

To: Healthcare professionals involved in administration of injections, such as contrast media, antibiotics, and antineoplastics

Follow-up report for Recommendation Number 3

## Deaths due to Anaphylaxis following Intravascular Administration of Drugs

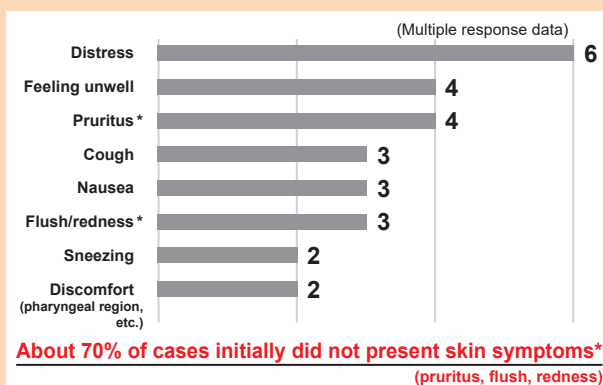
Since the publication of Recommendation Number 3 “Analysis of deaths related to ‘Anaphylaxis caused by injections’” in 2018, there have been reports of 19 adult cases presenting fatal anaphylactic shock following intravascular administration of drugs, such as contrast media, antibiotics, and antineoplastic agents.

### ! Characteristics of the 19 target cases

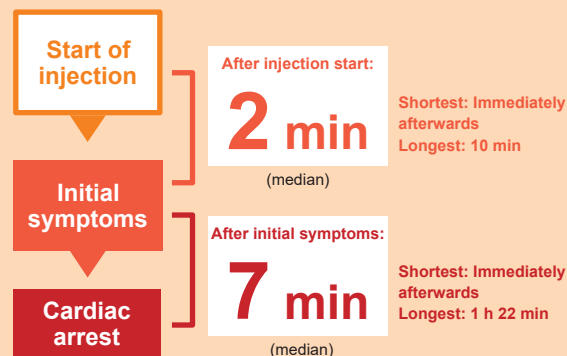
#### Administered drugs

<b>Contrast medium</b>	<b>Iodinated contrast medium</b>	<b>8 cases</b>	iomeprol (3), iopamidol (2), iohexol, iopromide, ioversol
	MRI contrast medium	1 case	gadoteridol
<b>Antibiotic</b>	<b><math>\beta</math>-lactam antibiotic</b>	<b>6 cases</b>	ceftriaxone (4), cefoperazone/sulbactam (2)
	New quinolone	1 case	ciprofloxacin hydrochloride hydrate
	Antineoplastic agent	1 case	paclitaxel
	Plasma derivative	1 case	human immunoglobulin (blood product)
	Protease inhibitor	1 case	nafamostat mesilate

#### Initial symptoms (symptoms first observed)



#### Rapid progression of symptoms



### ! Illustrative Cases

#### Case 1

A patient in his/her 60s with a rectal tumor. Anaphylaxis occurred in the CT examination room. A cough appeared immediately after infusion of the iodinated contrast medium (iomeprol).

One minute after the onset of the initial symptom (during scanning), the patient felt unwell. Two minutes later (at the end of scanning), the patient exhibited pronounced conjunctival hyperemia, cold sweat, nausea, and facial redness, and the physician and other staff members were called. Five minutes later, the patient vomited and the consciousness level declined. Adrenaline 0.3 mg was intramuscularly injected, and an emergency call was made. Eight minutes later, blood pressure became unmeasurable and resuscitation was performed, but the patient died about one hour later.

#### Case 2

A patient in his/her 70s with acute cholangitis. Anaphylaxis occurred in the hospital room. One to two minutes after the start of the infusion of a beta-lactam antibiotic (cefoperazone/sulbactam), facial flush, redness of both upper extremities, pruritus, and difficulty in breathing occurred. Drug administration was discontinued and the physician was called.

Three to four minutes after the initial symptoms, the patient went into cardiac arrest, prompting the initiation of cardiopulmonary resuscitation and intramuscular injection of adrenaline 0.5 mg. Thirteen to fourteen minutes later, the second intramuscular injection of adrenaline 0.5 mg was given. An emergency call was made 17 to 18 minutes later, and emergency treatment was continued, but the patient died the next day.

\* The illustrative cases were prepared by the Expert Analysis Subcommittee by organizing information based on the in-hospital investigation. For other reported cases, please refer to the website.

## [Prevention of recurrence based on case studies]

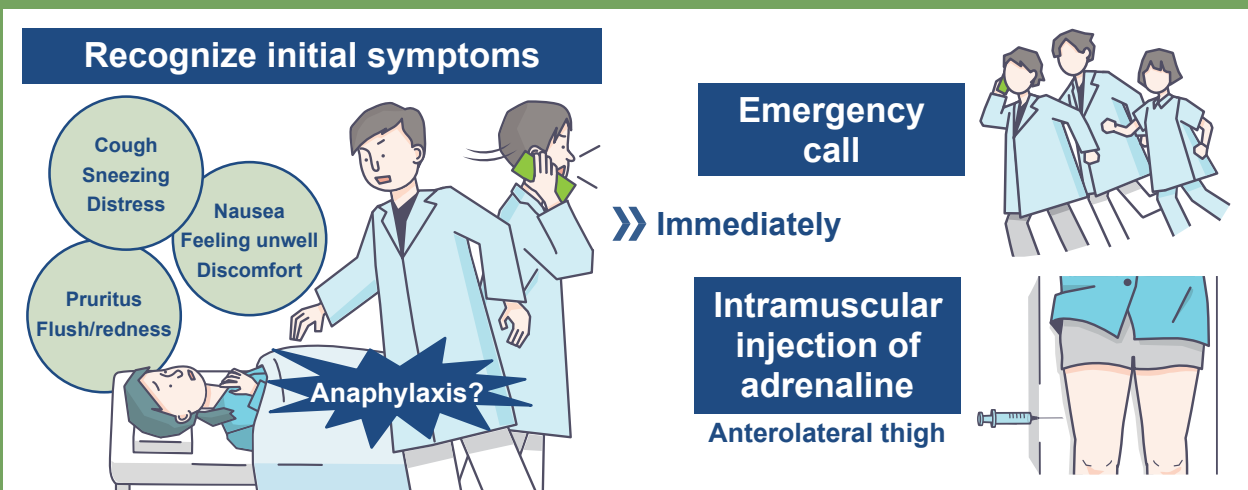
Follow-up report for  
Recommendation  
Number 3

—To prevent deaths due to anaphylaxis following  
intravascular administration of drugs—

## ! To prevent anaphylactic shock

### Recommendation

**Once any initial symptom occurs after injection, suspect anaphylaxis even if no skin symptoms are present, and immediately make an emergency call and give an intramuscular injection of adrenaline.**



\* Image illustration

### Key point for intramuscular injection of adrenaline

#### Dose

**0.1% adrenaline 0.01 mg/kg\***  
(Maximum dose for adults: 0.5 mg)

- ☐ For adults, administer adrenaline 0.3 to 0.5 mg (0.3 to 0.5 mL) by intramuscular injection
- ☐ Repeat administration if symptoms do not improve

\* Refer to "Anaphylaxis guidelines 2022" by the Japanese Society of Allergology

## ! Preparation for treating anaphylaxis

- Prepare an emergency protocol, communicate, and train staff on the anaphylaxis management to ensure a prompt emergency call and intramuscular injection of adrenaline



- ☐ Stock adrenaline in places where contrast media, antibiotics, or antineoplastics are used
- ☐ Collect and share information on drug allergy
- ☐ Observe the patient for five minutes after the initiation of intravascular drug administration

\* For details, refer to Recommendation Number 3.

### Important Notice

This report has been developed by an Expert Analysis Subcommittee and approved by the Committee for the Prevention of Recurrence. It is intended to aid clinical decision-making and does not impose mandatory obligations or limit the discretion of individual healthcare professionals.