ ૨૮ મી ગવર્નિંગ બોડી મીટીંગમાં આ દર્દીઓ પાસેથી બ્લડ ટ્રાન્સફ્યુઝન ચાર્જ પણ લેવો નહી તેવું નિયત થયેલ છે.

જેથી તમામ સંબંધિત બ્લડ બેંકો/ હોસ્પિટલ ને જણાવવામાં આવે છે કે થેલેસેમિયા, સીકલસેલ એનિમિયા અને હિમોફિલિયાના દર્દીઓને કોઇ પણ સર્વિસ ચાર્જ લીધા વિના બ્લડ પુરુ પાડવું અને બ્લડના ટ્રાન્સફ્યુઝન માટે પણ કોઇ જ ચાર્જ લેવો નહિ તેની તકેદારી રાખવાની રહેશે.

ગુજરાત સ્ટેટ કાઉન્સિલ ફોર બ્લડ ટ્રાન્સફ્યુઝન
અમદાવાદ

નકલ રવાના:
1. અધિક નિયામક, તબીબી સેવાઓ, ગાંધીનગર ને આપના તાબા હેઠળની બ્લડ બેંકો ને જાણ કરવા સારૂ
2. અધિક નિયામક, તબીબી શિક્ષણ, ગાંધીનગરને આપના તાબા હેઠળની બ્લડ બેંકો ને જાણ કરવા સારૂ
3. સીડીએમઓ કમ સિવીલ સર્જનશ્રી, આપના જિલ્લાની તમામ બ્લડ બેંકો તથા હોસ્પિટલોને ને જાણ કરવા સારૂ.
4. ચેરમેનશ્રી, ઇન્ડિયન રેડક્રોસ સોસાયટી, ગુજરાત સ્ટેટ બ્રાન્ચને આપના તાબા હેઠળની બ્લડ બેંકો ને જાણ કરવા સારૂ
5. ડી.ટી.એચ.ઓ, ડાપ્કુ (તમામ) ને જાણ સારૂ.
6. પ્રમુખશ્રી, ઇન્ડિયન મેડિકલ એસોસીએશન, ગુજરાત બ્રાન્ચને આપના સંલગ્ન તમામ સભ્યોને જાણ કરવા સારૂ.

ONCE IS NOT ENOUGH.....DONATE BLOOD REGULARLY

IMA Survey - Core Group Recommendations

RECOMMENDATIONS :

The core committee meeting was held to discuss the results of the survey, of 4 states & 7 Union territories. The recommendations are classified as essential & optional for the different categories of clinical establishments.

NURSING HOMES / HOSPITALS

Essential :

A. General

1. Hospital should have infection control measures and it is desirable to have an infection control committee.
2. Bio medical waste management authorization certificate
3. Medical Records maintenance by hard/soft copy
4. Laboratory Services : either owned or Collection Centre should be available.
5. Birth and death information register is to be maintained in the hospital / nursing home.
6. Back up electricity
7. Fire extinguishers
8. Laundry facility-Either in house, or some arrangements for clean / sterilized linens
9. Ambulance service arrangements
10. Display of services
11. Information of the services and their approximately estimated charges should be provided by the administration of the hospitals / nursing homes. Name of the person responsible for providing such information should be displayed. Service charges are variable according to the service provided but infrastructural charges are fixed. Consultation fee is customized and fixed by individual doctors

B. OPD :

1. Stethoscope, Torch, Thermometer (Preferably non mercury), BP Apparatus (Preferably non mercury), Hand wash facility, Examination Chair / Table, Female attendant for female patients, Privacy to Patients, Information Material for Patients.

2. Registration of Patients. In registration Name, Age, Sex and contact details (at least mobile number).
3. Waiting Area, Drinking Water facility, Toilets
4. Display of the names of the Consultants.

C. Casualty Services :

1. Emergency drugs and equipments according to the scope of the services.
2. Wherever casualty services are provided signage should be displayed at the entrance and be easily visible.
3. Ramp / Slope facility is essential. Stretchers / wheel chairs should be available

D. IPD :

1. Signage to different department
2. Availability of Doctor on call
3. In the survey it is seen that in more than 60% of Nurses in small NH/H are trained Nurses. Since the availability of qualified Nurses as per the requirement is quite low, therefore trained nurses with six months of experience for smaller NH/H under the supervision of a qualified Nurse can solve this issue.
4. Bed facility - A system to call nurses / attendants (Intercom / Call Bell). Hand Washing Facility / Hand Sanitizer, Bed pan, Waste bins, Attendant Chair / Stool.

E. OT :

1. According to the survey more than 50% of are ordinary OT. So recommendations are that Operation Theater should at-least have OT Table, OT Light, Plain Tiles on wall (7 ft), Adjacent hand washing area and Air conditioning.
2. Survey suggested majority of Nurses & Technicians in operation theater are not having specific qualification but are trained. Therefore our recommendations are Nurses & Technician working in OT should have minimum training of six months for the same.
3. Equipments : Suction (single unit / central), Oxygen, Pulse Oxy-meter, Boyles apparatus

Optional :

- For Emergency facilities - pulse oxy-meter, cardiac monitor, nebulizer, defibrillator, suction
- Vaccination and other services under the national health programs
- Facility for the resuscitation of the new born
- In operation theater defibrillator
- Nursing station at respective floor
- Pantry
- X-ray / CT - Scan service provision
- Noise & Air Pollution authorization certificate

Clinics

Essentials :

1. Name of the physician with qualification & Registration Number inside the clinic.
2. chairs / Stool, Examination table, Torch, Thermometer (preferably non-mercurial), BP apparatus (preferably non-mercurial), Stethoscope
3. Hand washing facility, Drinking Water and some waiting space
4. Biomedical waste management authorization certificate. The registration should be different from a factory. New user friendly rules are to be framed for the medical fraternity.
5. Display of services provided.
6. Emergency Medicines (Steroids, Hydrocortisone, Adrenaline) and IV fluid

Optional :

- Emergency services for 24 hours
- Noise and Air Pollution authorization certificate.
- Electricity back up
- Glucometer and Specialty Care
- Vaccination services / family welfare services / or other services under national health programs
- Additional instruments like Splint, Endotracheal tube Laryngoscope, Ambu bag.

- X - ray and other diagnostic services
- Fire Extinguisher

Laboratories

Essentials

1. Name of the consultant with qualification and registration Number displayed
2. Display of services & Charges
3. Fire Extinguisher
4. Bio medical waste management authorization certificate
5. Backup electricity
6. Waiting space, Chair / Stool for phlebotomy, Drinking water / Hand Washing & Toilet facilities
7. Lab facility
   - Neuburg Chamber
   - Microscope
   - Centrifuge machine
   - Calorimeter / Auto analyzer
   - Tourniquet
8. BP apparatus and Stethoscope

Optional

- Weighing machine
- Incubator
- Autoclave
- Noise & Air Pollution authorization certificate

Radiology

X-Ray

Essentials

1. Name of the Consultant with qualification and registration Number displayed
2. Display of Radiation Protection Messages
3. Display of services & Charges
4. Fire Extinguisher

5. Bio medical waste management authorization certificate
6. Backup electricity
7. Waiting space, Chair / Stool, Drinking water / Hand Washing
8. Lead Apron / Lead Screen

Optional

- TLD Badges for technicians & Doctors
- Toilet facilities
- Noise & Air Pollution authorization certificate

Ultra Sound

1. Registration under PNDT Act
2. Name of the Consuitant with qualification and registration Number displayed
3. Display of services & information regarding Charges
4. Fire Extinguisher
5. Biomedical waste management authorization certificate
6. Back up electricity
7. Waiting space, Chair / Stool, Drinking water, Hand Washing & Toilet facilities
8. Record maintenance

Optional

- Noise & Air Pollution authorization certificate

* * * * *

DISCLAIMER

Opinions in the various articles are those of the authors and do not reflect the views of Indian Medical Association, Gujarat State Branch. The appearance of advertisement is not a guarantee or endorsement of the product or the claims made for the product by the manufacturer.

SCIENTIFIC UPDATE

" Overview Of Role Of Medical Pleuroscopy In Pulmonary Medicine "

Background

Medical thoracoscopy was initially performed in 1910 by an internist from Sweden, Hans-Christian Jacobaeus. Jacobaeus was the first to use the term *thoracoscopy,* which he described as "replacing fluid with air" in order to examine the pleural surfaces of two patients with tuberculous pleurisy. Jacobaeus later developed a therapeutic application for thoracoscopy by using thermocautery to lyse adhesions and create a pneumothorax to treat tuberculosis.[1]

During the 1950s and 1960s, thoracoscopy gained popularity with pulmonologists because of the tuberculosis endemic in the United States. The major indications were for pleural and pulmonary biopsies for diffuse lung disease. However, with the advent of effective chemotherapy for tuberculosis, the need for thoracoscopy decreased. The procedure was later adopted by surgeons after advances in optics, laparoscopic techniques, and video technology. Thoracoscopy grew into the video-assisted thoracoscopic surgery that is currently performed by thoracic surgeons.

The term thoracoscopy is confusing because it refers to both the medical and surgical procedures. To avoid confusion, some authors suggest that medical thoracoscopy should be referred to as *pleuroscopy*. The term thoracoscopy may be used exclusively for the surgical thoracoscopic procedure.

Indications

The accepted indications for medical thoracoscopy include the following:

- Workup and diagnosis of idiopathic pleural effusions
- Staging of lung cancer
- Pleurodesis
- Site-directed biopsy of parietal pleura
- Staging for mesothelioma

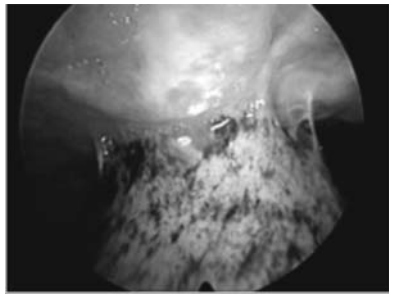
Idiopathic pleural effusions that have been sampled by thoracentesis are ideal for medical thoracoscopy. The direct visualization of the pleura allows for site-directed biopsy of abnormal parietal pleura. Additionally, it allows for examination of the visceral pleura and any clues that may provide towards the diagnosis of the pleural effusion. Currently, most interventional pulmonologists limit biopsy to the parietal pleura due to the risk of injury to the lung when sampling the visceral pleura.

In addition, patients who do require further treatment can be excluded from certain chemotherapeutics because of the chemotherapy's tendency to distribute into the pleural effusion and affect serum levels. The classic examples of this are methotrexate, fludarabine, and possibly pemetrexed.[4, 5, 6]

Survival of patients with advanced pleural disease is often discussed in weeks to months. The benefits of medical thoracoscopy against repeated thoracentesis should be carefully considered for the individual patient. .

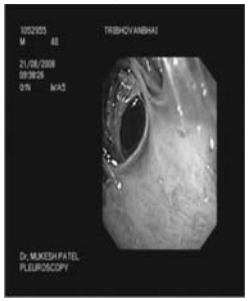
Empyema and Complicated Parapneumonic Effusions

Some interventional pulmonologists have used medical thoracoscopy for drainage of uncomplicated empyema and chest tube placement. Additionally, it can be used carefully for lysis of thin fibrous adhesions (see the image below).[9]



Pleural adhesions on medical thoracoscopy.

Currently, this is not routinely performed or the standard of care, mainly because timing is key in these procedures and they should be considered early if chest tube drainage is inadequate.[3, 10] In later phases of the empyema, there may be thick fibrous adhesions, pleural peel, or trapped lung. In these cases, early video-assisted thoracoscopic decortication is required.[11,12]

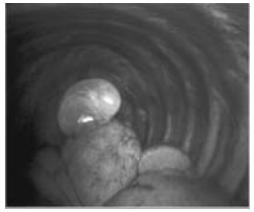


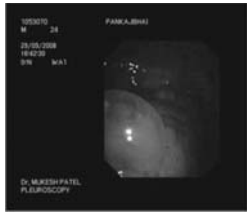
Tuberculous Pleural Effusion

There is controversy whether medical thoracoscopy is warranted when the suspicion for tuberculosis is high. In these cases, the diagnostic yield from closed-needle pleural biopsy is approximately 69%, with some studies reporting rates as high as 88%.[3] The current consensus is that medical thoracoscopy should be reserved for special circumstances, such as lysis of adhesions or more effective drainage of loculated effusions, as well as when larger quantities of tissue are needed for sensitivities.[3]

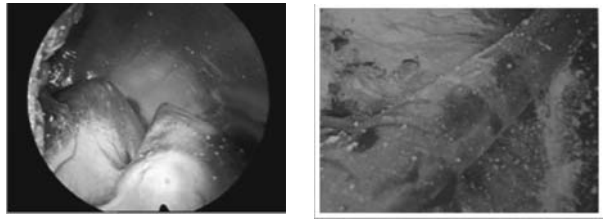
Pneumothorax

Medical thoracoscopy can offer definitive treatment or diagnostic inspection of a patient with a recurrent pneumothorax. In patients who are not candidates for video-assisted thoracoscopic surgery, pleural abrasion or talc pleurodesis can be performed. For patients suitable for video-assisted





thoracoscopic surgery, bullectomy, pleural abrasion, and pleurectomy in the operating room are superior and preferred.[12] In cases with an established malignant diagnosis, medical thoracoscopy also has a therapeutic role in the form of pleurodesis. Complete evacuation of pleural fluid, with maximization of lung expandability by removing adhesions and pleurodesis by talc insufflations (see the image below), has short- and long-term success rates greater than 90%.[2]



Talc pleurodesis on lung and parietal pleura.

The benefit of the pleurodesis is twofold. First, it improves the patient's functional status and quality of life. In the setting of advanced malignant disease, this is the central goal of any physician. In patients who are undergoing further treatment for malignancy, there is an added benefit of increasing treatment options by improving the patient's functional status.

Contraindications

The major contraindications are related to the ability to perform the procedure. As long as no contraindication exists for the ability to insert instruments into the pleural space, it can be performed safely. Even when the lung is adherent to the chest wall, the use of transthoracic ultrasound by interventional pulmonologists can allow identification of safe areas to insert the trocar and pleuroscope.

A pleural separation of at least 10 mm is recommended to minimize injury to the lung. In patients with small effusions, a pneumothorax may need to be induced by cannulating the pleural space and asking the patient to inspire deeply while the catheter is open to the atmosphere. The presence of a pneumothorax can then be confirmed with either chest radiograph or thoracic ultrasound at the bedside. This procedure is limited by the ability of the patient to tolerate a pneumothorax. In patients who already have an effusion, the concern regarding tolerance of a pneumothorax is not as worrisome because an equal volume of fluid would be replaced by air.

The following relative contraindications may be corrected and accounted for:

- Refractory cough
- Hypoxia
- Coagulopathy
- Thrombocytopenia

Periprocedural Care

Equipment

There are two different pleuroscopes: the rigid and the semirigid pleuroscopes. The choice of instrument depends on the indication of the procedure. Most procedures will be performed with a semirigid pleuroscope for the above-mentioned indications. The main indications for the use of a rigid pleuroscope involve trapped lung, lysis of thick adhesions, empyema, and pneumothorax.[3] These patients may be referred to a thoracic surgeon for a video-assisted thoracoscopic surgery.

Semirigid Pleuroscope

The semirigid pleuroscope is similar to a video bronchoscope. It consists of a handle with a shaft that measures 27 cm in length and 7 mm in diameter, as shown in the image below.

Insertion of semirigid scope through trocar.

The first 22 cm of the pleuroscope is rigid, with an additional 5-cm flexible scope on the distal end. The flexible end is operated through a level on the handle, similar to a flexible bronchoscope. The 2.8-mm working channel accommodates instruments such as biopsy forceps and needles.

Rigid Pleuroscope

The rigid pleuroscope includes a xenon light source, an endoscopic camera that transmits to the eyepiece of the telescope, and a video camera. It provides different angles of vision, both direct and oblique (30-50 degrees). The trocars come in different size diameters (3-13 mm). The traditional size of the forceps by which to obtain biopsies is 5 mm. However, 3-mm biopsy forceps have a yield similar to conventional forceps.

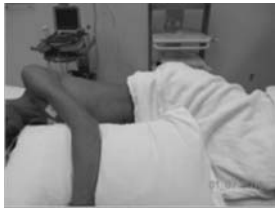
Patient Preparation

Anesthesia

Medical thoracoscopy is generally performed in an endoscopy suite. Moderate sedation with local anesthesia is used in a manner similar to inserting a chest tube in a conscious patient. Epinephrine can be added to the lidocaine to minimize bleeding at the trocar insertion site.

Positioning

Patients are placed in the lateral decubitus position with the involved side up, as shown in the image below.



Patient positioning for medical thoracoscopy.

A round bolster is placed under the thorax when patient is in position to arch the vertebral column upward to maximize the intercostal spaces of the involved side. To further widen the intercostals spaces, the patient's arm is placed at a right angle to the body. On very rare occasions, a dorsal decubitus position or a ventral decubitus position is used.[13]

Monitoring & Follow-up

Because of the minimally invasive nature of the procedure, many patients can be discharged the same day. In most cases, total resolution of the pneumothorax occurs within minutes. After a chest radiograph confirms the re-expansion of the lung, the chest tube is often removed while the patient is still in the procedure room.

Complications

Complications of medical thoracoscopy are rare. The mortality risk is 0.09%, with a major complication rate of 1.9% and a minor complication rate of 5.6%.[14] Complications with a rigid scope include prolonged air leak, hemorrhage, subcutaneous emphysema, postoperative fever, empyema,

and seeding of chest wall from mesothelioma. Bleeding after a parietal pleural biopsy, lung perforation, and infections are the most prevalent complications about which the interventional pulmonologist is most concerned. In the case of pleurodesis, 30% of patients develop low grade fevers and may require short term hospitalization for observation.

Technique

Approach Considerations

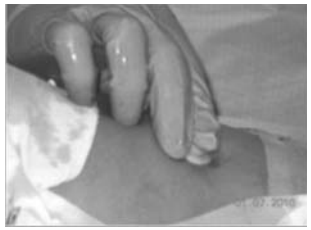
To prepare for the procedure, the pulmonologist can remove 500 ml of fluid from the pleural space through thoracentesis and induce a pneumothorax before inserting a trochar. Alternatively, the pulmonologist can make an intercostal incision that allows fluid to be aspirated freely once the trocar is inserted.

If malignancy is suspected, a single skin incision is made in approximately the fifth to seventh intercostal space along the lateral chest wall of the involved hemithorax. Pleural fluid is evacuated and pleural biopsies are obtained of the pleura. If the procedure is performed to visualize blebs and bullae in the lung apex, an incision in the fourth intercostal space is preferred.

Medical thoracoscopy is usually performed with a single-puncture technique, but can also use a double-puncture technique. For both, the pulmonologist visualizes the pleural space with a rigid or semirigid pleuroscope. Once the pleural cavity is entered, almost complete visualization of the parietal cavity is possible; only the posterior and mediastinal side of the lung cannot be seen.

Single-Puncture Technique

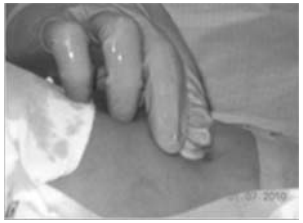
With the single-puncture technique, the pulmonologist inserts accessory instruments through the working channel of the pleuroscope. Parietal pleural biopsies, for example, can be done using illuminated forceps through a single point of entry. To enter the pleural cavity, an 8- to 10-mm skin incision is made parallel with and centered in the intercostal space selected. Blunt dissection is then performed with a straight scissor down to the parietal pleura. The trocar is gently pushed through the dissected pathway; with moderate pressure, it is pushed through the pleura (see the image below).



Trocar insertion for medical thoracoscopy.

Any fluid remaining in the pleura is aspirated with a blunt flexible tube that is fed through the trocar sleeve. The tube is usually smaller than the track made into the pleural space to continue to allow for air to enter the thoracic cavity and induce a pneumothorax.

The insertion of the semirigid pleuroscope through the trocar is shown in the image below.



Trocar insertion for medical thoracoscopy.

Double-Puncture Technique

With a double-puncture technique, the operator makes a second smaller incision along another intercostal space, which allows for insertion of a pleural trocar for accessory instruments. The second trocar is smaller, only 5 mm, and therefore only requires a 5-mm incision. The double-puncture technique is usually used when there is a need to lyse severe adhesions, control bleeding, suction large amounts of pleural fluid, or perform biopsies of the visceral pleura.

For parietal pleural biopsies, both abnormal- and normal-appearing pleura are sampled. Typically 4-6 biopsies of a suspicious lesion will establish a diagnosis. When malignancy is suspected and the endoscopic findings have been nonspecific, the number of biopsies should increase to 10-12 biopsies.[10]

When the procedure is complete, a chest tube is inserted through the original incision site. The lung is gently re-expanded by connecting the chest tube to a suctioning device. In the case of a trapped lung, the operator has the option of placing a normal chest tube with or without suction or placing a tunneled chest drain for outpatient management.

Sparsh Chest Diseases Center
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C.G.P. C.M.E. Programme CGP I.M.A.G.S.B. & Gandhinagar Branch

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CME on Diabetes Updates Academy of Medical Specialty, GSB

SCIENTIFIC UPDATE

Myocardial infarction

Diagram of a myocardial infarction of the tip of the anterior wall of the heart (an apical infarct) after occlusion of a branch of the left coronary artery (LCA) In the diagram RCA is the right coronary artery.

Myocardial infarction (MI) or acute myocardial infarction (AMI), commonly known as a heart attack, results from the partial interruption of blood supply to a part of the heart muscle, causing the heart cells to be damaged or die. This is most commonly due to occlusion (blockage) of a coronary artery following the rupture of a vulnerable atherosclerotic plaque, which is an unstable collection of cholesterol and fatty acids and white blood cells in the wall of an artery. The resulting ischemia (restriction in blood supply) and ensuing oxygen shortage, if left untreated for a sufficient period of time, can cause damage or death (infarction) of heart muscle tissue (myocardium).

Typical symptoms of acute myocardial infarction include sudden retrosternal chest pain (typically radiating to the left arm or left side of the neck), shortness of breath, nausea, vomiting, palpitations, sweating, and anxiety (often described as a sense of impending doom). Women may experience fewer typical symptoms than men, most commonly shortness of breath, weakness, a feeling of indigestion, and fatigue. A sizeable proportion of myocardial infarctions (22–64%) are "silent", that is without chest pain or other symptoms.

Among the diagnostic tests available to detect heart muscle damage are an electrocardiogram (ECG), echocardiography, cardiac MRI and various blood tests. The most often used blood markers are the creatine kinase-MB (CK-MB) fraction and the troponin levels. Immediate treatment for suspected acute myocardial infarction includes oxygen, aspirin, and sublingual nitroglycerin.

Most cases of myocardial infarction with ST elevation on ECG (STEMI) are treated with reperfusion therapy, such as percutaneous coronary intervention (PCI) or thrombolysis. Non-ST elevation myocardial infarction (NSTEMI) may be managed with medication, although PCI may be required if the patient's risk warrants it. People who have multiple

blockages of their coronary arteries, particularly if they also have diabetes mellitus, may benefit from bypass surgery (CABG). The European Society of Cardiology guidelines in 2011 proposed treating the blockage causing the myocardial infarction by PCI and performing CABG later when the patient is more stable. Rarely CABG may be preferred in the acute phase of myocardial infarction, for example when PCI has failed or is contraindicated.

Ischemic heart disease (which includes myocardial infarction, angina pectoris and heart failure when preceded by myocardial infarction) was the leading cause of death for both men and women worldwide in 2004. Important risk factors are previous cardiovascular disease, older age, tobacco smoking, high blood levels of certain lipids (low-density lipoprotein cholesterol, triglycerides) and low levels of high density lipoprotein (HDL) cholesterol, diabetes, high blood pressure, lack of physical activity and obesity, chronic kidney disease, excessive alcohol consumption, the abuse of illicit drugs (such as cocaine and amphetamines), and chronic high stress levels.·

Classification

There are two basic types of acute myocardial infarction based on pathology:

Transmural: associated with atherosclerosis involving a major coronary artery. It can be subclassified into anterior, posterior, inferior, lateral or septal. Transmural infarcts extend through the whole thickness of the heart muscle and are usually a result of complete occlusion of the area's blood supply. In addition, on ECG, ST elevation and Q waves are seen.

Subendocardial: involving a small area in the subendocardial wall of the left ventricle, ventricular septum, or papillary muscles. The subendocardial area is particularly susceptible to ischemia. In addition, ST depression is seen on ECG.

In the clinical context, a myocardial infarction can be further subclassified into a ST elevation MI (STEMI) versus a non-ST elevation MI (non-STEMI) based on ECG changes. The phrase heart attack is sometimes used incorrectly to describe sudden cardiac death, which may or may not be the result of acute myocardial infarction. A heart attack is different from, but can be the cause of cardiac arrest, which is the stopping of the heartbeat,

and cardiac arrhythmia, an abnormal heartbeat. It is also distinct from heart failure, in which the pumping action of the heart is impaired; however severe myocardial infarction may lead to heart failure. A 2007 consensus document classifies myocardial infarction into five main types:

Type 1 – Spontaneous myocardial infarction related to ischemia due to a primary coronary event such as plaque erosion and/or rupture, fissuring, or dissection

Type 2 – Myocardial infarction secondary to ischemia due to either increased oxygen demand or decreased supply, e.g. coronary artery spasm, coronary embolism, anaemia, arrhythmias, hypertension, or hypotension

Type 3 – Sudden unexpected cardiac death, including cardiac arrest, often with symptoms suggestive of myocardial ischaemia, accompanied by new ST elevation, or new LBBB, or evidence of fresh thrombus in a coronary artery by angiography and/or at autopsy, but death occurring before blood samples could be obtained, or at a time before the appearance of cardiac biomarkers in the blood

Type 4 – Associated with coronary angioplasty or stents:

Type 4a – Myocardial infarction associated with PCI

Type 4b – Myocardial infarction associated with stent thrombosis as documented by angiography or at autopsy

Type 5 – Myocardial infarction associated with CABG

Signs and symptoms

The onset of symptoms in myocardial infarction (MI) is usually gradual, over several minutes, and rarely instantaneous. Chest pain is the most common symptom of acute myocardial infarction and is often described as a sensation of tightness, pressure, or squeezing. Chest pain due to ischemia (a lack of blood and hence oxygen supply) of the heart muscle is termed angina pectoris. Pain radiates most often to the left arm, but may also radiate to the lower jaw, neck, right arm, back, and epigastrium, where it may mimic heartburn. Levine's sign, in which the patient localizes the chest pain by clenching their fist over the sternum, has classically been thought to be predictive of cardiac chest pain, although a prospective

observational study showed that it had a poor positive predictive value.

Shortness of breath (dyspnea) occurs when the damage to the heart limits the output of the left ventricle, causing left ventricular failure and consequent pulmonary edema. Other symptoms include diaphoresis (an excessive form of sweating), weakness, light-headedness, nausea, vomiting, and palpitations. These symptoms are likely induced by a massive surge of catecholamines from the sympathetic nervous system which occurs in response to pain and the hemodynamic abnormalities that result from cardiac dysfunction. Loss of consciousness (due to inadequate cerebral perfusion and cardiogenic shock) and sudden death (frequently due to the development of ventricular fibrillation) can occur in myocardial infarctions.

Women and older patients report atypical symptoms more frequently than their male and younger counterparts. Women also report more numerous symptoms compared with men (2.6 on average vs 1.8 symptoms in men). The most common symptoms of MI in women include dyspnea (shortness of breath), weakness, and fatigue. Fatigue, sleep disturbances, and dyspnea have been reported as frequently occurring symptoms that may manifest as long as one month before the actual clinically manifested ischemic event. In women, chest pain may be less predictive of coronary ischemia than in men.

At least one-fourth of all myocardial infarctions are silent, without chest pain or other symptoms. These cases can be discovered later on electrocardiograms, using blood enzyme tests or at autopsy without a prior history of related complaints. Estimates of the prevalence of silent myocardial infarctions vary between 22 and 64%. A silent course is more common in the elderly, in patients with diabetes mellitus and after heart transplantation, probably because the donor heart is not fully innervated by the nervous system of the recipient. In people with diabetes, differences in pain threshold, autonomic neuropathy, and psychological factors have been cited as possible explanations for the lack of symptoms.

Any group of symptoms compatible with a sudden interruption of the blood flow to the heart are called an acute coronary syndrome.

The differential diagnosis includes other catastrophic causes of chest pain, such as pulmonary embolism, aortic dissection, pericardial effusion

causing cardiac tamponade, tension pneumothorax, and esophageal rupture. Other non-catastrophic differentials include gastroesophageal reflux and Tietze's syndrome.

Causes

Heart attack rates are higher in association with intense exertion, be it psychological stress or physical exertion, especially if the exertion is more intense than the individual usually performs.

Acute severe infection, such as pneumonia, can trigger myocardial infarction. A more controversial link is that between Chlamydophila pneumoniae infection and atherosclerosis.While this intracellular organism has been demonstrated in atherosclerotic plaques, evidence is inconclusive as to whether it can be considered a causative factor. Treatment with antibiotics in patients with proven atherosclerosis has not demonstrated a decreased risk of heart attacks or other coronary vascular diseases.

There is an association of an increased incidence of a heart attack in the morning hours, more specifically around 9 a.m. Some investigators have noticed that the ability of platelets to aggregate varies according to a circadian rhythm, although they have not proven causation.

Risk factors

Myocardial infarction results from atherosclerosis. Smoking appears to be the cause of about 36% of coronary artery disease and obesity 20%. Lack of exercise has been linked to 7-12% of cases. Job stress appear to play a minor role accounting for about 3% of cases.

Risk factors for myocardial infarction include:

- Age
- Gender: At any given age men are more at risk than women, particularly before menopause, but because in general women live longer than men ischemic heart disease causes slightly more total deaths in women.
- Diabetes mellitus (type 1 or 2)
- High blood pressure

- Dyslipidemia/hypercholesterolemia (abnormal levels of lipoproteins in the blood), particularly high low-density lipoprotein, low high-density lipoprotein and high triglycerides
- Tobacco smoking, including secondhand smoke
- Short term exposure to air pollution including: carbon monoxide, nitrogen dioxide, and sulfur dioxide but not ozone.
- Family history of ischaemic heart disease or myocardial infarction particularly if one has a first-degree relative (father, brother, mother, sister) who suffered a 'premature' myocardial infarction (defined as occurring at or younger than age 55 years (men) or 65 (women).
- Obesity (defined by a body mass index of more than 30 kg/m², or alternatively by waist circumference or waist-hip ratio).
- Lack of physical activity.
- Psychosocial factors including, low socio-economic status, social isolation, negative emotions and stress increase the risk of myocardial infarction and are associated with worse outcomes after myocardial infarction. Socioeconomic factors such as a shorter education and lower income (particularly in women), and unmarried cohabitation are also correlated with a higher risk of MI.
- Alcohol — Studies show that prolonged exposure to high quantities of alcohol can increase the risk of heart attack.
- Oral contraceptive pill – women who use combined oral contraceptive pills have a modestly increased risk of myocardial infarction, especially in the presence of other risk factors, such as smoking.
- Hyperhomocysteinemia (high homocysteine) in homocysteinuria is associated with premature atherosclerosis, whether elevated homocysteine in the normal range is causal is contentious.

Inflammation is known to be an important step in the process of atherosclerotic plaque formation. C-reactive protein (CRP) is a sensitive but non-specific marker for inflammation. Elevated CRP blood levels, especially measured with high-sensitivity assays, can predict the risk of

MI, as well as stroke and development of diabetes. Moreover, some drugs for MI might also reduce CRP levels. The use of high-sensitivity CRP assays as a means of screening the general population is advised against, but it may be used optionally at the physician's discretion in patients who already present with other risk factors or known coronary artery disease. Whether CRP plays a direct role in atherosclerosis remains uncertain. Inflammation in periodontal disease may be linked to coronary heart disease, and, since periodontitis is very common, this could have great consequences for public health. Serological studies measuring antibody levels against typical periodontitis-causing bacteria found that such antibodies were more present in subjects with coronary heart disease. Periodontitis tends to increase blood levels of CRP, fibrinogen and cytokines; thus, periodontitis may mediate its effect on MI risk via other risk factors. Preclinical research suggests that periodontal bacteria can promote aggregation of platelets and promote the formation of foam cells. A role for specific periodontal bacteria has been suggested but remains to be established. There is some evidence that influenza may trigger an acute myocardial infarction.

Baldness, hair greying, a diagonal earlobe crease (Frank's sign) and possibly other skin features have been suggested as independent risk factors for MI. Their role remains controversial; a common denominator of these signs and the risk of MI is supposed, possibly genetic.

Calcium deposition is another part of atherosclerotic plaque formation. Calcium deposits in the coronary arteries can be detected with CT scans. Several studies have shown that coronary calcium can provide predictive information beyond that of classical risk factors.

Many of these risk factors are modifiable, so many heart attacks can be prevented by maintaining a healthier lifestyle. Physical activity, for example, is associated with a lower risk profile. Non-modifiable risk factors include age, sex, and family history of an early heart attack, which is thought of as reflecting a genetic predisposition.

Pathophysiology

A myocardial infarction occurs when an atherosclerotic plaque slowly builds up in the inner lining of a coronary artery and then suddenly ruptures, causing catastrophic thrombus formation, totally occluding the artery and preventing blood flow downstream.

Acute myocardial infarction refers to two subtypes of acute coronary syndrome, namely non-ST-elevated myocardial infarction and ST-elevated myocardial infarction, which are most frequently (but not always) a manifestation of coronary artery disease. The most common triggering event is the disruption of an atherosclerotic plaque in an epicardial coronary artery, which leads to a clotting cascade, sometimes resulting in total occlusion of the artery. Atherosclerosis is the gradual buildup of cholesterol and fibrous tissue in plaques in the wall of arteries (in this case, the coronary arteries), typically over decades. Blood stream column irregularities visible on angiography reflect artery lumen narrowing as a result of decades of advancing atherosclerosis. Plaques can become unstable, rupture, and additionally promote a thrombus (blood clot) that occludes the artery; this can occur in minutes. When a severe enough plaque rupture occurs in the coronary vasculature, it leads to myocardial infarction (necrosis of downstream myocardium).

If impaired blood flow to the heart lasts long enough, it triggers a process called the ischemic cascade; the heart cells in the territory of the occluded coronary artery die (chiefly through necrosis) and do not grow back. A collagen scar forms in its place. Recent studies indicate that another form of cell death called apoptosis also plays a role in the process of tissue damage subsequent to myocardial infarction.[65] As a result, the patient's heart will be permanently damaged. This myocardial scarring also puts the patient at risk for potentially life threatening arrhythmias, and may result in the formation of a ventricular aneurysm that can rupture with catastrophic consequences.

Injured heart tissue conducts electrical impulses more slowly than normal heart tissue. The difference in conduction velocity between injured and uninjured tissue can trigger re-entry or a feedback loop that is believed to be the cause of many lethal arrhythmias. The most serious of these arrhythmias is ventricular fibrillation (V-Fib/VF), an extremely fast and chaotic heart rhythm that is the leading cause of sudden cardiac death. Another life-threatening arrhythmia is ventricular tachycardia (V-Tach/VT), which may or may not cause sudden cardiac death. However, ventricular tachycardia usually results in rapid heart rates that prevent the heart from pumping blood effectively. Cardiac output and blood pressure may fall to dangerous levels, which can lead to further coronary ischemia and extension of the infarct.

The cardiac defibrillator is a device that was specifically designed to terminate these potentially fatal arrhythmias. The device works by delivering an electrical shock to the patient in order to depolarize a critical mass of the heart muscle, in effect "rebooting" the heart. This therapy is time dependent, and the odds of successful defibrillation decline rapidly after the onset of cardiopulmonary arrest.

Diagnosis

Main article: Myocardial infarction diagnosis

Medical societies recommend that the physician confirm that a patient is at high risk for myocardial infarction before conducting imaging tests to make a diagnosis. Patients who have a normal ECG and who are able to exercise, for example, do not merit routine imaging.Imaging tests such as stress radionuclide myocardial perfusion imaging or stress echocardiography can confirm a diagnosis when a patient's history, physical exam, ECG and cardiac biomarkers suggest the likelihood of a problem.

The diagnosis of myocardial infarction can be made after assessing patient's complaints and physical status. ECG changes, coronary angiogram and levels of cardiac markers help to confirm the diagnosis. ECG gives valuable clues to identify the site of myocardial damage while coronary angiogram allows visualization of narrowing or obstructions in the heart vessels. At autopsy, a pathologist can diagnose a myocardial infarction based on anatomopathological findings.

A chest radiograph and routine blood tests may indicate complications or precipitating causes and are often performed upon arrival to an emergency department. New regional wall motion abnormalities on an echocardiogram are also suggestive of a myocardial infarction. Echo may be performed in equivocal cases by the on-call cardiologist. In stable patients whose symptoms have resolved by the time of evaluation, Technetium (99mTc) sestamibi (i.e. a "MIBI scan") or thallium-201 chloride can be used in nuclear medicine to visualize areas of reduced blood flow in conjunction with physiologic or pharmacologic stress. Thallium may also be used to determine viability of tissue, distinguishing whether non-functional myocardium is actually dead or merely in a state of hibernation or of being stunned.

WHO criteria formulated in 1979 have classically been used to diagnose MI; a patient is diagnosed with myocardial infarction if two (probable) or three (definite) of the following criteria are satisfied:

1. Clinical history of ischaemic type chest pain lasting for more than 20 minutes
2. Changes in serial ECG tracings
3. Rise and fall of serum cardiac biomarkers such as creatine kinase-MB fraction and troponin

The WHO criteria were refined in 2000 to give more prominence to cardiac biomarkers. According to the new guidelines, a cardiac troponin rise accompanied by either typical symptoms, pathological Q waves, ST elevation or depression, or coronary intervention is diagnostic of MI.

Prevention

The risk of a recurrent myocardial infarction decreases with strict blood pressure management and lifestyle changes, chiefly smoking cessation, regular exercise, a sensible diet for those with heart disease, and limitation of alcohol intake. People are usually commenced on several long-term medications post-MI, with the aim of preventing secondary cardiovascular events such as further myocardial infarctions, congestive heart failure or cerebrovascular accident (CVA). Unless contraindicated, such medications may include:

· Antiplatelet drug therapy such as aspirin and/or clopidogrel should be continued to reduce the risk of plaque rupture and recurrent myocardial infarction. Aspirin is first-line, owing to its low cost and comparable efficacy, with clopidogrel reserved for patients intolerant of aspirin. The combination of clopidogrel and aspirin may further reduce risk of cardiovascular events, however the risk of hemorrhage is increased.

· Beta blocker therapy such as metoprolol or carvedilol should be commenced.[76] These have been particularly beneficial in high-risk patients such as those with left ventricular dysfunction and/or continuing cardiac ischaemia. β -Blockers decrease mortality and morbidity. They also improve symptoms of cardiac ischemia in NSTEMI.

ACE inhibitor therapy should be commenced 24–48 hours post-MI in hemodynamically stable patients, particularly in patients with a

history of MI, diabetes mellitus, hypertension, anterior location of infarct as (assessed by ECG), and/or evidence of left ventricular dysfunction. ACE inhibitors reduce mortality, the development of heart failure, and decrease ventricular remodelling post-MI.

- Statin therapy has been shown to reduce mortality and morbidity post-MI. The effects of statins may be more than their LDL lowering effects. The general consensus is that statins have plaque stabilization and multiple other ("pleiotropic") effects that may prevent myocardial infarction in addition to their effects on blood lipids.

· The aldosterone antagonist agent eplerenone has been shown to further reduce risk of cardiovascular death post-MI in patients with heart failure and left ventricular dysfunction, when used in conjunction with standard therapies above. Spironolactone is another option that is sometimes preferable to eplerenone due to cost.

· Evidence supports the consumption of polyunsaturated fats instead of saturated fats as a measure of decreasing coronary heart disease. In high-risk people there is no clear-cut decrease in potentially fatal arrhythmias due to omega-3 fatty acids. And they may increase risk in some groups.

· Giving heparin to people with heart conditions like unstable angina and some forms of heart attacks reduces the risk of having another heart attack. However, heparin also increases the chance of minor bleeding.

Management

Main article: Myocardial infarction management

An MI requires immediate medical attention. Treatment attempts to salvage as much myocardium as possible and to prevent further complications, hence the phrase "time is muscle". Oxygen, aspirin, and nitroglycerin may be administered. Morphine was classically used if nitroglycerin was not effective; however, it may increase mortality in the setting of NSTEMI. A 2009 and 2010 review of high flow oxygen in myocardial infarction found increased mortality and infarct size, calling into question the recommendation about its routine use. Other analgesics such as nitrous oxide are of unknown benefit. Percutaneous coronary intervention (PCI) or fibrinolysis are recommended in those with an STEMI.

Prognosis

The prognosis post myocardial infarction varies greatly, depending on a person's health, the extent of the heart damage and the treatment given. For the period 2005–2008 in the United States, the median mortality at 30 days was 16.6% with a range from 10.9% to 24.9% depending on the hospital. Using variables available in the emergency room, people with a higher risk of adverse outcome can be identified. One study found that 0.4% of patients with a low-risk profile died after 90 days, whereas in high-risk people it was 21.1%.

Some of the more reproduced risk-stratifying factors include: age, hemodynamic parameters (such as heart failure, cardiac arrest on admission, systolic blood pressure, or Killip class of two or greater), ST-segment deviation, diabetes, serum creatinine, peripheral vascular disease and elevation of cardiac markers. Assessment of left ventricular ejection fraction may increase the predictive power. The prognostic importance of Q-waves is debated. Prognosis is significantly worsened if a mechanical complication such as papillary muscle or myocardial free wall rupture occurs. Morbidity and mortality from myocardial infarction has improved over the years due to better treatment.

Complications

Complications may occur immediately following the heart attack (in the acute phase), or may need time to develop (a chronic problem). Acute complications may include heart failure if the damaged heart is no longer able to adequately pump blood around the body; aneurysm or rupture of the myocardium; mitral regurgitation, in particular if the infarction causes dysfunction of the papillary muscle; and arrhythmias, such as ventricular fibrillation, ventricular tachycardia, atrial fibrillation and heart block. Longer-term complications include heart failure, atrial fibrillation, and the increased risk of a second myocardial infarction.

Epidemiology

Myocardial infarction is a common presentation of ischemic heart disease/coronary artery disease. The World Health Organization estimated in 2004, that 12.2% of worldwide deaths were from ischemic heart disease with it being the leading cause of death in high or middle income countries and second only to lower respiratory infections in lower income countries. Worldwide more than 3 million people have STEMIs and 4 million have NSTEMIs a year.

Rates of death from ischemic heart disease have slowed or declined in most high income countries, although cardiovascular disease still accounted for 1 in 3 of all deaths in the USA in 2008. In contrast, ischemic heart disease is becoming a more common cause of death in the developing world. For example in India, ischemic heart disease had become the leading cause of death by 2004 accounting for 1.46 million deaths (14% of total deaths) and deaths due to ischemic heart disease were expected to double during 1985–2015.[100] Globally it is predicted that disability adjusted life years (DALYs) lost to ischemic heart disease will account for 5.5% of total DALYs in 2030, making it the second most important cause of disability (after unipolar depressive disorder), as well as the leading cause of death by this date.

Research

Patients who receive stem cell treatment by coronary artery injections of stem cells derived from their own bone marrow after a myocardial infarction (MI) show improvements in left ventricular ejection fraction and end-diastolic volume not seen with placebo. The larger the initial infarct size, the greater the effect of the infusion. Clinical trials of progenitor cell infusion as a treatment approach to ST elevation MI are proceeding.

There are currently three biomaterial and tissue engineering approaches for the treatment of post-MI conditions, but these are in an even earlier stage of medical research. Many questions and issues must be addressed before they can be applied to patients. The first involves polymeric left ventricular restraints in the prevention of heart failure. The second utilizes in vitro engineered cardiac tissue, which is subsequently implanted in vivo. The final approach entails injecting cells and/or a scaffold into the myocardium to create in situ engineered cardiac tissue.

Antiplatelet agents

Aspirin has been shown to markedly reduce mortality and thus should be taken as soon as possible in those without an allergy to it. Aspirin has an antiplatelet effect which inhibits formation of further thrombi (blood clots) that clog arteries. Chewing is the preferred method of administration, so that it can be absorbed quickly. Dissolved soluble preparations or sublingual administration can also be used. U.S. guidelines recommend a dose of 162–325 mg.[Australian guidelines recommend a dose of 150–300 mg.Additionally, the antiplatelet agent clopidogrel improves outcomes in those who will be conservatively managed or undergo

percutaneous coronary intervention. It however may worsen outcomes in those who need urgent coronary artery bypass surgery.

Nitroglycerin

Nitroglycerin is used in the treatment of ACS/IHD to relieve anginal symptoms. It is associated with the decrease in myocardial stress due to peripheral vasodilation. The decrease of stress also decreases oxygen demand of the heart. The first line treatment for symptomatic relief of angina is sub-lingual nitroglycerin. Other formulations such as spray and IV can also be used. In the body nitroglycerin donates three nitric oxide molecules, which activate a second messenger system leading to release of calcium ions. The release of calcium ions leads to a relaxation of vascular smooth muscles and vasodilation. Nitroglycerin should not be given if any phosphodiesterase type 5 inhibitors such as Viagra, Cialis, Stondra, and Levitra have been taken by the casualty within the previous 24–48 hours as the combination of the two could cause a serious drop in blood pressure. It should not be given to patients with systolic blood pressure (SBP) less than 90mmHg or 30mmHg or more below baseline.

Beta Blockers

β-blockers have been extensively studied in acute MI. Despite thousands of studies, no consensus has yet been reached as to their efficacy in preventing complications or decreasing mortality.[citation needed] Logically this means that any treatment effect that exists is most likely small and risks and benefits of use in the ER should be weighed carefully. However, in theory β-blockers decrease the effect of the sympathetic nervous system on the heart. Since it is known that the sympathetic nervous system increases the heart rate and blood pressure in order to increase the cardiac output. Hence its blockage spares the heart the extra work load.

Heparin

Unfractionated heparin and enoxaparin result in similar outcomes at one year post MI.

Myocardial Energy Metabolism Regulator

Mildronate is a clinically used pharmacological preconditioning agent and anti-ischemic drug. It acts as a myocardial energy metabolism regulator by inhibiting fatty acid oxidation, and the carnitine biosynthesis and transport pathways, in particular gamma-butyrobetaine dioxygenase,

and carnitine acetyltransferase. By regulating the effective carnitine concentration, treatment with mildronate shifts the myocardial energy metabolism from fatty acid oxidation to the more favourable glucose oxidation under ischemic conditions.

Reperfusion

Also see cardiology quick review of trials section on intervention

The concept of reperfusion has become so central to the modern treatment of acute myocardial infarction, that we are said to be in the reperfusion era. Patients who present with suspected acute myocardial infarction and ST segment elevation (STEMI) or new bundle branch block on the 12 lead ECG are presumed to have an occlusive thrombosis in an epicardial coronary artery. They are therefore candidates for immediate reperfusion, either with thrombolytic therapy, percutaneous coronary intervention (PCI) or when these therapies are unsuccessful, bypass surgery

Rehabilitation

Additional objectives are to prevent life-threatening arrhythmias or conduction disturbances. This requires monitoring in a coronary care unit and protocolised administration of antiarrhythmic agents. Antiarrhythmic agents are typically only given to individuals with life-threatening arrhythmias after a myocardial infarction and not to suppress the ventricular ectopy that is often seen after a myocardial infarction.

Cardiac rehabilitation aims to optimize function and quality of life in those afflicted with a heart disease. This can be with the help of a physician, or in the form of a cardiac rehabilitation program.

Physical exercise is an important part of rehabilitation after a myocardial infarction, with beneficial effects on cholesterol levels, blood pressure, weight, stress and mood. Some patients become afraid of exercising because it might trigger another infarct. Patients are stimulated to exercise, and should only avoid certain exerting activities. Local authorities may place limitations on driving motorised vehicles. In most cases, the advice is a gradual increase in physical exercise during about 6–8 weeks following an MI. If it doesn't feel too hard for the patient, the advice about exercise is then the same as applies to anyone else to gain health benefits, that is, at least 20–30 minutes of moderate exercise on most days (at least five days per week) to the extent of getting slightly short of breath.

Some people are afraid to have sex after a heart attack. Most people can resume sexual activities after 3 to 4 weeks. The amount of activity needs to be dosed to the patient's possibilities.

Emergency services

When symptoms of myocardial infarction occur, people wait an average of three hours, instead of doing what is recommended: calling for help immediately. Acting immediately by calling the emergency services can improve outcomes for two reasons. First and most importantly, the emergency services can immediately save life from ventricular fibrillation, most often primary ventricular fibrillation, which occurs unexpectedly in more than 10% of all infarctions especially during the first hour of symptoms[citation needed] and second, immediate treatment of myocardial infarction can prevent sustained damage to the heart ("time is muscle").

Emergency Medical Services (EMS) Systems vary considerably in their ability to evaluate and treat patients with suspected acute myocardial infarction. Some provide as little as first aid and early defibrillation. Others employ highly trained paramedics with sophisticated technology and advanced protocols. Paramedic services are capable of providing oxygen, IV access, sublingual nitroglycerine, morphine, and aspirin. Some advanced paramedic systems can also perform 12-lead ECGs. If a STEMI is recognized the paramedic may be able to contact the local PCI hospital and alert the emergency room physician, and staff of the suspected AMI. Some Paramedic services are capable of providing thrombolytic therapy in the prehospital setting, allowing reperfusion of the myocardium.

With primary PCI emerging as the preferred therapy for ST-segment elevation myocardial infarction, EMS can play a key role in reducing door-to-balloon intervals (the time from presentation to a hospital ER to the restoration of coronary artery blood flow) by performing a 12-lead ECG in the field and using this information to triage the patient to the most appropriate medical facility. In addition, the 12-lead ECG can be transmitted to the receiving hospital, which enables time saving decisions to be made prior to the arrival of the patient. This may include a "cardiac alert" or "STEMI alert" that calls in off duty personnel in areas where the cardiac cath lab is not staffed 24 hours a day. Even in the absence of a formal alerting program, prehospital 12-lead ECGs are independently associated with reduced door to treatment intervals in the emergency department.