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Criteria for sedation of psychiatric patients for air transport in British Columbia

Air Ambulance Program guidelines are designed to ensure the safety of paramedics, air crew, and patients.

ABSTRACT: Transporting patients from one place to another in the vast province of British Columbia requires air transport, since ground transport can take too long even for noncritical patients. Although psychiatric patients constitute only a small percentage of all air transport patients, they require special consideration because they can become agitated and act in a way that poses a danger to themselves and everyone else aboard an aircraft. Recently, the BC Ambulance Service conducted a literature review and developed guidelines that identify psychiatric patients who require sedation prior to air transport. Facilities wishing to send psychiatric patients to another facility by air are now asked to consult with Air Ambulance Program transport advisors and follow these guidelines in order to ensure the safety of paramedics, air crew, and patients. In cases where sedation of a patient is contraindicated, facilities might consider other methods of transport, including a commercial flight or ground vehicle with a supportive family member.

The province of British Columbia covers 970 634 square kilometres (374 764 square miles). This makes it larger in area than California, Oregon, and Washington combined. The British Columbia Ambulance Service operates an air ambulance service in conjunction with the regular ambulance service. To transport patients who cannot travel by ground, the British Columbia Ambulance Service Air Ambulance Program relies on three fixed-wing bases with five fixed-wing aircraft and two rotor bases with three rotor aircraft. The program transports over 8000 patients a year, including a small number of psychiatric patients (5% to 6%) and some medical patients who have an altered sensorium or abnormal behavior. These patients all require special consideration in the flight environment because of the danger they pose to themselves and the crew.

Most of BC's population is located in the southwest corner of the province and the Okanagan Valley, very close to tertiary medical care. Generally, if the ground transport time for stable patients going from rural BC to tertiary medical care is expected to be longer than 5 hours, air transport is utilized.

All patients are assigned to one of three categories for medical oversight during air transport: critical, noncritical, or infant/maternal. Psychiatric patients are assigned to the noncritical category. Dedicated noncritical care transport advisors (TAs), all certified and practising emergency physicians with extensive experience of air transport, provide advice to sending facilities and transport attendants on the safe transport of psychiatric patients.

Psychiatric patients

Psychiatric patients and patients with abnormal or agitated behavior present special challenges to safe transport of both the patient and crew. Unlike a motor vehicle, an aircraft cannot be safely and easily stopped when the patient's behavior becomes physical. Over the years, our flight crews have had to deal with a number of situations where patients' inappropriate behaviors have escalated en route inside an aircraft. Luckily, no one has been seriously hurt and the Air Ambulance Program

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Figure 1. Interior of King Air 350 transport plane. Notice the low head height and the doorless opening into the pilots' seats.

has never lost an aircraft from this cause. Indeed, the program has an impressive safety record, especially when compared with other air medical services throughout North America, which have experienced high numbers of crashes and deaths.[1] However, our service has had events in flight where a crash was a real possibility. On one occasion, an agitated patient became loose in the aircraft and began assaulting the pilot. The patient was eventually restrained and the aircraft made a safe landing, but only the heroic efforts of our attending paramedics prevented a catastrophe.

Common sense would dictate that patients who are agitated in an emergency department are too agitated to be put on an aircraft. However, BC Ambulance Service (BCAS) flight crews have responded numerous times to emergency departments where agitated patients have not been sedated and are hard to control. Sometimes crews are asked to pick up patients at the local RCMP cells because they are too violent to be kept in the emergency department. Obviously, these patients cannot be put on an aircraft in an agitated condition. Even if restrained, an agitated patient might be able to remove a limb from the restraints and might cause significant bodily harm to an attendant or pilot. In a worst-case scenario, an agitated patient might assault the pilot and cause the aircraft to crash.

More subtle are the depressed patients who are not overtly agitated. These patients, too, present a risk to themselves and the crew. Several years ago, an RCMP helicopter was transporting a depressed patient from Haida Gwaii (the Queen Charlotte Islands) to the mainland when the patient opened the door and leaped from the aircraft into Johnstone Strait. His body was never found.

Patients who are not agitated but have an altered sensorium, or who do not have an understanding of the events occurring around them, also pose a risk. These patients may be calm initially, but can become upset and agitated when moved from a familiar, comfortable environment and strapped onto a stretcher in a confined space that is noisy and vibrates, and occasionally can shake violently. In such circumstances these patients can become fearful and violent. They can become unpredictable and try to remove themselves from a situation they perceive as threatening.

Dealing with potentially violent patients in flight is not a problem unique to the BCAS Air Ambulance Program. Other air ambulance services have wrestled with how to deal with this issue. Some programs have developed a policy of excluding all psychiatric patients.[2] This is not a solution BCAS considers ethical or practical, given the size and geography of our province. Psychiatric patients should be considered for air transport by applying the same criteria the program uses for assessing medical patients, meaning that transport will be provided if a patient:

- Faces a ground trip longer than 5 hours.
- Is unable to travel by commercial aircraft.
- Has a time-sensitive condition requiring rapid transport.
- Requires an escort with a high skill level for an extended time.

Literature review

Unfortunately, the literature on the transportation of psychiatric patients in aircraft is almost nonexistent and what little there is comes from the US military.[3,4] None of the literature is current. Sedation of psychiatric patients is suggested on military flights for agitated or potentially agitated patients. The flight environment is markedly different on large military transport planes, which have a flight deck separated from the patient area and are staffed by personnel who monitor and restrain the patients. The civilian transport flight environment uses fixed-wing planes that are small, patients and crew are unable to stand, and the flight deck is not separated from the patient area (**Figure 1**). On rotor aircraft (**Figure 2**) the conditions are even more cramped, with all occupants within arm's reach of one another. Sedation of psychiatric patients in these environments is essential.[5]

For several years, Air Ambulance Program paramedic crews expressed their concern to management and TAs regarding sedation not being used for appropriate patients. In response, TAs began phoning the sending facility and requesting sedation of psychiatric patients before transport. These phone calls were intended to give the sending hospitals enough lead time to sedate patients before the crew arrived. Compliance with these requests was poor and our paramedics would often arrive to find patients under-sedated or not

Figure 2. Interior of Bell 222 helicopter. Notice the pilot's seat directly in front of the patient's stretcher and the proximity to the paramedic attendants. The patient is immediately adjacent to the helicopter door, which cannot be locked for safety reasons.

sedated at all. Over many months of calling by the TAs, no improvement in compliance with sedation requests occurred, probably because sending hospitals were not aware of the conditions in our aircraft and the potential risks involved in transporting undersedated patients. In addition, sending facilities were often concerned about over-sedation of these patients, especially when patients did not seem to require sedation in the facility.

Guidelines developed

When paramedic crews continued to relate cases of agitated patients who were not adequately sedated, the Air Ambulance Program decided to develop a new policy based on the principle that safety could only be assured if all patients at risk were routinely and adequately sedated. The definition of "adequately sedated" was thoroughly discussed by the TA group, with the understanding that a transport advisor would provide final approval to sedate or not sedate a particular patient. Unfortunately, the air transport and psychiatric literature does not provide any definition of adequately sedated, nor does it provide any guidelines for civilian air psychiatric transports. After extensive deliberation it was decided to define adequately sedated as "sleepy to the point of needing to be roused by loud voice or light touch."

The next challenge was defining which patients should be routinely sedated. In 2008, the noncritical transport advisors developed a list of criteria for patients requiring sedation for the transport flights. The list was developed with the expectation that it would balance the needs of flight crews concerned about their safety, and those of physicians concerned about the well-being of their patients. The committee, consisting of six experienced transport advisors, eventually agreed upon criteria for mandatory sedation of psychiatric or cognitively impaired patients prior to flight (see **Table 1**). The committee recognized that only sending physicians have the authority to order sedating agents in their institution, and that the transport advisor must be willing and available to provide advice on the medication and dosage (see **Table 2**). This advice includes considering factors such as the patient's weight, history, current state of agitation, previous therapeutic response to the drugs, and any adverse effects from them.

The guidelines finally developed by BCAS were designed to be modified as needed by transport advisors, who would call the sending facilities about all psychiatric patient transfers to discuss appropriate sedation.

The criteria for sedation were presented to the BC Ambulance Service Provincial Medical Leadership Council in October 2008 for approval. Since the criteria were approved, they have been applied to all psychiatric and cognitively impaired patients requiring air transport in BC.

Results of implementation

The mandatory sedation policy was instituted with an understanding that disagreements about sedation might arise, but with the knowledge that BCAS could not tolerate any incidents that put air ambulance crews in jeopardy. We authorized our flight paramedics to refuse any patient not adequately sedated and to leave for their next patient transfer. BCAS took this step because paramedic and crew safety are the over-riding concern, even though each refusal of transport results in problems for dispatch, increased costs, and a sending physician and patient whose needs are not met in a timely manner.

As anticipated, there were initially many complaints about this policy from sending facilities that still had a patient, now with a transport delay. There were also complaints from receiving facilities regarding sedated patients who could not be interviewed for significant periods after they arrived. In addition, concerns were raised about the possibility of patients

Table 1. Criteria for sedation of psychiatric or cognitively impaired patients.

A patient with any one of the following requires sedation.

- Active psychotic disorder.
- Active paranoid disorder.
- Active mania.
- History of panic disorder or phobias relating to air travel or confined space.
- History of cluster B personality disorder.
- Depression with suicide ideation or hopelessness.
- History of violence.
- History of serious suicide attempt.
- Currently under arrest.
- History of poor anger or impulse control.
- Confrontational.
- Incapable of following instructions.
- Incapable of understanding instructions or events.
- Less than fully cooperative with staff.
- Views transport negatively.
- Certified under the Mental Health Act.
- Physically strong and large, and would be difficult to control in aircraft.

Note: The transport advisor (TA) makes the final decision on determining if these criteria apply to a patient. Air crews are authorized to refuse transport if they are unsatisfied with the level of the patient's sedation.

Table 2. General recommendations for sedation.

Patient should receive three sedating agents at least 1 hour prior to departure from hospital so that further medication can be administered if the initial effects are subtherapeutic. It is not unusual for agitated patients to require repeated doses of a benzodiazepine and an antipsychotic.

- An antinausea agent, such as dimenhydrinate (50 mg IM) which has the added benefit of reducing motion sickness.
- A benzodiazepine, such as lorazepam (1–3 mg IM or sublingual).
- An antipsychotic, such as haloperidol (2.5–5 mg IM) or olanzapine (5–10 mg IM).

Intramuscular (IM) injection is recommended over oral administration as the absorption is generally quicker and the sedating effects of the drugs have a faster onset.

who were susceptible to tranquilizers arriving over-sedated and at risk. However, to date, BCAS has not documented any adverse events due to over-sedation.

Sending facilities that are concerned about possible adverse events are encouraged to explore other methods of transport should a patient meet the BCAS criteria for requiring sedation and they believe sedation is absolutely contraindicated. For some patients, transport in a ground vehicle, with a supportive family member, may be preferred. Commercial flights may also be a less anxiety-provoking method of transport; these aircraft are roomier, quieter, and less subject to turbulence.

Summary

Physicians and other health professionals in British Columbia who provide care to psychiatric patients should keep in mind the complexities of transporting their patients by air. The flight environment is unique and outside the experience of most medical providers. Air transit is a high-risk undertaking with little room for error, and the consequences of under-sedating psychiatric patients could be catastrophic. The BCAS Air Ambulance Program is endeavoring to make all air transports as safe as possible for crews and patients alike. This requires the physicians who request air transport for their psychiatric or cognitively impaired patient to understand the need for sedation during transport. Air ambulance transport advisors are aware that not all patients require the same level of sedation. The goal of the program is to have each patient sedated according to individual requirements in order to ensure safety for paramedics, air crew, and patients.

Physicians who need to discuss details of a patient transport can contact a transport advisor through the Provincial Dispatch Coordination Centre (1 800 561-8011). Physicians with general concerns regarding air ambulance transfer policy can contact the program's director, Mr Randy L'Heureux (Randy.Lheureux@gov.bc.ca), or medical director, Dr Stephen Wheeler (Steve.Wheeler@gov.bc.ca).

Competing interests

The authors are employed by the BC Ambulance Service Air Ambulance Program.

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