

HOW A COMMUNITY HOSPITAL EMERGENCY DEPARTMENT COPEd WITH A MASSIVE BLIZZARD

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INTRODUCTION

Although the great snowstorm of '78 is now history, for those of us who lived through it, it was a mixture of serious, eerie and sometimes comical events. For those of us who were more or less directly involved with its consequences, it will be a long remembered event. This, therefore, is an attempt to explain how one general hospital Emergency Department coped with a mammoth blizzard and was able to continue operations, while most people in the area were snowbound.

THE STORY OF EVENTS

The city of Pawtucket, Rhode Island is populated by approximately 90,000 people. It is situated in the northeastern section of the state and contains numerous small industries. Its working population comes from several surrounding "bedroom" communities in Rhode Island and neighboring Massachusetts as well as a significant number from the city of Pawtucket, itself. Downtown Pawtucket is approximately 4 miles from downtown Providence but actually the northern outskirts of Pawtucket fuse with the southernmost outskirts of Providence. Pawtucket is also surrounded by the cities of East Providence, Central Falls, and the town of Seekonk in Massachusetts.

The climate in Rhode Island is milder

than in the other New England states. The maximum snowfall (40–55 inches per year) usually occurs in the western third of the state. In 1978 there were 2 snowfalls prior to February 6. One measured approximately 2 inches in mid January and one measured 8–12 inches in early February. The residents of the area began to feel that they were going to experience a winter with insignificant snowfall.

On Monday, February 6, 1978 a light snowfall began to occur in the area at about 10:30 a.m. Although the National Weather Service had predicted a massive snowfall about 30 hours earlier and within 15 hours "near-blizzard" conditions were predicted, people were complacent, expecting "just another snowfall". By 12:30 p.m. it was snowing much more heavily and there were 2 to 3 inches of snow on the ground. Still no one appeared to be too concerned (36 hours later there would be 36 inches of snow). Schools are usually discharged in the area between 1:30 and 2:30 p.m. but by 1:00 p.m. some consternation had arisen and students were let out 15 to 30 minutes early. School buses were late in arriving at many schools, however, and the students were compelled to wait for them.

It began to become apparent that this was not an ordinary storm, as snow was now gusting horizontally and piling up quickly on the

ground. Employers became alarmed and began to send employees home around 2:30–3:00 p.m. As a result most workers were discharged at about the same time. With the build up of surface snow and the mass exodus of workers, long lines of traffic began to build up on many major thoroughfares and on the two major highways in the area. Soon lesser highways also became inundated with traffic. As the storm progressed, vehicles began to be trapped at intersections and at the entrances and exits of the major highways. This in turn led to other vehicles becoming trapped on the roads and numerous occupants having to leave their cars in search of shelter. (Interestingly, those who ventured onto side streets and lesser roads, at this point, found little or no traffic around them and were able to proceed with no interruption as long as they were able to cope with a moderate build-up of snow on the roads.)

The storm raged on through the night and continued the following day to a lesser degree. Those who did manage to reach their destinations on Monday evening found that their cars were almost completely buried in snow by the following morning and that roads were impassable. Numerous people failed to reach their destinations however, and stayed in firehalls, schools and private homes. Rumors began to circulate that many people trapped in their cars had died from exposure and from asphyxiation. This was later disproved.

By Tuesday morning, the city was at a standstill with up to 4 feet of snow and stalled vehicles blocking the roadways. Late in the morning, snowplows began to make some headway and were able to plow one lane on some major streets and access roads. These lanes were for the use of Ambulance, Rescue, Fire and Police vehicles only.



Fig. 1.

Wednesday, two days after the storm had started, was sunny and bright. Only a few major thoroughfares were open to single lane traffic. Emergency vehicles were slowly plodding through these and trips which usually took 15 minutes were now taking at least 1 hour. By this time, a ban had been placed

on unauthorized vehicular travel with \$ 500 fine for violators. The scene in the area was one of utter devastation. Automobiles, buses and trucks were blocking intersections at odd angles (Fig. 1, 2 and 3). (Most of these vehicles had been abandoned 48 hours earlier.) There were huge ruts in the roads. Large num-



Fig. 2.



Fig. 3.

bers of people were out walking and milling around and yet there was an eerie quiet due to the fact that few vehicles were in operation. It looked and sounded as though the city were suffering from the aftermath of a major catastrophe.

One of the most difficult problems with the movement of rescue vehicles was the pedestrians. People, in general, tended to ignore the flashing lights of these units. When sirens were sounded, most moved aside, yet some were slow to do so, others defied their drivers until the last moment while still others became irritated and swore at the Rescue Personnel.

Rescue workers worked long and arduous hours. At one point, I saw 6 men go through waist deep snow to bring a man 150 feet from an apartment building by stretcher. Because of the weight and height of the snow, they began to trip and fall while carrying the patient. The stretcher never touched the ground, however, because as one man fell there was always another one present to catch the stretcher handle before it reached the ground.

On Wednesday, the Army began to arrive with personnel and heavy snow removal equipment and the tide of battle began to turn for this first time in 2 days.

At the Memorial Hospital in Pawtucket, Rhode Island it was fortunate that 2 physicians had been scheduled to work the 4:00 p.m. to 12:00 a.m. shift in the Emergency Department on Monday, February 6. This Department is usually quite busy, seeing on an average of 110 patients per day. As in most Emergency Departments, approximately 60% of these patients, present with minor injuries and illnesses can be dispensed of fairly quickly. As of noon Monday, February 6 not too many patients were arriving at the Emergency Department, due to increasing weather conditions. Some patients who routinely went to other facilities, were unable to reach them and had to be rerouted

to Memorial. As a result only 59 patients were seen that day, but about 90% of these were true emergencies, requiring either admission or consultation.

By Tuesday morning the seriousness of the situation began to evolve. Medical and nursing staff were unable to get in to relieve the staff who had already worked two 8 hours shifts, and those who had worked were unable to leave. Those who were confined to their duties began to spell each other in order to obtain some rest. Fortunately, Tuesday's patient flow dwindled to 35 patients over a 24 hour period. Unfortunately, nearly all of these patients required some form of acute medical or surgical care.

The methods of patient arrival were varied: Fire Department Rescue, Ambulance, Police Department cruisers, stretchers on the front ends of jeeps, toboggans pulled behind jeeps and snowmobiles. One patient arrived with a broken leg, transported in the bucket of a front end loader.

As previously indicated, staffing initially became unregulated. Staff within the hospital relieved one another on a haphazard basis. Doctors and nurses who were not working and who were unable to get home, obtained sleep anywhere they could, whenever they could. Some slept in the Resident's Quarters, others slept on mattresses placed in conference rooms, while others got short naps on beds and stretchers in the Emergency Department.

In their off time on Tuesday, 2 members of the Emergency medical staff went walking in order to relieve their boredom and found themselves walking up the middle of Route 95, the state's major highway. They found this to be an eerie experience, surrounded by silence and what appeared to be a wasteland, with numerous vehicles abandoned by the sides of the road and blocking entrances and exits.

On Wednesday, with one lane traffic available on some streets, some additional staff

began to trickle in on foot and transported by authorized emergency vehicles: Fire Department, Police, Volunteers and Hospital. (The National Guard refused to transport medical and nursing personnel as they were involved in transporting patients, drugs and other hospital supplies.) With their arrival, some organization for working hours began to develop.

Where possible, nursing staff was placed on 8 hours shifts and medical staff was placed on 12 hour shifts. Some of the staff who had been on duty for 48 hours were sent home. Others, however, would have to pass through the city of Providence in order to reach their destinations. Since Providence was totally closed to all but essential emergency vehicles, these people had to wait until Friday or Saturday to reach home.

At one point on Tuesday, members of the resident staff were discussing how they could improve their efficiency when the idea of telephone triaging of Fire Department Rescue calls emerged. As a result, one member of the resident staff was assigned, on a daily basis, to the Central Fire Station and triaged calls to separate the necessary calls from those which were unnecessary and in this manner, kept the Rescue runs cut in half during their period of operation.

Residents assigned to this service also accompanied the Rescue vehicles on more serious runs and worked primarily as paramedics, starting IV's, giving drugs, etc.

There is a rather large parking lot adjacent to the Emergency Department at the Memorial Hospital. As it became apparent that there might be some problem in obtaining supplies and in transferring patients, this lot was cleared of snow and automobiles and used as a helipad. Over the next 4 days, several landings of small and medium helicopters took place from it for various reasons. The major problem with this site was that people were used to parking there. It became necessary to leave a security guard

on duty to prevent this.

As the traffic routes began to open up slightly on Wednesday, the patient volume in the Emergency Department rose from the 35 seen on Tuesday to 60. (This became a continuing pattern throughout the week. As ease of availability in reaching the hospital increased, more patients with illnesses and injuries of lesser severity arrived in the Emergency Department, Table 1.)

TABLE 1

	Date	No. of patients seen
Monday	2/6/78	59
Tuesday	2/7/78	35
Wednesday	2/8/78	60
Thursday	2/9/78	81
Friday	2/10/78	82
Saturday	2/11/78	106
Sunday	2/12/78	107

Thursday it became evident that the hospital was experiencing a serious logistics problem. Due to the large number of patients admitted, hospital beds had run out and only a few patients who had been discharged were able to be sent home. Those who did manage to leave were sent in Fire Department and Police Department vehicles. One group of patients who lived south of Providence left by Army helicopter.

On Friday, the Police Department assigned an officer to coordinate the movement of discharged patients from the hospital and to aid in setting up transportation of hospital staff to and from the hospital.

On Saturday, traffic began to flow much more freely and the driving ban was lifted in some areas about noontime. Numerous vehicles suddenly appeared on the roads tying up Emergency Rescue vehicles as roadways were still very narrow (Fig. 4).

The lifting of the driving ban also brought a flood of patients into the Emergency De-



Fig. 4.

partment. Many of the patients seen on these 2 days had illnesses and injuries of minor nature but a larger than normal number of patients with serious illnesses continued to arrive. This pattern continued through the following day as well. By this time, medical and nursing staff were fatigued and the sudden increase in the number of patients placed a severe strain on them. By Sunday evening, (6 days after the storm began) the patient load in the Emergency Department returned to normal and it became possible to reinstate normal 8 hour shifts.

CONCLUSIONS

During the record snowstorm which blanketed Rhode Island on February 6, 1978:

1. Most people in the area were released from work at the same time. This resulted in the main roads and highways becoming clogged with traffic.
2. The Interstate Highways were left open. Had these been closed when it became apparent that a major storm was in progress, automobiles would have been forced to use secondary roads. When vehicle occu-

pants leave their vehicles on an Interstate Highway, there is no means of obtaining shelter, other than to seek the nearest entrance or exit ramp, leave the highway and then look for the nearest building. In the case of most secondary roads, houses and other buildings are adjacent to them and much more readily available for shelter.

3. With the exception of 1 area television station, there was no major source of information. Many people in the area were sheltered in schools, etc. while others were without power. Most had radios but few of these people had access to a television set. Radio stations in the area carried on with regular programming and information was only occasionally given. As a result, people were not kept fully informed of what was really happening and of how to obtain aid and services in emergency situations. Secondary shelter areas, restaurants, service stations, etc. were not announced. The result was that telephones were used unnecessarily and long waits for a dial tone resulted.
4. The travel ban was not gradually lifted in most areas. This resulted in numerous

automobiles suddenly appearing on roads which were still quite narrow and deeply rutted. Many of these became stalled and long line-ups occurred. This hindered the continuing efforts of Rescue and other essential vehicles.

5. The use of physicians to triage incoming Fire Department Rescue calls resulted in cutting down the number of Rescue runs to approximately half. This is an area which should possibly be looked into for permanent implementation.