

ACTIVASE (ALTEPLASE)

REVIEW OF T-PA ADMINISTRATION IN ACUTE ISCHEMIC STROKE

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What is Activase?

- ❑ Activase® (Alteplase), also known as t-PA, is a tissue plasminogen activator. It dissolves clots by converting entrapped plasminogen to plasmin, a process called fibrinolysis
- ❑ Not all patients with acute ischemic stroke will be eligible for Activase therapy
- ❑ All thrombolytic agents increase the risk of bleeding, including intracranial bleeding, and should be used **ONLY** in appropriate patients



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What is the FDA-approved indication for Activase in Acute Stroke?

- ❑ Activase is indicated for the management of acute ischemic stroke. NRH utilizes TeleNeurology to provide specialist consultation to aid in the decision of thrombolytic eligibility.
- ❑ A Stat CT of Head is done immediately on all Code Stroke patients. The purpose is to exclude intracranial hemorrhage as the primary cause of stroke signs and symptoms prior to initiation of treatment.
- ❑ Initiate treatment as soon as possible but within 3 hours after symptom onset for the best outcome.
- ❑ If mechanical thrombectomy is considered AHA/ASA guidelines recommend that Activase is administered first. Patients will return to the ED immediately after the non-contrast head CT for evaluation by TeleNeurology then if recommended, Activase is initiated. Patients can then return to CT for a CTA to evaluate for Large Vessel Occlusion

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Activase for Acute Ischemic Stroke

- ❑ The Society of Vascular and Interventional Neurology (SVIN) also recommends endovascular mechanical thrombectomy, in addition to treatment with IV alteplase in eligible patients, for anterior circulation large vessel occlusion ischemic strokes in patients presenting up to 16 hours after symptom onset
- ❑ Patients eligible for IV alteplase should receive alteplase even if endovascular treatments are being considered

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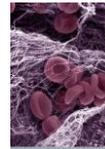
Are there other thrombolytic agents I can use to treat acute ischemic stroke?

- ❑ **Activase is the only FDA-approved medication indicated for the treatment of acute ischemic stroke at this time**
- ❑ January to December 2020, NRH administered Activase to 41 patients
- ❑ January to December 2021, 27 patients received Activase.

- ❑ The FDA stated that “tPA” is the abbreviation for the drug class that encompasses all tissue plasminogen activators. To avoid confusion and medication errors, it has directed healthcare professionals to use either the brand name, **Activase**, or the generic name, **Alteplase**, in written prescriptions and verbal orders

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How does Activase work?



- ❑ An Ischemic stroke occurs when blood supply to brain tissue is blocked by a blood clot.
- ❑ Activase® (tPA) is given to patients through an IV in the arm, and it works by dissolving the blood clots that block blood flow to the brain
- ❑ When administered quickly after stroke onset (within three hours, as approved by the FDA), tPA helps to restore blood flow to brain regions affected by a stroke, thereby limiting the risk of damage and functional impairment.

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Important Safety Information

Contraindications:

- Ischemic stroke patients who have an unclear time and/ or unwitnessed symptom onset and in whom the time last known to be at baseline state is >3 or 4.5 h
- Extensive regions of obvious hypodensity on Head CT consistent with irreversible injury: There remains insufficient evidence to identify a threshold of hypoattenuation (affected area is darker than other areas of brain) severity or extent that affects treatment response to alteplase. **However, administering IV alteplase to patients whose CT brain imaging exhibits extensive regions of clear hypoattenuation is not recommended.** These patients have a poor prognosis despite IV alteplase, and severe hypoattenuation defined as obvious hypodensity represents irreversible injury.

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Important Safety Information

Contraindications:

- Patients with current Intracranial Hemorrhage (ICH)
- Patients with Subarachnoid Hemorrhage (SAH)
- Active internal bleeding
- Recent (within 3 months) intracranial or intraspinal surgery or serious head trauma
- Presence of intracranial condition that may increase risk of bleeding (some neoplasms, arteriovenous malformations, or aneurysms)
- Bleeding diathesis
- Seizure with postictal residual neurological impairment
- Current severe uncontrolled hypertension: **Systolic BP exceeding 185 mmHg or diastolic BP exceeding 110 mmHg despite repeated measurements and treatment**
- Patients with Coagulopathy:
 - Platelets <100 000/mm³
 - INR >1.7
 - aPTT >40 seconds
 - PT >15 seconds

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Important Safety Information

Contraindications:

-
- Patients who have received a treatment dose of LMWH (enoxaparin-Lovenox or fondaparinux (Arixta) within the previous 24 h
 - Patients taking direct thrombin inhibitors or direct factor Xa inhibitors (dabigatran (Pradaxa), rivaroxaban (Xarelto), apixaban (Eliquis), edoxaban (Savaysa), argatroban, or bivalrudin (Angiomax) MORE than 48 hours ago AND at least one of the following exists: CrCl is less than 50mL/min; INR greater than 1.7, PT greater than 15 or PTT greater than 40
 - Antiplatelet agents that inhibit the glycoprotein IIb/IIIa receptor should not be administered concurrently with IV alteplase
 - Patients with symptoms consistent with endocarditis
 - Stroke known or suspected to be associated with aortic arch dissection
 - Patients with intra-axial intracranial neoplasm

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Important Safety Information

Warnings:

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- Only minor and isolated neurologic signs or rapidly improving symptoms
 - Serum glucose < 50 mg/dL
 - Serious trauma in the previous 14 days
 - Major surgery in the previous 14 days
 - History of GI bleeding (remote) or genitourinary bleeding
 - Seizure at the onset of stroke with postictal neurologic impairments
 - Pregnancy
 - Arterial puncture at a noncompressible site in the previous 7 days
 - Large (≥ 10 mm), untreated, unruptured intracranial aneurysm
 - Untreated intracranial vascular malformation

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Important Safety Information

Additional Warnings for treatment from 3 to 4.5 hours from symptom onset

- Age > 80 years
- Oral anticoagulant use regardless of INR
- Severe stroke (NIHSS score > 25)
- Combination of both previous ischemic stroke and diabetes mellitus

In the setting of these conditions, risk of bleed is significantly increased,
leading to a worse outcome

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ACTIVASE

RECONSTITUTION AND ADMINISTRATION

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Activase (alteplase) 100mg Vial 1mg/ML after reconstitution



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Activase Dosing Calculations

- t-PA (ACTIVASE/ALTEPASE) DOSE CALCULATIONS as follows:
 - TOTAL DOSE: Patient weight in kg _____ x 0.9 mg/kg= _____ mg (Maximum dose=90 mg)
 - BOLUS DOSE: 10% of Total dose= _____ mg (Maximum dose=9 mg)
 - INFUSION DOSE: 90% of Total dose= _____ mg (Maximum dose=81 mg)
 - After calculating for total dose, discard the portion of Activase that will NOT be administered (Waste Dose). This prevents potential of administering too much medication and resulting increased risk of Intracranial Hemorrhage

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Activase Dosing Calculations

Patient Information

NURSING CODE STROKE WORK SHEET

PROTOCOLS	
<input type="checkbox"/> t-PA Administered	<input type="checkbox"/> TIA / Acute Stroke - No tPA
<input type="checkbox"/> Keep NPO	<input type="checkbox"/> Perform DYSPHAGIA Screening Tool
<input type="checkbox"/> 2 Large bore Patent IVs	<input type="checkbox"/> Keep NPO if fails Dysphagia Screen - Notify MD
<input type="checkbox"/> Vital Signs q 15 MINS	<input type="checkbox"/> Maintain SpO ₂ - SpO ₂ under 220, OBP under 120
<input type="checkbox"/> STROKE Acute Neuro Assessment q 15 MINS	<input type="checkbox"/> VS Per ED / ICU Protocol
<input type="checkbox"/> ANGIOEDEMA check q 15 MINS	<input type="checkbox"/> STROKE Acute Neuro Assessment ED/ICU Protocol
<input type="checkbox"/> DYSPHAGIA Screen - Document Screen OR NPO	<input type="checkbox"/> P/36 30 degrees
<input type="checkbox"/> Calculate and Dispose WASTE dose	<input type="checkbox"/> Repeat NIHSS for any change in condition
<input type="checkbox"/> Administer BOLUS dose over 1 minute	<input type="checkbox"/> Complete DOCUMENTATION
<input type="checkbox"/> Begin INFUSION dose via IV Pump	ACUTE HEMORRHAGIC STROKE
<input type="checkbox"/> Hang 50ml NS to complete t-PA infusion	<input type="checkbox"/> Keep NPO and document
<input type="checkbox"/> Maintain BP Systolic BP < 180, Diastolic BP < 105	<input type="checkbox"/> MOB 30 degrees at all times
<input type="checkbox"/> Repeat NIHSS for any change in condition	<input type="checkbox"/> VS q 15 MINS until transfer
<input type="checkbox"/> Repeat NIHSS 2 hour Post t-PA Infusion	<input type="checkbox"/> STROKE Acute Neuro Assessment q 15 MINS
<input type="checkbox"/> BLEEDING Precautions	<input type="checkbox"/> Repeat NIHSS for any change in condition
<input type="checkbox"/> DOCUMENT	<input type="checkbox"/> Maintain BP: SpO ₂ < 140, OBP < 90

EMS to Continue VS, Neuro Checks, (Angioedema Check for t-PA Patients) During Transport

ACTIVASE / ALTEPLASE / t-PA DOSING
100mg Vial of Activase is reconstituted to concentration of 1mg/mL
DOOR TO NEEDLE GOAL IS 45 MINUTES

- Patient Weight: _____ Pounds _____ Kg
- Total Dose: _____ mg (0.9mg x weight in kg) VERIFY DOSE w/ 2 RNs or RNMD
- Waste Dose: _____ mg (Discard prior to bolus)
- Bolus Dose: _____ mg (0.01 x weight in kg or 10% of total dose)
(Bolus dose is administered IV push over 1 minute - Do Not use IV pump to infuse bolus dose)
- Infusion Dose: _____ mL/hr (Total dose minus Bolus dose)
(Infuse the remaining 90% of the 0.9-mg/kg dose over 60 minutes. The infusion should begin immediately following the bolus dose)

Hang 50ml bag of NS to complete the t-PA infusion. If patient is transferred, send NS with EMS.
Up to 18mg can remain in the tubing once the bottle is empty.

Using the Code Stroke Worksheet in the Code Stroke packet, calculate the patient weight in kg to determine:

- Total Dose
- Waste Dose
- Bolus Dose
- Infusion Dose

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How is Activase dosed for acute ischemic stroke?

DOSING

WEIGHT BASED

The recommended dose is **0.9 mg/kg** (never to exceed 90 mg total dose).

Must have correct weight for Patient

Ten percent of the total dose is administered as an initial intravenous bolus dose over 1 minute.

The remainder of the dose should be infused over 60 minutes via IV pump



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How is Activase reconstituted?

- ❑ Activase should be reconstituted immediately before use
- ❑ Reconstitute only by aseptically adding the packaged Sterile Water for Injection (utilizing the transfer device)
- ❑ When diluting, either polyvinyl chloride bags or glass vials are acceptable
- ❑ Pharmacists now respond to all Code Strokes and assist staff in calculating dosage and mixing and preparing medication.

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Reconstitution of 100-mg vials

Reconstitution should be carried out using the transfer device provided and adding the contents of the 100-mg vial of sterile water for injection (SWFI) to the contents of the 100-mg Activase powder

Step 1: Remove protective caps and swab the top of each vial with an alcohol wipe to reduce the risk of contamination



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Reconstitution of 100-mg vials

Step 2: Remove one of the protective caps from the transfer device and insert the piercing pin vertically into the center of the stopper of the SWFI vial, keeping the vial upright. Holding the Activase vial upside down, position it so that the center of the stopper is directly over the exposed pin of the transfer device. Push vial down onto the transfer device, ensuring that the piercing pin is inserted through the center of the Activase vial stopper

Insert transfer pin in SWFI vial



Insert Activase vial on other end of pin



Push down



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Reconstitution of 100-mg vials

Step 3: Invert the 2 vials, so that the vial of **Activase is on the bottom** (upright) and the vial of SWFI is upside down. Allow the **ENTIRE** contents of the vial of SWFI to flow down through the transfer device into the vial containing Activase. Approximately 0.5 mL of SWFI will remain in the diluent vial. Remove the transfer device and the empty SWFI vial from the Activase vial. Safely discard both the transfer device and the empty diluent vial according to institutional procedures.



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Reconstitution of 100-mg vials

Step 4: Mix the solution with a gentle swirl. **DO NOT SHAKE.** Slight foaming of the solution is normal. Let the solution stand undisturbed for several minutes to allow any large bubbles to dissipate. This preparation will result in a colorless to pale yellow transparent solution containing Activase at a concentration of 1 mg/mL. Visually inspect the Activase solution for particulate matter and discoloration before administration.

The solution may be used for intravenous administration within 8 hours following reconstitution when stored between 2-30°C (36-86°F). **Do not add other medication to solutions containing Activase.** Any unused solution should be discarded



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Activase Administration

Step 1: Inspect the solution for particulate matter and discoloration prior to administration



Step 2: To ensure proper dosing, discard excess by removing any quantity of drug in excess of that specified for the patient's treatment. Be sure to insert the needle into the keyhole port of the vial top, away from the puncture site made by the transfer device, and do not prime the syringe



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Activase Administration

Step 3: The bolus treatment dose is 10% of the 0.9 mg/kg treatment dose. **Remove the treatment dose before the vial is attached to the infusion set.** Be sure to insert the needle away from the puncture site made by the transfer device. This will prevent leakage when you invert the vial

Do not prime the syringe



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Activase Administration

Step 4:

Insert the spike end of an infusion set through the center of the stopper of the vial of reconstituted Activase, using the same puncture site made by the transfer device



Peel the clear plastic hanger from the vial label. Hang the Activase vial from the resulting loop



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Activase Administration

Step 5: Prime infusion set tubing with Activase solution and administer initial IV bolus over 1 minute



ADMINISTER BOLUS



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Activase Administration

Infuse the remaining 90% of the 0.9 mg/kg dose over 60 minutes.

Step 6: Administer remainder.

Infuse the remaining 90% of the 0.9 mg/kg treatment dose over 60 minutes. The infusion should begin immediately following the bolus treatment dose

Must be administered using an infusion pump.

Make sure to prime the pump tubing with Activase solution so that the infusion begins immediately following the bolus dose.



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Activase Administration

Step 7: Clear the line

Spike a small bag (eg, 50 mL) of NS with end of the Activase infusion set when the Activase vial is empty. **The infusion should continue at the same rate**

Program an infusion pump to flush the IV tubing following administration of treatment dose



Line must be cleared to ensure full treatment dose is delivered.

Approximately 11mg – 18mg of Activase remains in the tubing once the vial is empty

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Activase Administration

Important Information from Genetech

Steps to reduce risk of stopper dislodgement and leakage during reconstitution and administration of Activase 100mg vials:

	INSTRUCTIONS FROM THE ACTIVASE USPI	FURTHER EXPLANATION
<i>Reconstitution</i>	Holding the vial of Activase upside down, position it so that the center of the stopper is directly over the exposed piercing pin of the transfer device, and push the vial of Activase down so that <u>the piercing pin is inserted through the center of the Activase vial stopper.</u>	Puncturing the stopper off-center or at an angle with the transfer device may cause the Activase stopper to dislodge.
<i>Preparation of the bolus dose</i>	Remove the appropriate volume from the vial of reconstituted (1-mg/mL) Activase using a syringe and needle. The needle should be inserted <u>away from the puncture mark</u> made by the transfer device.	Inserting the needle too closely to the hole made by the transfer device may enlarge the hole and cause leakage. The stopper is designed with a keyhole port for insertion of the needle. 
<i>Administration</i>	Remove from the vial any quantity of drug in excess of that specified for patient treatment. Insert the spike end of an infusion set <u>through the same puncture site</u> created by the transfer device in the stopper of the vial of reconstituted Activase.	Creating a second opening with insertion of the spike end of the infusion set may cause leakage.

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Administration of Activase

✓ Always check and confirm dosage with 2 RNs

✓ Use Dosing Chart in Code Stroke packet as a resource when giving t-PA



For acute ischemic stroke
Activase (alteplase)
dosing and administration

Dosing

The recommended dose of Activase is 0.9 mg/kg (33 mg) in 1 hour. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg.

Administration of bolus*

After administration, a 1-hour infusion should be given for 30 minutes and then discontinued. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg.

Administration of remainder of dose*

The remainder of the dose should be given over 30 minutes. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg. The maximum recommended dose is 100 mg.

Important Safety Information

Activase is a thrombolytic agent. It is used to treat acute ischemic stroke. It is contraindicated in patients with a history of intracranial hemorrhage, active bleeding, or recent surgery. It is also contraindicated in patients with a history of stroke within the last 3 months.

Weight (kg)	Weight (lb)	0.9 mg/kg (33 mg)			
60	132	54	54	54	54
65	143	59	59	59	59
70	154	63	63	63	63
75	166	68	68	68	68
80	176	72	72	72	72
85	187	77	77	77	77
90	198	81	81	81	81
95	209	86	86	86	86
100	220	90	90	90	90
105	231	95	95	95	95
110	242	99	99	99	99
115	253	104	104	104	104
120	264	108	108	108	108
125	275	113	113	113	113
130	286	117	117	117	117
135	297	122	122	122	122
140	308	126	126	126	126
145	319	131	131	131	131
150	330	135	135	135	135
155	341	140	140	140	140
160	352	144	144	144	144
165	363	149	149	149	149
170	374	153	153	153	153
175	385	158	158	158	158
180	396	162	162	162	162
185	407	167	167	167	167
190	418	171	171	171	171
195	429	176	176	176	176
200	440	180	180	180	180
205	451	185	185	185	185
210	462	189	189	189	189
215	473	194	194	194	194
220	484	198	198	198	198
225	495	203	203	203	203
230	506	207	207	207	207
235	517	212	212	212	212
240	528	216	216	216	216
245	539	221	221	221	221
250	550	225	225	225	225
255	561	230	230	230	230
260	572	234	234	234	234
265	583	239	239	239	239
270	594	243	243	243	243
275	605	248	248	248	248
280	616	252	252	252	252
285	627	257	257	257	257
290	638	261	261	261	261
295	649	266	266	266	266
300	660	270	270	270	270
305	671	275	275	275	275
310	682	279	279	279	279
315	693	284	284	284	284
320	704	288	288	288	288
325	715	293	293	293	293
330	726	297	297	297	297
335	737	302	302	302	302
340	748	306	306	306	306
345	759	311	311	311	311
350	770	315	315	315	315
355	781	320	320	320	320
360	792	324	324	324	324
365	803	329	329	329	329
370	814	333	333	333	333
375	825	338	338	338	338
380	836	342	342	342	342
385	847	347	347	347	347
390	858	351	351	351	351
395	869	356	356	356	356
400	880	360	360	360	360
405	891	365	365	365	365
410	902	369	369	369	369
415	913	374	374	374	374
420	924	378	378	378	378
425	935	383	383	383	383
430	946	387	387	387	387
435	957	392	392	392	392
440	968	396	396	396	396
445	979	401	401	401	401
450	990	405	405	405	405
455	1001	410	410	410	410
460	1012	414	414	414	414
465	1023	419	419	419	419
470	1034	424	424	424	424
475	1045	428	428	428	428
480	1056	433	433	433	433
485	1067	437	437	437	437
490	1078	442	442	442	442
495	1089	446	446	446	446
500	1100	451	451	451	451
505	1111	455	455	455	455
510	1122	460	460	460	460
515	1133	464	464	464	464
520	1144	469	469	469	469
525	1155	473	473	473	473
530	1166	478	478	478	478
535	1177	482	482	482	482
540	1188	487	487	487	487
545	1199	491	491	491	491
550	1210	496	496	496	496
555	1221	500	500	500	500
560	1232	505	505	505	505
565	1243	509	509	509	509
570	1254	514	514	514	514
575	1265	518	518	518	518
580	1276	523	523	523	523
585	1287	527	527	527	527
590	1298	532	532	532	532
595	1309	536	536	536	536
600	1320	541	541	541	541
605	1331	545	545	545	545
610	1342	550	550	550	550
615	1353	554	554	554	554
620	1364	559	559	559	559
625	1375	563	563	563	563
630	1386	568	568	568	568
635	1397	572	572	572	572
640	1408	577	577	577	577
645	1419	581	581	581	581
650	1430	586	586	586	586
655	1441	590	590	590	590
660	1452	595	595	595	595
665	1463	599	599	599	599
670	1474	604	604	604	604
675	1485	608	608	608	608
680	1496	613	613	613	613
685	1507	617	617	617	617
690	1518	622	622	622	622
695	1529	626	626	626	626
700	1540	631	631	631	631
705	1551	635	635	635	635
710	1562	640	640	640	640
715	1573	644	644	644	644
720	1584	649	649	649	649
725	1595	653	653	653	653
730	1606	658	658	658	658
735	1617	662	662	662	662
740	1628	667	667	667	667
745	1639	671	671	671	671
750	1650	676	676	676	676
755	1661	680	680	680	680
760	1672	685	685	685	685
765	1683	689	689	689	689
770	1694	694	694	694	694
775	1705	698	698	698	698
780	1716	703	703	703	703
785	1727	707	707	707	707
790	1738	712	712	712	712
795	1749	716	716	716	716
800	1760	721	721	721	721
805	1771	725	725	725	725
810	1782	730	730	730	730
815	1793	734	734	734	734
820	1804	739	739	739	739
825	1815	743	743	743	743
830	1826	748	748	748	748
835	1837	752	752	752	752
840	1848	757	757	757	757
845	1859	761	761	761	761
850	1870	766	766	766	766
855	1881	770	770	770	770
860	1892	775	775	775	775
865	1903	779	779	779	779
870	1914	784	784	784	784
875	1925	788	788	788	788
880	1936	793	793	793	793
885	1947	797	797	797	797
890	1958	802	802	802	802
895	1969	806	806	806	806
900	1980	811	811	811	811
905	1991	815	815	815	815
910	2002	820	820	820	820
915	2013	824	824	824	824
920	2024	829	829	829	829
925	2035	833	833	833	833
930	2046	838	838	838	838
935	2057	842	842	842	842
940	2068	847	847	847	847
945	2079	851	851	851	851
950	2090	856	856	856	856
955	2101	860	860	860	860
960	2112	865	865	865	865
965	2123	869	869	869	869
970	2134	874	874	874	874
975	2145	878	878	878	878
980	2156	883	883	883	883
985	2167	887	887	887	887
990	2178	892	892	892	892
995	2189	896	896	896	896
1000	2200	901	901	901	901

ACTIVASE

POST TRANSFUSION CARE

What should be monitored in the first 24 hours after Activase therapy is administered?

Close observation and frequent monitoring of patients for:

- Neurologic changes
- Any signs/symptoms of intracranial hemorrhage
- Any signs of adverse drug reactions

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Warnings & Precautions for Activase

BLEEDING

- Activase can cause significant, sometimes fatal, internal or external bleeding, especially at arterial and venous puncture sites
 - Avoid intramuscular injections and trauma to the patient while on Activase
 - Perform venipunctures carefully and only as required
 - If an arterial puncture is necessary during Activase infusion, use an upper extremity vessel that is accessible to manual compression, apply pressure for at least 30 minutes, and monitor the puncture site closely
- Monitor closely for any signs / symptoms of Intracranial Hemorrhage**

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Warnings & Precautions for Activase

HYPERSENSITIVITY

- ❑ Hypersensitivity, including urticarial / anaphylactic reactions, have been reported after administration of Activase (e.g., laryngeal edema, rash and shock)
- ❑ Angioedema has been observed during and up to 2 hours after Activase infusion – **Angioedema checkst must be performed q 15 minutes for 2 hours after administration of bolus dose/infusion**
- ❑ In many cases, patients with hypersensitivity reaction had received concomitant angiotensin-converting enzyme inhibitors

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Warnings & Precautions for Activase

THROMBOEMBOLISM

- ❑ Use of thrombolytics can increase the risk of thrombo-embolic events in patients with high likelihood of left heart thrombus, such as patients with mitral stenosis or atrial fibrillation

CHOLESTEROL EMBOLISM

- ❑ Cholesterol embolism has been reported rarely in patients treated with thrombolytic agents; the true incidence is unknown
- ❑ It is associated with invasive vascular procedures (e.g., cardiac catheterization, angiography, vascular surgery) and/or anticoagulant therapy

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Activase DURING Infusion Care

- ☐ Perform neurological assessments
 - ☐ Repeat every 15 minutes during the infusion to monitor for neurological deterioration. VS are q 15 minutes for 2 hours
 - ☐ NRH neuro assessment tool is the Stroke Acute Neuro Assessment
 - ☐ This assessment **MUST** be included with Vital Signs and Angioedema checks!
 - ☐ Documentation is Paramount

**VS + Stroke Acute Neuro Assessment + Angioedema checks
Q 15 minutes x 2 hours**

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Activase DURING Infusion Care

- ☐ Check for major and/or minor bleeding
 - All body secretions should be tested for occult blood
- ☐ **Major bleeding:** intracranial, retroperitoneal, gastrointestinal, or genitourinary hemorrhages
- ☐ **Minor bleeding:** gums, venipuncture sites, hematuria, hemoptysis, skin hematomas, or ecchymosis
- ☐ Arterial and venous punctures will be minimized and checked frequently

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Activase DURING Infusion Care

Monitor blood pressure

- ❑ EVERY 15 MINUTES x 2 HOURS
- ❑ Once intravenous alteplase is given, the blood pressure must be maintained below 180/105 mm Hg to limit the risk of ICH
- ❑ Administer antihypertensive medications to maintain blood pressure at or below these levels

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Activase DURING Infusion Care

Monitor for signs of hypersensitivity

- ❑ If signs of hypersensitivity occur, such as an anaphylactoid reaction or development of angioedema, discontinue the Activase infusion and promptly institute therapy
- ❑ Angioedema checks are INCLUDED in the every 15 minute assessment along with Vital Signs and Stroke Neuro Assessments and continue for the first 2 hours of infusion

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Activase DURING Infusion Care

Discontinue infusion and obtain an emergency CT scan if the patient develops severe headache, acute hypertension, nausea, or vomiting; or has a worsening neurologic examination

If ANY complications occur, stop the infusion and IMMEDIATELY inform the physician

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POST Activase Care

Continue to monitor for neurological deterioration

- ❑ Every 15 minutes x 2 hours (for the first hour after the infusion is completed or stopped)
- ❑ Every 30 minutes for the next 6 hours
- ❑ Hourly for 16 hours post infusion hour until 24 hours after the infusion is stopped

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POST Activase Care

- Continue to check for major and/or minor bleeding
- Continue to monitor for signs of hypersensitivity
- Continue to monitor and control blood pressure**
 - Every 15 minutes for the first hour after the infusion is completed
 - Every 30 minutes for the next 6 hours
 - Hourly for 16 hours post infusion hour until 24 hours after the infusion is stopped

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POST Activase Care

NIHSS

- Complete NIHSS 1 hour post Activase infusion
- Repeat NIHSS 24 hours post Activase infusion
- Complete NIHSS prior to discharge
- * **Must have NIHSS certification to perform this assessment**

STROKE ACUTE NEURO ASSESSMENT

- Stroke Acute Neuro Assessment every 4 hours after initial 24 hours.

FOLLOW UP IMAGING

- Obtain a follow-up CT scan or MRI at 24 hours before starting anticoagulants or antiplatelet agents

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POST Activase Care

Nursing Care

Bleeding Precautions:

- Do not perform arterial puncture or place central venous access or NG tube without consulting physician
- Do not insert Foley catheter
- Check puncture sites for bleeding or hematomas
- Apply digital pressure or pressure dressing to active compressible bleeding sites
- Evaluate urine, stool, emesis, and secretions for blood
- Perform Hemocult testing if there is evidence of gastrointestinal bleeding

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POST Activase Care

Blood Pressure Management:

- Maintain Systolic BP <185 and Diastolic BP <110 prior to t-PA infusion
- If BP is not maintained at or below 185/110 mmHg, do not administer t-PA. Notify physician
- After t-PA infusion** maintain Systolic BP <180 and Diastolic BP <105
 - If systolic BP >180–230 mmHg or diastolic BP >105–120 mmHG for 2 readings 5 minutes apart NOTIFY PHYSICIAN and follow protocol for Blood Pressure Management

Blood Pressure must be maintained per protocol to reduce the risk of ICH

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Important

- ❑ Protocols **MUST** be followed and strictly adhered to
- ❑ **Documentation is PARAMOUNT**
- ❑ Nursing notes must reflect aspects of patient care
- ❑ Remember to post signage for ALL Activase patients regarding Needle Stick Precautions. These are found in the Code Stroke Packets

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Post Activase Care

Patients receiving Activase for AIS may be admitted to the ICU here at Northern Regional Hospital. These will be low NIHSS/low risk AIS patients

As a Primary Stroke Center there are protocols in place to manage patients in the acute setting of ICS with Activase administration

The Step Down Unit of Northern Regional is designated as our "Stroke Unit". Patients receiving Activase will be admitted to the ICU for initial monitoring and management

Patients with a potential large vessel occlusion, higher NIHSS score, or deemed high risk, will be transferred to a Comprehensive Stroke Center instead of being considered for admission

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ICU and Stroke Unit for AIS Patient

Patients receiving Activase for AIS are considered Acute Care and will be managed in the Intensive Care Unit during the immediate post acute phase of Stroke care

Patients will be transferred to the "Stroke Unit" after the post acute phase whenever the Physicians deems appropriate

Supportive care such as Physical Therapy, Occupational Therapy, Speech Therapy, Nutritional consultation, Diagnostic and Preventative care are implemented as soon as possible

Detailed information and education regarding Stroke is provided to patients and next-of-kin during the hospital stay

Swallow Evaluation, early mobilization and early rehabilitation are areas of key focus for the acute stroke patient

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Complication of Alteplase- ICH

Alteplase is limited by risk of sICH (occurring in 2-7% of treated pts)

Two types of ICH:

- Hemorrhagic infarction (HI): petechial hemorrhage into the area of infarction
- Parenchymal hemorrhage (PH): sharply defined area of hemorrhage with or without mass effect

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Complication of Alteplase- ICH

Risk Factors for ICH after Alteplase:

- Higher stroke severity
- Older age
- Higher baseline glucose
- HTN
- CHF
- Renal impairment
- Diabetes
- Ischemic heart disease
- Afib
- Baseline antiplatelet use
- Visible acute infarct on imaging

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Complication of Alteplase- ICH

Assessment Protocols after Alteplase are Imperative:

- Guidelines recommend ICU or stroke unit care for 24 hours
 - Neurologic and BP monitoring (goal < 180/105)
 - Q15min for 2hrs, q30min for 6 hrs, then q60min for 16 hrs
 - Repeat imaging (STAT CT Head) with HA, N/V, or neurologic worsening

If symptoms develop during infusion, stop IV alteplase and obtain an emergent head CT

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Complication of Alteplase- ICH

Timing of Post Alteplase ICH

- Symptomatic ICH attributable to IV Alteplase occurs within 36 hours
 - **80% of fatal sICH occur within 12 hours**
 - **100% of fatal sICH occur within 24 hours**

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Treatment of Post Alteplase Hemorrhage

Contact TeleNeurology and arrange for Emergency Transfer

Cryoprecipitate

Each pooled unit of Cryo equals five (5) individual units of Cryo (Patient is to receive two (2) pools of Cryoprecipitate to equal ten (10) units of Cryo.)

- First dose: Transfuse 2 units of pooled Cryoprecipitate (1 pool = 5 units / 1 product) over 10–30 minutes (onset in 1 hours, peaks in 12 hours)

Tranexamic Acid

- 1000mg IV Infused over 10 minutes

Anticipate transfer to Comprehensive Stroke Center

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ICU and Stroke Unit for AIS Patient

COVID:

During the Covid Pandemic, all protocols will be adhered to

IF Code Stroke is called on an Inpatient, the provider may elect to move the patient to the Stroke Unit (Step Down Unit) immediately after the CT scan IF the patient is not a candidate for Activase administration and provider deems appropriate

If the Code Stroke patient is a candidate for Activase administration, accommodations will be implemented by the Nursing Supervisor to ensure patient receives the appropriate monitoring and care for post activase care protocols

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Reconstituted But Unused Activase

Activase costs approximately \$8400.00 per dose. Genetech will reimburse the hospital for the cost of any Activase that has been opened in good faith to be given to a potential Acute Ischemic Stroke patient and then not administered.

Examples would be a deterioration in patient condition after decision made to give Activase causing a reversal of decision to administer, patient changes their mind and refuses medication after reconstitution, or inability to lower BP to acceptable range to initiate bolus/infusion of Activase

In the event it is reconstituted but not given to a patient:

- DO NOT DISCARD the Activase – We cannot be reimbursed without returning the unused portion
- Place the unused medication in a sealed container and send to the Pharmacy along with the patient name, date and reason the medication was not given. Must be in original container and bear original label

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*Thank You
Please Take Post-Test*

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Post Test

1. There are several drugs that have been FDA approved for administration in acute ischemic stroke patients. T / F
2. Activase may be given to patients with acute ischemic stroke up to 12 hours after the onset of symptoms. T / F
3. Uncontrolled hypertension (>185 mm Hg systolic and > 110 mm Hg) at the time of treatment is a contraindication to the administration of Activase. T / F
4. The recommended dose of Activase for acute ischemic stroke is 0.9 mg/kg, not to exceed 90 mg total dose. T / F
5. After administration of Activase, the patient should be observed closely for neurological changes, any signs/symptoms of intracranial hemorrhage or signs of adverse drug reaction. T / F
6. If a patient has a seizure at the onset of symptoms of stroke, the patient is still eligible to receive Activase. T / F
7. Half of the total dose is administered as an initial IV bolus over 1 minute. T / F
8. While reconstituting Activase, mix with a gentle swirl or slow inversion. Shaking will cause medication to foam. T / F

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