RDTC TRACKING SHEET

- Record patient information in top right corner
- When completed, place in RDTC binder at A-pod Faculty desk

Name: _____

MR# _____

Stamp OR write patient information above

ED provider (i.e. faculty/PA/resident to complete)

Protocol: _____

Date: _____/ _____/ _____ Time: _____ : _____ *(military)*

Current ED Location _____ *(pod and room #)*

Name of supervising ED provider: _____

Name of RDTC Faculty: _____

RDTC PA / Faculty to complete

Disposition: Date: _____/ _____/ _____ Time: _____ : _____ *(military)*

- ☐ Hospitalized
- ☐ Discharged
- ☐ AMA / Elopement

PLEASE PLACE IN BINDER AT COMPLETION OF PATIENT COURSE

Rapid Diagnosis and Treatment Center
University Hospital, Center For Emergency Care

ED MD/PA Protocol Checklist and Templates

Required Activities

In order to bill for RDTC, we must have Orders, Progress Notes and Discharge Note. The entire completed RDTC Packet must be returned to the HUC at discharge.

☐ RDTC Binder Sheet *(ED Provider begins. RDTC Provider Completes.)*

☐ Dictate ED Summary Note *(ED Provider – addendum by attending)*

☐ Sign, Date and Time Order Set *(RDTC Attending)*

☐ Dictate RDTC Admission Note including reason for RDTC and the risk Stratification. *(RDTC Provider–addendum by attending)*

☐ Any patient seen in the ED before Midnight who then goes into the RDTC after midnight needs a second note dictated at the level 4/5* plus the risk stratification. *(RDTC Provider–addendum by attending)*

☐ Document RDTC Progress Notes *(RDTC Provider)*

☐ Sign, Date and Time Discharge Order Sheet *(RDTC Attending)*

☐ Dictate RDTC Discharge Summary Note *(RDTC Provider–addendum by attending)*

☐ **Give entire RDTC Packet to HUC** *(RDTC Provider)*

***Level 4**
4 HPI elements
2+ ROS
3/3 Past, Fam, Social HX
EXAM 5-7 body areas/organ sx
MDM straight forward – mod complexity

Level 5
4 HPI elements
10+ ROS
3/3 Past, Fam, Social Hx
EXAM 8+ organ sx
MDM High complexity

Dictation Templates

RDTC Attending Summary Template (*if no PA to do admit note*)

This patient has been risk-stratified based on the available history, physical exam, and related study findings, and admission to observation status for further diagnosis/treatment of _____is warranted. This extended period of observation is specifically required to determine the need for hospitalization**.** This patient will be treated/monitor with/for_____. We will observe the patient for the following endpoints_____. When met, appropriate disposition will be arranged.

Physician's Assistant Admission Summary Template

I am dictating on behalf of the attending _____ This patient has been risk-stratified based on the available history, physical exam, and related *study findings, and admission to observation status for further diagnosis/treatment of _____is warranted.* ***This extended period of observation is specifically required to determine the need for hospitalization****. This patient will be treated/monitor with/for_____. We will observe the patient for the following endpoints_____. When met, appropriate disposition will be arranged.*

Discharge Home Stat Disposition Summary Template

This patient has been cared for according to standard RDTC protocol for _____ (diagnosis). Significant events during the course of observation include (detail testing, therapy, and response). This extended period of observation was specifically required to determine the need for hospitalization. (Please give evidence for medical necessity of DURATION of observation—i.e. when condition improved sufficiently or when study results became available.) This patient is stable for discharge based on the following diagnostic/therapeutic criteria. Prior to discharge from observation, the final physical examination reveals _____. Total length of observation time was _____ hours. (Detail discharge instructions and discussions with primary/consulting MDs)

If PA dictating add: I have reviewed the case with Dr. _____(RDTC Attending.)

Admission Disposition Summary Template

This patient has been cared for according to standard RDTC protocol for _____(diagnosis). Significant events during the course of observation include (detail testing, therapy, and response). ***This extended period of observation was specifically required to determine the need for hospitalization****.* (Please give evidence for medical necessity of DURATION of observation—i.e. **when** condition improved sufficiently or when study results became available.) *It is now clear based on _____that this patient will require admission to hospital for _____.* Prior to discharge from observation, the final physical examination reveals _____. Total length of observation time was _____ hours.

If PA dictating add: I have reviewed the case with Dr. _____(RDTC attending).

ACETAMINOPHEN OVERDOSE

INCLUSION AND DISCHARGE CRITERIA

ADMISSION

Inclusion Criteria *(if ALL criteria apply patient is a POTENTIAL RDTC candidate)*

Y	N	
❑	❑	Acute, single acetaminophen overdose
❑	❑	Time of ingestion can be estimated for use of normogram
❑	❑	Acetaminophen level drawn between 4 and 20 hours after estimated time of ingestion
❑	❑	Pt is above the nomogram treatment line (see cover page) but deemed low risk (< 10%) based on actual or predicted time of IV NAC infusion
❑	❑	Normal transaminase (AST, ALT) levels in ED
❑	❑	Poison Control contacted regarding ingestion
❑	❑	Psychiatric Hold Signed
❑	❑	PES notified of need for evaluation
❑	❑	Anticipated RDTC length-of-stay greater than 8 hours and less than 23 hours
❑	❑	Primary physician and / or consultant contacted (if applicable)
❑	❑	Order for admission to observation status signed, dated, and timed by attending physician

Exclusion Criteria *(if ANY criteria apply patient is NOT an RDTC candidate)*

Y	N	
❑	❑	Unstable vital signs, altered mental status, hypoxia, impending respiratory failure, shock, or severe systemic illness
❑	❑	Allergy to NAC
❑	❑	Delayed absorption likely (extended release or co-ingestants)
❑	❑	Chronic acetaminophen toxicity or ingestion taken as multiple doses
❑	❑	Time of ingestion cannot be estimated
❑	❑	Co-ingestants deemed by attending (+/- consultation with poison control, i.e. oral long acting antihyperglycemics) inappropriate for RDTC treatment
❑	❑	History of alcoholism (co-ingestion of alcohol is not an exclusion criteria
❑	❑	Significant co-morbidities or co-ingestions dictate a higher level of care
❑	❑	Hospitalization at the discretion of the ED physician, primary physician, or consultant

DISPOSITION

Disposition Criteria

Y	N	**Hospital *(if ANY criteria apply patient should be hospitalized)***
❑	❑	Unstable / abnormal vital signs, persistently altered mental status, or worsening symptoms
❑	❑	Hepatic transaminase level (AST, ALT) elevation at any time
❑	❑	Persistently elevated acetaminophen levels at 20 hours post NAC initiation
❑	❑	Significant NAC reaction with persistent symptoms OR requiring epinephrine
❑	❑	New diagnosis requiring hospitalization discovered
❑	❑	Does not or will not meet Home Disposition criteria after 23 hours of treatment
❑	❑	Hospitalization at the discretion of the ED physician, primary physician, or consultant

Y	N	**Home/PES *(if ALL criteria apply patient may be discharged to home/PES)***
❑	❑	Stable and normal vitals signs and baseline mental status
❑	❑	Acetaminophen serum level below limits of detection at 20 hours post NAC initiation
❑	❑	Normal transaminase levels below limits of detection at 20 hours post NAC initiation
❑	❑	Patient is asymptomatic
❑	❑	Patient's psychiatric hold has been cleared by PES MD (only if d/c home)

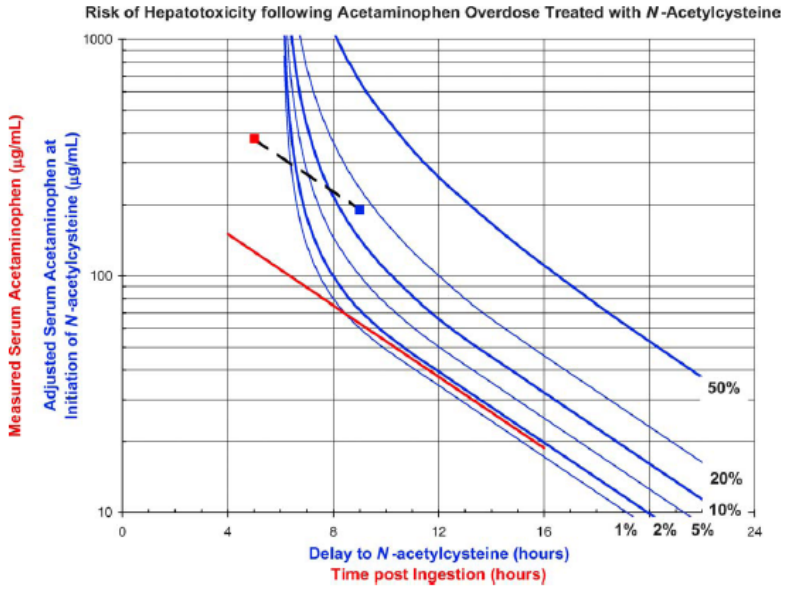

Figure 2. Risk of hepatotoxicity after acute acetaminophen [APAP] ingestion treated with *N*-acetylcysteine (*N*-AC). The graph illustrates the discrete probability of developing peak aminotransferase ≥1,000 IU/L after acute acetaminophen overdose (curved blue lines), conditioned on the absence of ethanol. For reference, the lower treatment line of the Rumack-Matthew nomogram is included (straight red line). To use the graph, plot the earliest measured postpeak [APAP] obtained at least 4 hours postingestion against the time of phlebotomy. Then draw a line parallel to the red Rumack-Matthew nomogram line until the time of *N*-AC initiation is reached. The risk of hepatotoxicity is then estimated using the blue lines. For patients not given *N*-AC, extend the line toward the right into the area of approximately parallel isoprobability lines to estimate the risk of hepatotoxicity. To illustrate, a patient with a serum [APAP] of 380 µg/mL measured 5 hours after ingestion is treated with *N*-AC beginning 9 hours after ingestion. The measured unadjusted [APAP] is plotted (red square) and then extended to 9 hours (blue square). Assuming the patient did not coingest ethanol and is not an alcoholic, the estimated probability of hepatotoxicity is approximately 15%. Had *N*-AC been initiated within 6 hours of ingestion, this risk would be less than 1%. Note that the Rumack-Matthew nomogram should continue to govern the decision to initiate treatment with *N*-AC and that there is no requirement to remeasure serum [APAP] at *N*-AC initiation. Downloading for patient use is permissable by the authors.

Acute Acetaminophen Overdose

The Rumack-Matthew treatment nomogram for acute acetaminophen overdose has been validated repeatedly but not modified in the last 30 years. The nomogram determines which patients are at no risk of significant liver injury if left untreated and those who are likely to benefit from treatment. Despite its benefit, questions with a significant impact on both patients and health care expenditures remained. Should all acetaminophen overdose patients who require treatment be treated the same? What is the optimal dose and route of acetylcysteine administration? How might individual factors modify the answer to these questions?

Sivilotti, et al presented a modified Rumack-Matthews nomogram that is a result of a broad 20 year retrospective analysis of the Canadian experience with intravenous treatment of acetaminophen overdose. The authors studied more than 1,270 patients treated mostly with a 20-hour course of intravenous acetylcysteine to determine which factors are associated with adverse outcome in these treated patients. While numerous risk factors were evaluated (dose, delay to initiation of treatment, chronic exposure to alcohol, and concurrent ingestion of alcohol with acetaminophen) their modified nomogram only links dose and delay to treatment with the likelihood of severe hepatic injury (defined as developing peak aminotransferase levels $\geq$ 1,000 IU/L). This nomogram is for acute acetaminophen overdose in nonalcoholic drinkers who will not have delayed absorption (extended release or co-ingestants).

In this new nomogram, physicians calculate risk of hepatotoxicity based on the timed serum concentration and the time that therapy with acetylcysteine begins (see Sivilotti figure). Physicians must be careful to differentiate the need to treat based on the Rumack – Matthew nomogram from the likelihood of significant liver injury based on this Sivilotti risk nomogram. Patients with $\leq$ 10% risk of hepatotoxicity are elegible for the RDTC protocol. By using this modified nomogram, a large number of patients may be identified who can be treated for 20 hours with intravenous acetylcysteine and discharged. While follow up testing is not required, the authors of this RDTC protocol have chosen to measure aminotransferase levels at the end of treatment for research purposes and to identify those few patients who may develop hepatoxicity (concordant with RDTC anticipated failure rate of 10-20%) .

This protocol was developed by Dr. Ali Raja and Dr. Jeff Holmes with the help of Dr. Michael Lyons and board certified toxicologists Dr. Edward Otten, Dr. Curtis Snook, and Dr. Randall Bond.

EDREC

RAPID DIAGNOSIS AND TREATMENT CENTER

PHYSICIAN ORDER SHEET

All **applicable** orders have been checked.
ORDERS **NOT CHECKED** ARE NOT TO BE FOLLOWED

Orders are modified according to the medical condition of the patient. All orders are to be dated, timed and signed by a physician. Additional orders may be entered at the end of the order set. If the orders are transcribed in sessions, the transcriber must date, time, and initial in the section marked order noted.

Place Sticker Here

ALLERGIES: ☐ None Known
☐ Yes, Drug/Reaction: _____

ORDER #	✓	Acute Acetaminophen Overdose	ORDER NOTED (DATE/TIME)	(INITIAL)
1.	✓	Admit to observation status *(Please record date / time order noted by nurse)*		
2.	✓	• Take off Order to begin observation by recording Date/Time • ED nurse place patient ID sticker on paperwork • Begin protocol orders unless RDTC bed imminently available • Report to RDTC nurse with completed admission paperwork • Transfer to RDTC		
3.	✓	Diagnosis: Acute acetaminophen overdose		
4.	✓	VS: Q 1 hour x 2, then Q 2 hours and prn (with pain assessment) Call RDTC MD or PA if: **greater than** / **Less than** SBP: 180 / 90 DBP: 110 / 50 HR: 120 / 60 RR: 35 / 10		
5.	✓	Allergies: confirm allergy list and record on designated area **pg 1&2**		
6.	✓	Nursing: • Call MD/PA for recurrent vomiting, abdominal pain, altered mental status		
7.	✓	Ensure peripheral IV access		
8.	✓	Ensure patient is properly restrained		
9.	☐	Diet: Regular diet/Advance as tolerated		
10.	☐	NS 1 liter bolus IV		
11.	☐	Consult Social Services for:_____		
12.	☐	Consult psychiatric emergency services		

White -- Chart Yellow -- Pharmacy Pink -- Floor Copy ……**See Page 2**

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Place Sticker Here

ALLERGIES: ☐ None Known
☐ Yes, Drug/Reaction: _____

ORDER #	✓	Acute Acetaminophen Overdose	ORDER NOTED (DATE/TIME)	(INITIAL)
		Medications		
13.	✓	Phenergan 12.5 mg IV q 4 hr prn nausea/vomiting		
14.	✓	N-acetylcysteine (NAC = Acetadote®) loading dose: 150 mg/kg IV in 200 ml of 0.45% sodium chloride given over 1 hour (if not already given in E.D.)		
15.	✓	N-acetylcysteine (NAC = Acetadote ®) maintenance dose: 50 mg/kg IV in 500 mL of 0.45% sodium chloride over 4 hours (125 mL/hr), followed by 100 mg/kg in 1000 ml of 0.45% sodium chloride given over 16 hours (62.5 ml/hr)		
16.	☐	Decrease 0.45% sodium chloride volume for patients less than 40 kg and those requiring fluid restriction (administer same dose of NAC but in 50% volume of 0.45% sodium chloride listed in orders #14 and #15)		
		Home/Other Medications:		
18.	☐			
19.	☐			
20.	☐			
21.	☐			
22.	☐			
		Laboratories		
23.	✓	Initial liver panel if not already done in E.D.		
24.	✓	Initial EP1 if not already done in E.D.		
25.	✓	Liver panel, EP1, and PT/INR, PTT – Draw these labs 20 hours after the first dose of NAC (Acetadote) given		
26.	✓	Acetaminophen level after 20 hours of treatment		
		Other:		
27.	✓			
28.	☐			
29.	☐			

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Attending MD Signature:_____ Date:_____ Time:_____

(ADMISSION ORDERS ONLY)

Developed by: Emergency Medicine Date 1/1/03 Review Date 5-24-10
9-27-10

EDREC

RAPID DIAGNOSIS AND TREATMENT CENTER

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Place Sticker Here

ALLERGIES: ☐ None Known
☐ Yes, Drug/Reaction: _____

ORDER #	✓	Acute Acetaminophen Overdose	ORDER NOTED (DATE/TIME)	(INITIAL)
		Acetadote ® Reaction Orders		
		Reaction #1. • Flushing		
1.	✓	Obtain vital signs		
2.	✓	Notify MD/PA		
3.	☐	Continue IV NAC infusion if continued treatment deemed necessary by MD		
		Reaction #2. • Hives/Urticaria		
1.	✓	Obtain vital signs and assess breathing.		
2.	✓	Notify MD/PA		
3.	✓	Diphenhydramine 1 mg/kg IV (maximum, 50 mg)		
4.	☐	Continue IV NAC infusion if continued treatment deemed necessary by MD		
5.	✓	Obtain vitals and assess breathing Q15 minutes x4.		
		• **Reaction #3:** Angioedema		
1.	✓	Stop IV NAC infusion		
2.	✓	Notify MD/PA		
3.	✓	Diphenhydramine 1 mg/kg IV (maximum, 50 mg)		
4.	✓	Obtain vital signs and assess breathing Q15 minutes x 4		
5.	☐	If no symptoms after one hour, continue IV NAC if continued treatment deemed necessary by MD		
		Reaction #4 • Shortness of breath • Wheezing • Hypotension (SBP less than 100)		
1.	✓	Stop IV NAC infusion		
2.	✓	Notify MD/PA		
3.	✓	Diphenhydramine 1mg/kg IV (maximum, 50 mg)		
4.	☐	Albuterol nebulizer 2.5 mg/3 ml INH x 3		
5.	☐	Epinephrine 0.3 mL of 1:1000 soln IM, contact MD		
6.	☐	If no symptoms after one hour, continue IV NAC if continued treatment deemed necessary by MD		

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Attending MD Signature:_____ Date:_____ Time:_____
(ADMISSION ORDERS ONLY)

EDREC

Rapid Diagnosis and Treatment Center
University Hospital, Center for Emergency Care

ACETAMINOPHEN OVERDOSE

Please Stamp Here

RDTC MD/PA *Protocol Continuation Checklist*

- ❑ PA notes/Dictations must include current RDTC attending name
- ❑ Progress Notes documented **every 6 hours** during RDTC admission. If stay is less than 6 hours, there must be at least one progress note.
- ❑ Add additional orders to NEW order form, NOT to original order set
- ❑ Complete Patient Tracking Form by A-pod desk at shift change

DATE	TIME	*Please sign, date, and time all notes*
		NOT for admission/discharge notes (these should be STAT dictated) **All PA notes should document attending name**
		Attending Observation Admission Addendum
		Progress Note(s)
		Attending Observation Discharge Addendum

EDREC

RAPID DIAGNOSIS AND TREATMENT CENTER

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Place Sticker Here

ALLERGIES: ☐ None Known
☐ Yes, Drug/Reaction: _____

ORDER #	✓	Acute Acetaminophen Overdose	ORDER NOTED (DATE/TIME)	(INITIAL)
1.	☐	**DISCHARGE ORDERS** *(Please record date / time order noted by nurse)* A. Ensure completion of RDTC Tracking Sheet B. Discontinue IV C. Provide copy of Discharge Information Sheet D. Review Discharge Instruction Sheet with patient and discharge to home/PES E. Transfer necessary paperwork to PES F. Report given to PES **G. Discharge Diagnosis: 1.**_____ **2.**_____ H. Disposition ☐PES ☐ Home		
2.	☐	**HOSPITAL ADMISSION ORDERS** *(Please record date / time order noted by nurse)* A. Ensure completion of RDTC Tracking Sheet B. Convert patient to transitional status unless transferred back to ED for unstable medical condition C. Admit to hospital D. **Bed Type**_____ E. **Admitting Service**_____ **F. Admitting Attending / Resident MD:**_____ **G. Hospital Admission Diagnosis: 1.**_____ _____ **2.**_____		

White -- Chart Yellow -- Pharmacy Pink -- Floor Copy

Attending MD Signature: _____ **Date:** _____ **Time:** _____
(DISCHARGE ORDERS ONLY)

Developed by: Emergency Medicine Date 03/17/2005 Review Date 04/25/08