

First Aid for hydrofluoric acid (HF) exposure

CALL 8050

Personal Care

Hospital

Small HF spill on skin

Remove contaminated clothing. Assist the person if necessary



Rinse with water
Rinse thoroughly



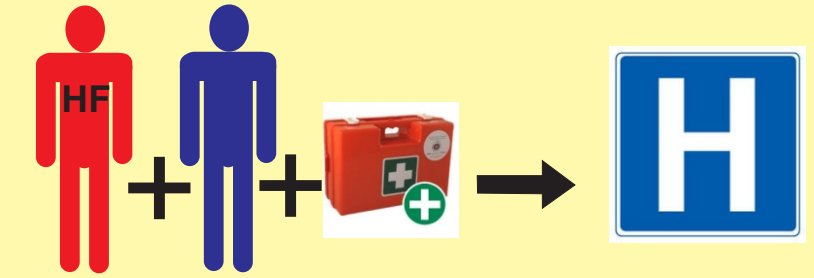
Apply Ca-gluconate gel
Use the tube in the HF-kit and apply the gel generously on the area. Do not forget to work the gel under the fingernails or in the person's hair.
Rinse off the gel and reapply the gel every two minutes



Administer two calcium tablets.
Have the person drink a solution of two Calcium Sandoz Forte tablets

Take precautions to ensure your own safety:

- * Do not touch spilled HF
- * Do not step into a spill
- * Wear neoprene gloves



Bring the person and the HF-First Aid Kit including medication to the casualty unit (CSO) of the UMCG hospital

A first aider (EHBO) accompany the person. Give the letter in the HF-kit to the attending Physician and provide information regarding the amount of exposure and how it occurred. Also provide a print-out of the MSDS

HF splash in eyes

Remove contaminated clothing. Assist the person if necessary



Rinse the eye for 15 minutes

Rinse thoroughly. Start with the eyewash followed by rinsing with Hexafluorine eyewash



Never treat eyes by applying a salve, gel, etc.



If HF has come into contact with the skin, administer calcium tablets in accordance with the instructions for HF-spill on skin

HF inhalation/ingestion always occurs in the event of large-volume spills

Take precautions to ensure your own safety

- * Do not inhale HF
- * A contaminated space is only accessible with a breathing apparatus
- * Wear neoprene gloves



Remove the person from the contaminated area

Remove contaminated clothing



Administer 6 calcium tablets

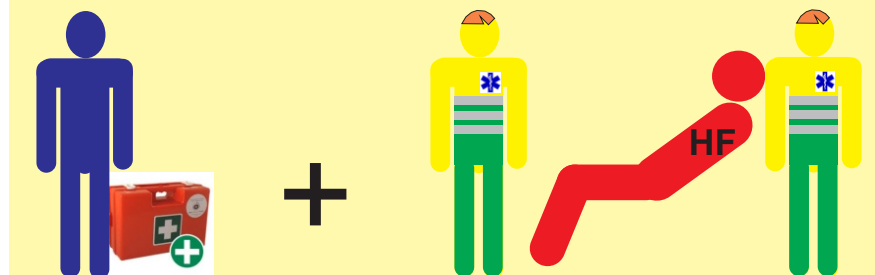
Have the person drink a solution of six Calcium Sandoz tablets



If the person is having difficulty breathing.

provide oxygen 9-15 ltrs/m

Transport the victim in a half-upright position to the casualty unit (CSO) UMCG take the Hf-kit with you.
Give the letter in the HF-kit to the attending physician and provide information regarding the amount of exposure and how it occurred



Emergency Department Care

Initial steps

- Remove soiled clothing.
- Decontaminate by irrigation with copious amounts of water.
- Assess and manage life-threatening conditions as with any other cause.
- Commence comprehensive monitoring for significant exposures.
- With any evidence of hypocalcemia, immediately administer 10% calcium gluconate IV.

Treatment by location of burn

- Cutaneous burns:
 - Apply 2.5% calcium gluconate gel to the affected area. If the proprietary gel is not available, constitute by dissolving 10% calcium gluconate solution in 3 times the volume of a water-soluble lubricant (eg, KY gel). For burns to the fingers, retain gel in a latex glove.
 - If pain persists for more than 30 minutes after application of calcium gluconate gel, further treatment is required. Subcutaneous infiltration of calcium gluconate is recommended at a dose of 0.5 mL of a 5% solution per square centimeter of surface burn extending 0.5 cm beyond the margin of involved tissue (10% calcium gluconate solution can be irritating to the tissue).
 - Do not use the chloride salt because it is an irritant and may cause tissue damage.
- Burns to the digits: Local infiltration of digits is not recommended because of pain, disfigurement, and potential complications. Alternative treatment methods follow.
 - IV regional calcium gluconate: 10-15 mL of 10% calcium gluconate plus 5000 units of heparin diluted up to 40 mL in 5% dextrose. Use a Bier ischemic arm block technique to infuse the solution intravenously. Release the cuff when any of the following conditions first occur: (1) pain from the digits resolves, (2) the cuff becomes more painful than the burn, or (3) 20 minutes of ischemic time elapses. Treatment can be repeated after 4 hours if needed. Continuous ECG and clinical monitoring are essential during this procedure.
 - Intra-arterial calcium gluconate: Place an arterial catheter in the radial or brachial artery to perfuse the affected digits. Infuse a solution of 10 mL of 10% calcium gluconate in 40 mL of 5% dextrose over a 4-hour period. Follow with further infusions repeated after 4-8 hours, if necessary. Several treatments may be needed. Exercise great care to ensure that the catheter is appropriately placed intravascularly (ie, by continuous waveform analysis), as tissue necrosis and digit loss have occurred following extravasation of calcium salts. Continuous ECG and clinical monitoring are essential during this procedure.
 - Digital block with local anesthetics may be an alternative for pain control in patients with delayed presentation after exposure to low concentration HF.
 - Administer opioids for additional pain control.
- Ocular burns:
 - Generously irrigate with sterile water or saline for at least 5 minutes. Local anesthetic may be required. If pain persists, irrigate with a 1% solution of calcium gluconate, which is made by diluting the 10% solution in 10 times the volume of normal saline. Do not use undiluted 10% calcium gluconate.

- Calcium salts are *very irritating* to the eye, and urgent ophthalmologic consultation should be requested prior to the irrigation with 1% calcium gluconate solution.
- Inhalation burns: Exposures to the head and neck should arouse suspicion of pulmonary involvement. If any doubt is present, admission for observation is advised. Specific treatment includes the following:
 - Provide 100% oxygen by mask, 2.5% calcium gluconate by nebulizer with 100% oxygen, continuous pulse oximetry, ECG, and clinical monitoring.
 - Acute lung injury is treated along conventional lines, as needed.
- Oral ingestion: Despite concerns of perforation, consider gastric lavage with calcium chloride (ie, 20 mmol calcium in 1000 mL normal saline solution) early in overdose. In isolated HF exposure, lavage should be performed through a nasogastric tube.
 - One series of autopsies performed on decedents who had received calcium chloride lavage after hydrofluoric acid ingestion demonstrated hemorrhagic gastritis; however, no evidence of perforation was revealed.
 - Secure the airway prior to gastric lavage.

Consultations

Consultation with specialty units may be required depending on individual circumstances.

- Toxicologist
- Burn surgeon
- Intensive care specialist
- Ophthalmologist
- Hand surgeon
- Gastroenterologist (following ingestions)

Proceed to [Medication](#)

Contributor Information and Disclosures

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Specialty Editor Board

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