

***Containing COVID-19 – A case study of Bhilwara
&
Improving Global Health: Focusing on Quality and Safety***

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PLACE: Jaipur

DATE:

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List of Abbreviations

ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
COVID-19	Coronavirus disease of 2019
CrPC	Criminal Procedure Code
ILI	Influenza like illness
IPD	In Patient Department
MERS	Middle East Respiratory Syndrome
MOHFW	Ministry of Health and Family Welfare
MICU	Medical Intensive Care Unit
OPD	Outpatient Department
RRT	Rapid Response Team
RAC	Rajasthan Armed Constabulary
RI	Routine Immunization
SARS	Severe acute Respiratory Syndrome
URI	Upper Respiratory Infections
UPHC	Urban Primary Health Center
WHO	World Health Organization

Part 1:
Containing COVID-19 – A case study of Bhilwara

Abstract:

Introduction - Non-Pharmacological measures as quarantine, ban on public gatherings, isolation has been used from many decades to prevent transmission and spread of communicable diseases. Public health measures played decisive role in controlling SARS epidemic in 2003 and MERS epidemic in 2015. Currently COVID-19 is a global pandemic and various countries are attempting to confound the outbreak in different ways. Bhilwara the Textile city of Rajasthan became the hotspot for COVID-19 at an early stage when cases started to get reported in Rajasthan. State department health agency and Administration of Bhilwara implemented aggressive 'Ruthless Containment Model' to reduce transmission rate. This article explains whether the 'Bhilwara Model' was a successful model in containing COVID-19. The strategical approach of Micro planning for containing the local transmission of COVID-19 in Bhilwara district is elaborated.

Objectives- The objective of this study is to assess the impact of Micro plan containment model in Bhilwara district to contain COVID -19 cases till 20th April 2020. And to evaluate the strategic approach taken by State Health Department and Bhilwara administration to contain the COVID-19 cases in Bhilwara district.

Methodology- This report is based on Descriptive cross-sectional study design. Secondary data for COVID-19 cases were collected from various Government database portals. A qualitative approach was followed to assess the impact of Micro plan containment model.

Findings- Bhilwara district became epicentre of COVID-19 at early stage of infection transmission. First positive case was reported on 19th March 2020 and within few days it became the hotspot for novel coronavirus. The state Health Department and District administration took various measures as isolation of district, hotspot mapping, contact tracing, door-to-door screening and monitoring of rural area to prevent spread of infection. Micro plan containment strategy was implemented to reduce the infection rate and flatten the curve of infection.

Conclusion- Numerous measures were implemented by District administration to confound the outbreak. Ruthless containment strategy, Proactive and timely action, Lockdown restrictions, Comprehensive screening, Quarantine and Treatment facilities, Acquisition of private facilities to provide Healthcare needs, Coordination among different Government departments, Open Essential services, Seeking and providing Public support and Dynamic Leadership are key principles of this model. All these enabled Bhilwara to fetch results to contain the infection rate and earned global acknowledgement to fight the pandemic.

Keywords- COVID-19, pandemic preparedness, SARS, MERS, Bhilwara Model.

Introduction:

A pandemic is defined as “An epidemic occurring worldwide, or over a very wide area, crossing and usually affecting a large number of people”. Along the centuries various novel strains of viruses are causing pandemic situation around the globe resulting in illness, death, and disruption. Plague, cholera, smallpox, Spanish flu had caused a huge loss of human lives in past. In 1918, at least 20 million people died due to Spanish flu. It was caused by H1N1 virus, with gene of avian origin. Spanish flu occurred in three waves and almost affected 50% of world population (Akin & Gözel, 2020). In 1957 Asian flu, a new H2N2 viral strain emerged in East Asia. Approximately 1.1 million people died worldwide (Viboud et al., 2015). In 2009 H1N1 Pandemic (H1N1pdm09 virus) emerged first in United States and it quickly spread worldwide. According to Centre for Disease Control and Prevention, 1.5 -5.75 lakhs people died for first year of viral infection. In 2003, Severe Acute Respiratory syndrome (SARS) caused by corona virus was first reported in Asia. Later in 2012 Middle East Respiratory syndrome (MERS), caused by Middle East respiratory Syndrome Corona virus (MERS-CoV) cases were firstly reported in Saudi Arabia. In 2015 largest outbreak of MERS was reported in Republic of Korea. Recently on 31st December 2020, Wuhan Municipal Health Commission, China reported a cluster of pneumonia cases in Wuhan, Hubei Province. The outbreak was declared as Public Health Emergency of international concern on 30th January 2020 by WHO. On 11th February 2022, the new coronavirus was announced as COVID-19 by WHO.

Corona virus belongs to a virus family, which causes illness in humans and circulate among animals as in camels, bats, cats etc. The current outbreak is due to SARS-CoV-2 a novel corona virus. The transmission of SARS-Cov-2 in humans occurs directly via respiratory secretions or indirectly through close contacts and contaminated object or surfaces. The incubation period is usually 2-14 days. The common symptoms are fever, fatigue, difficulty in breathing, sore throat rhinorrhoea, diarrhoea, and nausea/vomiting. According to a report of 72314 cases from the Chinese Center for Disease Control and Prevention, 81 % of cases were classified as mild, 14% as severe and 5% as critical. The overall fatality rate was 2.3% (Jennifer, 2020)

On 30th January first case of COVID-19 in India was detected in Trissur District, Kerala from students who came from China. Rajasthan confirmed its first case of corona virus on 2nd March 2020 in Jaipur, from an Italian tourist. On 19th March 2020 first case of COVID-19 was reported in Bhilwara, doctor from Brijesh Bangad Memorial Hospital, along with five others found positive for corona virus. It became the hotspot for corona cases in the state. As the doctors in hospital were treating patients, 25 suspected people were kept in isolation as a preventive measure. But it was suspected that the doctors found positive for COVID-19 by that time may have seen approximately 7000 – 8000 patients in hospital and home clinics, and there was no second set of patients record

so, it was estimated that approximately 15,000 to 20,000 people have had direct contact with hospital staff. Curfew was imposed in Bhilwara district by administration, prohibiting any movement with interconnected districts. On 22nd march complete lockdown was imposed in Rajasthan by State Government, barring essential services.

The goal of this paper is to estimate the number of COVID-19 cases in Bhilwara till 20th April 2020 and to evaluate whether the extensive initiatives taken by Bhilwara administration had impact on containing COVID-19 cases in Bhilwara district.

Background:

In 2003, SARS global epidemic outbreak was largely contained through traditional or non-medical public health interventions. These interventions included social distancing, isolating patients, quarantining contacts, banning public gathering, closure of schools and colleges, public awareness for wearing masks and personal hygiene practices. For example, a study in Singapore demonstrated a correlation between rapidly isolating patients after onset of symptoms and fewer secondary cases among their contacts (Bell et al., 2004).

In 2005, WHO published an updated version for WHO global influenza preparedness plan, the role of WHO and recommendations for national measures before and during pandemics. The six phased approach provides a framework to aid countries for pandemic preparedness and response planning.

TABLE 1 PANDEMIC PHASE DESCRIPTIONS	
	DESCRIPTION
PHASE 1	No animal influenza virus circulating among animals has been reported to cause infection in humans.
PHASE 2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.
PHASE 3	An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.
PHASE 4	Human-to-human transmission (H2H) of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.
PHASE 5	The same identified virus has caused sustained community level outbreaks in two or more countries in one WHO region.
PHASE 6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region.
POST-PEAK PERIOD	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.
POSSIBLE NEW WAVE	Level of pandemic influenza activity in most countries with adequate surveillance rising again.
POST-PANDEMIC PERIOD	Levels of influenza activity have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.

Table 1: Pandemic Phase Descriptions

There were basically five components for preparedness and response –

1. Planning and coordination
2. Situation monitoring and assessment
3. Reducing the spread of disease
4. Continuity of health care provision
5. Communications.

In May 2015, first case of Middle East respiratory syndrome was seen in South Korea. Extensive nonpharmacological measures as contact tracing, isolation and quarantine of all cases and suspected contacts helped in containment of MERS cases in South Korea. Early detection and rapid responsiveness were key factors in bringing down cases.

In December 2019, COVID-19 case was first reported in China. On 30 January 2020, WHO Director announced coronavirus disease as a Public Health emergency of International concern. On 19th March 2020, interim guidance document was released by WHO for consideration for quarantine of individual in context of containment for coronavirus disease (WHO, 2020). The guideline clearly mentioned the quarantine measures for individuals, to be taken by Member states in context of COVID – 19 outbreaks.

In India, the first case of COVID-19 was reported on 30 January 2020. Ministry of Health and Family Welfare Government of India released a guideline for Containment Plan for large outbreaks for Novel Corona Virus disease (Ministry of Health and Family Welfare, 2020). According to this, a strategic approach for various possible scenario is to be followed. The main possible scenarios are travel related case reported in India, local transmission of COVID-19, large outbreaks amenable to containment, wide-spread community transmission of COVID-19 disease. The objective of this plan is to stop the chain of transmission to reduce the morbidity and mortality of COVID-19.

Along with strategic plans, detailed guideline for action plans for geographic quarantine is also given. Boundaries of geographic quarantine is defined on basis of geospatial distribution, administrative unit containing clusters occurring within a state (with a minimum of 1 district), implementation of strict movement restrictions and joint assessment by State and Central RRTs.

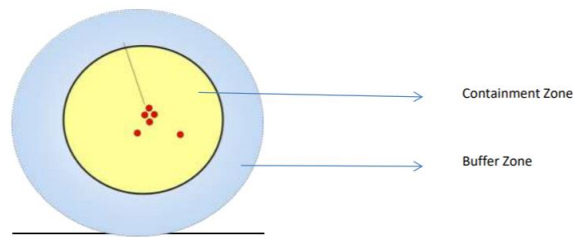


Fig: 1 Geographic quarantine boundaries

MoHFW also gave guidelines of surveillance in containment zone, contact tracing, laboratory support, hospital care, clinical management, psychosocial support pharmaceutical and non-pharmaceutical interventions, logistics, risk communication, capacity building, financing etc.

As the first corona positive case was reported in Bhilwara on 19th march. Bhilwara became epicentre of COVID-19 cases within few days, which was an alarming situation for both Bhilwara Administration as well as State government. District Administration acted swiftly and pursued an aggressive 'Ruthless Containment' Model to curb the infection rate. This Containment model was based on the Micro Plan for Containing Local Transmission of Coronavirus Disease (COVID-19) given by MoHFW (Government of India, 2020). The objective of this Micro plan is to contain the COVID-19 in a defined geographic area.

Objectives of the Study:

1. To study the impact of Micro plan containment model in Bhilwara district to contain COVID -19 cases till 20th April.
2. To evaluate the strategic approach taken by State Health Department and Bhilwara administration to contain COVID-19 cases in Bhilwara District.

Research Methodology:

Study type- Descriptive study

Study design – Cross sectional study

Research approach – Qualitative approach

Data collection – Secondary data (sources : <https://www.covid19india.org/>, PIB in Rajasthan (<https://twitter.com/pibjaipur?lang=en>)

Results:

Bhilwara district also called as the Textile city, is a homeland of approximately 30 lakh people. The district was among the first worst hit area for COVID-19 infection in state. Within few days it became the epicentre of corona virus infection.

The first case was reported on 19th March 2020 from a private hospital where a doctor was found positive. As the doctor was an employee of hospital who had provided treatment to many patients and has been in direct contact of other employees of hospital. The positive report of three doctors and three compounders of same hospital, alarmed the District administration to act immediately to curb infection rate.

COVID-19 daily basis positive cases reported from 19th March to 20th April 2020

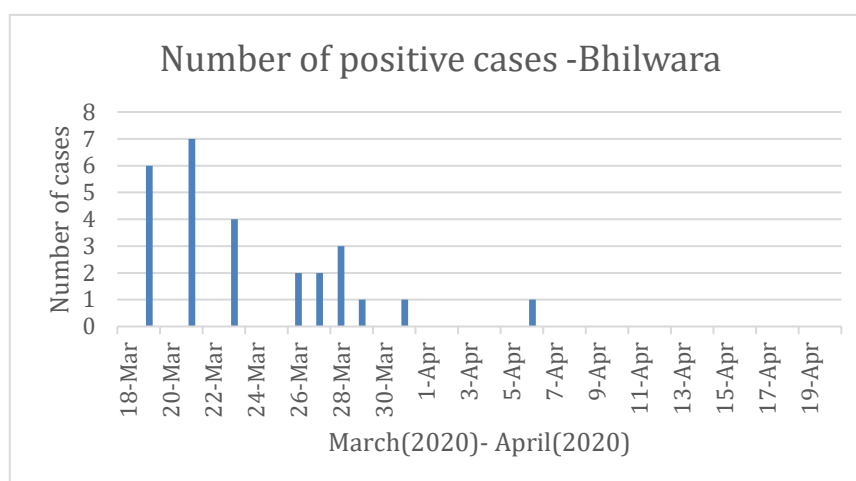


Fig 2: Graph showing number of cases in Bhilwara till 20th April 2020

Figure (2) shows the initial spurt in cases of COVID-19 in Bhilwara, which raised a major concern for State Health Department and Bhilwara administration.

The measures taken by the authorities of Bhilwara to contain COVID-19 were referred as 'Bhilwara Model'. It included isolation of district, hotspot mapping, contact tracing, door-to-door screening and monitoring of rural area to prevent spread of infection. All these measures were implemented according to micro plan containment model provided by MOHFW.

To win the battle against corona virus, the District Administration passed numerous orders to contain the infection.

On 21st March to isolate the District, District administration gave orders to completely seal the borders. Also, any workplace which had more than 10 people been asked to shut down. All rail services and movement of public or private vehicles were banned.

From 22nd March – 31st March, Curfew was imposed under section 144 of CrPC. A complete lockdown was enforced, and as per orders people were not allowed to come outside and roam, business outlets and shops were closed, offices, institutions, factories everything were shut down. Only essential items and service and few government offices, healthcare services, medical stores were exempted. Various teams were deployed to ensure supplies of essential services at ward at nagar parishad level.

On 23rd march orders were passed for acquisition of resorts, hotels and Dharamshala to convert them into quarantine centres to provide healthcare facilities. The district administration also took care of providing food packages to the needy ones.

On 25th March, a 24 hr services of War room were provided to Bhilwara residents. It included the representatives from Health Department, Local Administration, and police department to provide help to the residents.

On 26th March, to provide quarantine facilities 5 private hospitals were acquired by District authorities. The acquisition was done under The Rajasthan Epidemic Disease act 1957. Incident Commander were appointed to ensure the medical supplies as PPE kits, masks, sanitizers, and essential items at quarantine centres.

As per orders from Ministry of Home Affairs on 29th March, the District administration made proper arrangements of temporary shelters and food provision to migrants.

To break the chain of infection Maha – Curfew was imposed in the District from 3rd April to 13th April. People were strictly banned to move out of houses. Security was tightened and 3000 police jawans and RAC were deployed for patrolling to ensure zero mobility.

Door-to-Door Delivery of essential items were ensured. 324 Saras milk booths were open for dairy supplies and vegetables supplies were made available, which were distributed to colonies as per schedule provided. Residents were provided 24*7 helpline numbers to ask for their needs.

For hotspot mapping, based on travel history and maximum stay period of past 1 month, containment model was prepared. Shahpura urban was the epicentre in Bhilwara district.

Micro Plan for Containing Local Transmission of Coronavirus Disease (COVID-19)(Containment Zone Information - DNH, n.d.)

Demographic details of Bhilwara

District details

1. District area: 10509 km/Sq
2. District Population: 2408523 (According to Census 2011)

3. No of Blocks: 12
4. No of Municipalities: 6 + 1

Block Details

1. Name of Urban Area/ Block: Bhilwara Urban
2. Population: Approx. 348977 Lakh
3. Number of Sectors: 9
4. No. of Wards: 55
5. No. of Houses: 73334

Containment activity at Bhilwara

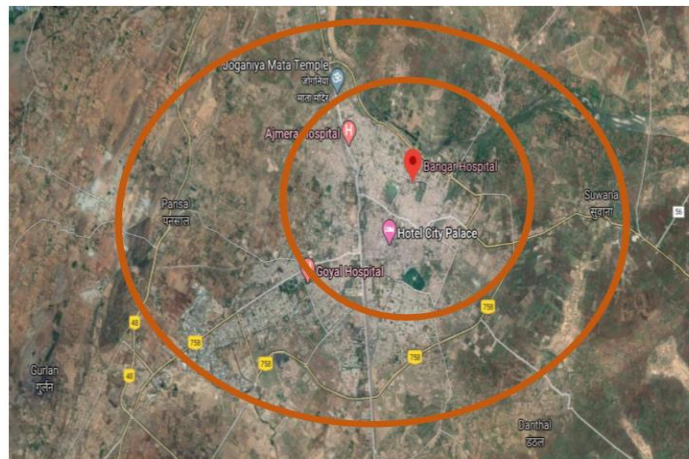


Fig: 3. Bhilwara containment activity

Details of Containment Zone

A. Affected area (Containment Zone)

1. **Name of the epicentre:** Bangad Hospital, R. C. Vyas Colony Bhilwara
2. **Number of affected Municipalities :** 1 (Municipal council of Bhilwara)
3. **Number of Wards in Containment Zone :** Total 8 sectors comprising of 51 wards are included in containment Zone:
 1. Sastri nagar (8 wards)
 2. Subhash Nagar (6 wards)
 3. Chandra Sekhar Azad Nagar (5 wards)
 4. Bapu Nagar (9 wards)
 5. Sanganer (7 Wards)
 6. Kashipuri (6 wards)
 7. Sanganeri Gate (5 wards)
 8. Chaprashshi colony (5 Wards)

4. **Number of houses in containment zone:** 68452 House.

5. **Population in Containment Zone:** 341601 Persons

B. Buffer Zone – As per Cluster Containment Plan Peri urban area selected as buffer zone.

1. **Number of Municipalities:** 1 (Municipal council of Bhilwara).

2. **Number of Wards in Buffer zone:** 1 sector Per 4 wards.

3. **Number of houses in Buffer zone:** 4882 houses.

4. **Population in Buffer zone:** 24004 persons

Activities related to Bhilwara urban (containment zone)

1. **Epicentre** – Bangad Hospital, R. C. Vyas Colony, Bhilwara was decided as the epicentre as both the positive case belong to same hospital.

2. **Coverage area** - An area of 3 kilometre radius of Bangad Hospital, was taken as containment area but 7 more staff of Bangad hospital resulted positive when tested on subsequent days, so 8 sectors of Bhilwara urban had been included in containment zone and remaining one sector was kept as Buffer zone.

3. **Team formation** – To cover entire area ANMs, urban ASHAs, nursing students and Anganwadi Workers of urban area were utilized for active case search.

4. **Micro planning**- Pulse-polio microplans & RI microplan as base for house to house survey.

Name of Containment area	Houses in Containment Zone	Houses in Buffer Zone	Population in Containment Zone	Population in Buffer Zone	Requirement of team	Number of Team deployed
Bhilwara City	68452	4882	341601	24004	309	300

Table 2: Containment zone details

5. **Supervision and monitoring** - One supervisor for every 10 teams and one Nodal Officer for every three supervisors.

6. **Door-to-Door Screening Activity by teams** - Teams went house to house and sensitized people about symptoms of novel coronavirus disease and steps for prevention. They also found out and documented any symptomatic (ILI) in their area and also collected travel history of all symptomatic. As a part of the drive the healthcare worker visited the suspected twice a day to keep

a check on their health status. And they also ensured that the home quarantine protocols were followed aggressively.

Detailed Survey report

Dates of survey	No. of Teams Deployed	No. of Houses surveyed	No. of People screened	No. of suspects of ILI		
				No. of URI	No. of High Risk	No. of Foreign Travellers
18.03.20 to 26.03.20 (Round 1)	1135	73334	365605	2572	149	25
24.03.20 to 02.04.20 (Round 2)	1098	75340	366449	882	00	123
27.03.20 to 04.04.20 (Round 3)	941	73626	378491	855	00	1

Table 3: Survey Report

Laboratory Support – District had collection centre in DEIC, Bhilwara and sample were sent to SMS Jaipur for COVID19 testing.

Identified Health Facility in the District – Total 6 hospital were catering to the patients and suspects of COVID 19 in the district. Out of this 1 was Government hospital and other 5 were private hospitals.

Ambulance facility – All the 108 (25) & 104 (21) ambulances were utilized to transfer the COVID19 suspects from field to hospital. Total 70 no. of ambulance (40) and private vehicle (30) were hired for transportation of suspects in addition to available govt. vehicles.

Contact tracing

The focus of door-to-door screening was to identify people with Influenza like illness (ILI). Once it was done, next step was aggressive contact tracing of all those who met them and are potential suspect of viral infection. All those who met people having ILI were advised to follow home quarantine guidelines and were visited by health care providers to check their health status

S. No.	Name of Positive Case	Contact Details		Total No. of Contact	Result		
		Close Cont act	Distance Contact		Positive	Negative	Waiting
1	Dr Alok Mittal	4	11	15	1	14	0
2	Dr Jagdish	3	9	12	0	12	0
3	Rajmal Sharma	1	7	8	0	8	0
4	Wasim Akram Rangrej	2	1	3	0	3	0
5	Praveen Singh	2	6	8	0	8	0
6	Pintu khatik	5	0	5	0	5	0
7	Seema Rao	4	9	13	0	13	0
8	Naiem	3	6	9	0	9	0
9	Dr Niyaz khan Pathan	5	15	20	0	20	0
10	Sima Mitthal	0	0	0	0	0	0
11	Priyanka Parashar	5	0	5	0	5	0
12	Narayan Singh	8	18	26	2	24	0
13	Ajay Singh	0	0	0	0	0	0
14	Daksha Solanki	2	7	9	0	9	0
15	Sweta D/o Ramesh Birla	4	7	11	0	11	0
16	Vishvesh tailor	3	21	24	0	24	0
17	Suresh Suwalka	3	12	15	0	15	0
		54	129	183	3	180	0

Table 4: Contact tracing

Passive Surveillance

All the UPHC within the containment Zone and Buffer zone were advised to refer and mobilise (keeping in lieu with the social distancing guidelines) the Suspected ILI to the screening and sampling centre at the district Headquarter.



Fig 4: Passive Surveillance

Overall Activities done in Bhilwara

1. Based on number of cases resulted positive in district containment zone was prepared
2. Ensuring no movement zone in urban Bhilwara
3. Ensured sample collection of all contacts identified
4. Sample collection of all the staff of Bangad Hospital was done
5. Sample collection of IPD patients including MICU patients of Bangad hospital in last one month was taken
6. Sample collection of all OPD patient from 12th March to 18th March irrespective of symptoms seen or not (as symptoms in major positive staff seen between 11 to 12th March 2020).

Content	No. of Samples collected
Total Staff in Bangad Hospital	370
Total Contacts	183
Total IPD Patients	417
Total OPD Load from 12 th March	213

Table 5: Number of samples collected from Bangad Hospital

Monitoring of rural areas

The 19 hotspots detected mostly belonged to urban Bhilwara due to high population density. For monitoring corona fighters and corona warriors were appointed in city, sub-divisional magistrate (SDM) was the corona captain and ASHA and ANM were corona fighters. In the villages, block development officers (BDO) and tehsildar were corona captains at the level of panchayat samitis and sarpanch, panchayat sahayak, teachers and ASHAs were corona fighters at village. These corona fighters submitted daily reports on screening of rural areas and if there is a sign of community spread. Six 24*7 control rooms were set up, including at the collectorate, chief medical and health officer, nagar parishad and sub- divisional office.

Apart from the following six key steps, the district administration also actively increased the decontamination drive disinfecting every nook and corner of the city. It included every containment and buffer zone areas, to all areas where positive cases were found. Also, ambulances, police vehicles, screening centres, quarantine facilities were disinfected on daily basis.

With all these rigorous efforts get a flatline curve was obtained, i.e. numbers have gone down due to cooperation between each department, Health officials and Bhilwara administration. Public support also played a major role in flattening of curve.

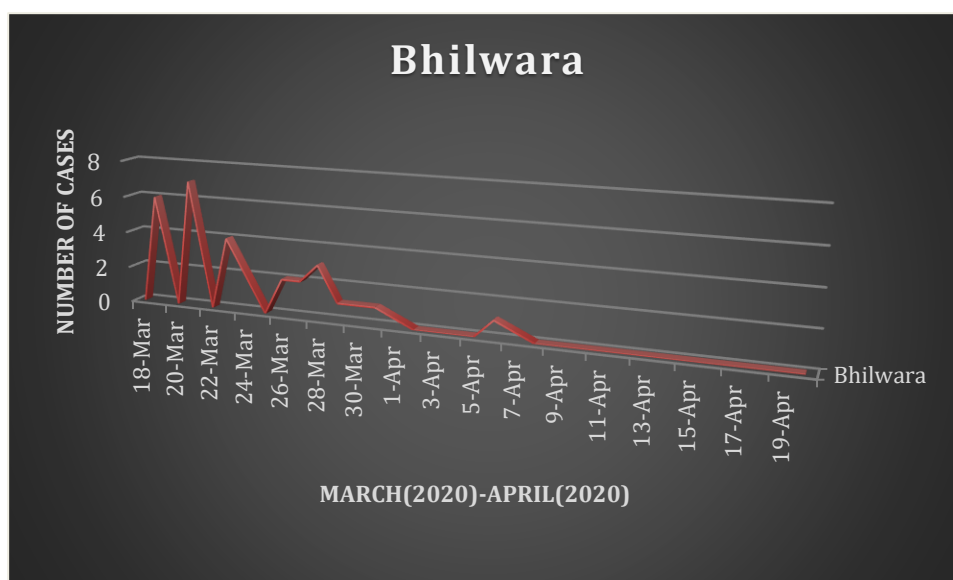


Fig 5: Flat line curve graph

Discussions:

Globally from previous experiences for epidemic control like SARS outbreak in 2003 or NIPAH virus outbreak in 2018 in Kerala, it was learned that through non-medical public intervention approach the infection rate can be curbed at a large extent. The victory of public health tools provides incentive to continue such stringent measures for novel corona virus outbreak.

Bhilwara emerged as one of the early COVID-19 hotspots in India. The Bhilwara Model of ‘Ruthless Containment’ strategy centred around 6 key steps which were implemented in phases.

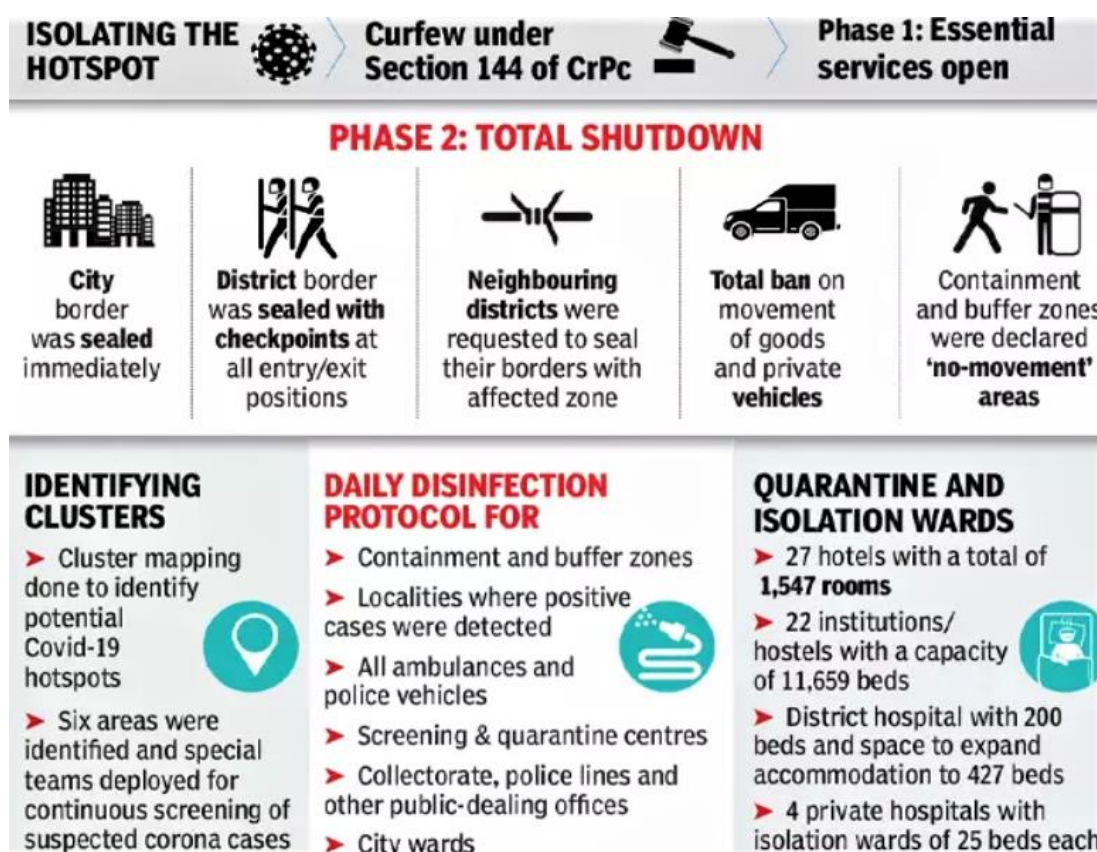


Figure 6 – Measures taken in containment strategy

When Bhilwara witnessed outbreak of Corona virus infection, it was compared as next Wuhan or Italy for infection outbreak. The District Collector identified that there might be this possibility, so without any delay the decision for curfew was implemented in one day. To avoid any movement from other connected Districts, the administrative units of nearby districts were informed about the situation. The administration imposed a total lockdown on the district, with the local police ensuring strict implementation of the curfew. For essential item supplies, administration took utmost care to check the flow of supplies to every locality under strict vigilance.

Hotspots mapping, door-to-door screening, contact tracing with help of healthcare frontline workers was performed at a rigorous level.

The state Health Department also took the help of technology, using an app to monitor the conditions of those under home quarantine daily along with keeping a tab on them through the geographical information system (GIS).

One of the leading causes of successful implementation of containment plan was Decentralization and Administrative autonomy of authorization. To make the entire process participatory special and specific responsibilities were allocated to all i.e. right from teams of elected village representatives to the sub divisional magistrates. The empowerment of local administration and ground team to take necessary steps in for containment of disease played a vital role.

Conclusion:

Over the past few months, COVID-19 emerged as a public health threat and various countries health systems are focussing on implementation of non-pharmacological health interventions to control the disease transmission. Success of Bhilwara model to contain COVID-19 can be attributed to various principles as:

- Ruthless containment strategy- From complete isolation of district to door-to-door supply of essential commodities, zero mobility, comprehensive screening, contact tracing Bhilwara witnessed extreme measures taken to stop infection transmission. So, to deal with situation of outbreak, Ruthless containment is key to control viral infection.
- Strict curfew enforcement – One of the most crucial steps in restricting disease outbreak is to break the chain of transmission. Strict enforcement of curfew by Bhilwara administration played a vital role to curb the infection rate at an early stage.
- Proactive approach – Proactivity and timely actions taken by the State health government and Bhilwara administration resulted in lowering the number of cases within 2 weeks of outbreak. Basically, the principle is that if the problem is evaluated at initial period and prompt actions are taken, then situation can be controlled effectively.
- Dynamic Leadership- Leadership is the ability to get extraordinary achievements through ordinary people. Under the dynamic leadership of Bhilwara Collector this model was established as a best model to arrest COVID-19 for whole of the country. So, the Principle is that in such a situation we need to have a Dynamic leader who can lead the things with clarity of vision.
- Coordination among various Government departments- Not letting virus spread and providing public basic essential supplies simultaneously is a big challenge for any Government body. To implement the Containment strategy without chaos various Government departments as Health, Police, Local administration played their roles with responsibilities. So, the Coordination of various Departments is an important determinant to manage such situation where a holistic approach is needed.
- Public support –The public of Bhilwara understood the seriousness of situation and need of the hour to support the Administration to control disease outbreak. Therefore, in situation like this where actions taken by government directly affect the public at basic level, seeking and providing support to public becomes an important element for implementation of such radical containment model.

The model has been executed with clockwork precision, immaculate coordination, and extreme efficiency. The collective efforts fetched results and the model has been globally acknowledged to fight the pandemic.

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Part 2:
Improving Global Health: Focusing on Quality and Safety

Course Description:

A prologue to the rising field of worldwide human services quality. In recent decades there has been an expanding acknowledgment that with the goal for human services to improve populace wellbeing, it must be sheltered and dependably conveyed. Despite this acknowledgment, the nature of healthcare that the world's residents get isn't as acceptable as possible and ought to be. The latest information propose that low quality social insurance is likely one of the top reasons for mortality globally. While there are various activities to improve medicinal services quality in the US, expansive proof from other high-pay nations and rising proof from low and centre salary nations recommend that a worldwide centre is required.

Objectives:

The importance of focusing on quality for improving population health

- A framework for understanding healthcare quality
- Approaches to quality measurement
- The role of information and communication technology in quality improvement
- Tools and contextual knowledge for quality improvement

Learning Methodology:

Video/assignments reading material

Online platform- edx

Key Learnings:

Quality comes in six aspects: Safety, Effectiveness, Efficiency, Patient-centred, Timeliness, and Equitability

Burden

According to survey polls globally 18 -20 % of patients who seek care in the hospital do suffer an adverse event when receiving that care. An adverse drug event is any injury occurring as a result of medication. In the context of healthcare quality hospital acquired infection, fall, pressure ulcer, surgical complications. Deep venous thrombosis are example(s) of an adverse event. 10 -25 % of patients suffer from adverse drug events.

A preventable adverse event is an injury caused by error in medical management. 25% of this accounts for lack of adequate personnel in hospitals to support implementation/ maintenance. Notably the risk for adverse drug event is low in LMICs (low- and middle-income countries). As an adverse event, birth related injuries are area of concern in LMICs. Now adverse events are mainly related to IPD settings. Referrals are major concern for OPD settings

In India, Tuberculosis prevalence is seen from decades. 25-30% of global TB cases and deaths are in India. In India, the number of TB deaths is declining, but the number of new cases is increasing because of increase in detection number from private sector providers, and drug resistance TB patients are increasing. It is essential that TB patients complete the full course of treatment. Both public and private sector providers are providing treatment facilities, but major chunk is still in hold of public sector. Monitoring, Learning, and Evaluation are key to monitoring TB progress in the public and private sector

Measurement

Approximately on average 50% of patient in India be diagnosed correctly. Lack of medical knowledge, not putting enough efforts. Doctor's getting paid to do something that is not right are main reasons for incorrect diagnosis and/or treatment in Low- and Middle-Income Countries (LMICs). In high income countries metrics are used for quality monitoring programs.

Standards

In U.S there are three ways by which the law helps to assures to provide quality care.

The first is regulation, states or the federal government sets minimum standards for which a practitioner must meet, or a hospital must meet, if it wants to operate.

The second is the liability system for malpractice that is a system of accountability.

And then the third is when it creates financial incentives, or penalties, for hospitals and physicians and other providers, about how they behave and what they do.

Medicare is the biggest payer of health care in America. Medicare has an important role to play to get either joint commission accreditation or getting accreditation directly from the government. Joint Commission looks at workspace area and make sure that it is free of clutter. It helps set that standard for people, to help people get better outcomes. For example, ACA has put in a lot of financial incentives and penalties that are designed to motivate hospitals and providers to focus either on certain processes, or focus on certain outcomes

For liability issues as malpractice there is a whole legal system. If somebody acts unreasonably and that unreasonableness causes a patient harm, that is negligence. So, doctors must behave reasonably and responsibly. About 98% of negligent injuries in U.S care go uncompensated. To avoid lawsuit Defensive medicine approach is practiced i.e. provide care that is unnecessary for patients as diagnostic test, medications. Defensive medicine accounts for about \$45 billion of costs across the US, which is a little under about 2% health care expenditures. Mainly, relationship between physician and patients and severity of injury are two major reasons for charging. And on an average, it takes 3-5 years to get compensated in U.S.

Improvement

For quality health care it is a need to build improvement capability, the science of improvement, into every curriculum. To get the entire mentality of the clinical culture improvements are needed. Now the model for improvement is Plan-Do-Study-Act cycles. Plan-Do-Study-Act (PDSA) is a non-clinically specific framework which lends itself to adaptability across contexts. Improve in quality considers many aspects as infrastructure, medications, equipment's used, communication with patients, Health financing. To measure quality of care healthcare is to be considered as an enterprise. It takes adoption of norms, educating healthcare professionals, planning and execution. To measures of success that quality of care has improved after 5 years, indicators should match with what is globally recognized. Substantially good public policies, comprehensive governance, and comprehensive care at each point of care will help in improving quality of care.

IT and Data

Health information exchange is a tool that enables to understand what is done and improve the performance of the healthcare system in a way that it could not do without the data and underlying technologies. For example, electronic health records (EHR) comprises of clinical notes, electronic ordering, results and result management, decision support. In U.S 50% of doctors use EHR. The financial incentive, HITECH Act from U.S government is a pull factor for increase in EHR users. A recent WHO survey suggested over 100 countries have national E-health strategy. Medication safety

and clinical decision support are key indicators to show the Efficiency of HIT in improving quality of health care. Overall, m Health interventions have the potential to impact healthcare around the world.

Management

Management plays a key role in improving quality of any organization. Hospital-specific management practices are strongly related to a hospital's quality of patient care and productivity outcomes. In studies it is found that there is a correlation between organizational performance on management metrics (AMI rates) and whether their patient live or die. Improved management practices in hospitals are associated with significantly lower mortality rates and better financial performance. Transparency and use of hospital safety metrics, managers with clinical degree, organization ownership, and organization size are few factors which affects quality outcomes. It is observed that pessimistic managers perform (as measured by management scores) better, as they drive themselves to improve on certain things and even encourage or drive colleagues as while. But hospitals usually have a lower quality management scores than other industries as a high percentage are government owned and they are often shielded from competition market.

In India, JIPMER launched an intensive Quality strategy. The strategy has included a number of initiatives, such as the multidisciplinary JIPMER Quality Council, Continuing Medical Education (CME) credits and training of the trainer.

Patients

Patient-centred care and patient experience are key element of quality of care. Patient-centred care is a respectful and responsiveness to the patients need, and values and ensuring that patient values guides all clinical decisions. To measure patients, experience there is a tool i.e. HCAHPS, which basically comprises a questionnaire. The purpose is benchmarking hospitals, aggregating data on public sites, providing a mechanism by which patients can express their experiences. For a quality outcome clinician-patient interaction is a major determinant. Awareness, competency, more time given to the patient as possible, preformed sheet filled by the patient, involving the patients in their own care and decision making are among tools to improve patient satisfaction.

Changes at personal level, microsystem level, organization level, global level as well as external level are needed to improve the culture of patient experience.

Now there is a difference in healthcare quality low and middle-income countries (LMICs) and high-income countries because of difference in standards, funding, Resources, and patient demand. Increasing skills and motivation of health care workers is a key opportunity to improve healthcare quality in many countries.

Public systems

Better care, better health and lower cost are Triple Aim of healthcare. Six aim for improvements are safety, patient-centred, equity, efficiency effectiveness, timeliness. In 2002, the First World health Assembly resolution on patient Safety passed. To sustain momentum to continuously improve quality multilateral policy mechanisms like setting Millennium Development Goals (MDGs) plays a key role. Every country is trying to improve the quality of health care.

Cross national learnings can be adopted to improve certain areas. Projects in Mexico, Peru and Russia have shown that healthcare improvements can be managed successfully with limited resources. The key lessons are to keep targets and measurement processes simple and to make use of teamwork. United States has integrated electronic health records and patient follow-ups which can drastically improve health care quality. Britain has done excellent in a lot of ways regarding these aspects of healthcare. They have implemented a lot of Electronic systems, trained staff to use it and then also has a lot of safety guidelines. Countries like Sweden/Denmark/Germany all have enough doctors and their work is spread as a result. More doctors will lead to higher efficiency in delivering patient centred healthcare.