WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

1001 East Ninth Street, Reno, Nevada 89512
P.O. Box 11130, Reno, Nevada 89520
Telephone 775.328-2400 • Fax 775.328.3752
www.washoecounty.us/health

MEETING NOTICE AND AGENDA

Emergency Medical Services Advisory Board

Date and Time of Meeting:	Thursday, October 5, 2017, 9:00 a.m.
Place of Meeting:	Washoe County Health District 1001 E. Ninth Street, Building B, South Auditorium Reno, Nevada 89512

1. ***Roll Call and Determination of Quorum**
2. ***Public Comment**
   Limited to three (3) minutes per person. No action may be taken.
3. **Consent Items** (For Possible Action)
   Matters which the Emergency Medical Services Advisory Board may consider in one motion. Any exceptions to the Consent Agenda must be stated prior to approval.
   A. **Approval of Draft Minutes**
      August 3, 2017
4. ***Prehospital Medical Advisory Committee (PMAC) Update**
   Dr. Andrew Michelson
5. ***Program and Performance Data Updates**
   Christina Conti
6. **Presentation, discussion and possible approval for distribution the Washoe County EMS Oversight Program FY17 Annual Data Report.** (For possible action)
   Heather Kerwin
7. **Presentation, discussion and possible approval of annual REMSA Franchise Map review recommendation.** (For possible action)
   Christina Conti
8. **Presentation, discussion and possible acceptance of an update on the regional protocol project, an objective of the Washoe County EMS 5-Year Strategic Plan.** (For possible action)
   Brittany Dayton

9. **Presentation and possible acceptance of an update on the Washoe County EMS 5-Year Strategic Plan, a requirement of the Interlocal Agreement for Emergency Medical Services Oversight.** (For possible action)
   Christina Conti

10. ***Board Comment**

    Limited to announcements or issues for future agendas. No action may be taken.

11. ***Public Comment**

    Limited to three (3) minutes per person. No action may be taken.

12. **Adjournment**

Items on the agenda may be taken out of order, combined with other items, withdrawn from the agenda, moved to the agenda of a later meeting; or they may be voted on in a block. Items with a specific time designation will not be heard prior to the stated time, but may be heard later. An item listed with asterisk (*) next to it is an item for which no action will be taken.

The Emergency Medical Services Advisory Board meetings are accessible to the disabled. Disabled members of the public who require special accommodations or assistance at the meeting are requested to notify Administrative Health Services at the Washoe County Health District, PO Box 11130, Reno, NV 89520-0027, or by calling 775.326-6049, at least 24 hours prior to the meeting.

Time Limits: Public comments are welcome during the Public Comment periods for all matters whether listed on the agenda or not. All comments are limited to three (3) minutes per person. Additionally, public comment of three (3) minutes per person may be heard during individual action items on the agenda. Persons are invited to submit comments in writing on the agenda items and/or attend and make comment on that item at the Board meeting. Persons may not allocate unused time to other speakers.

Response to Public Comments: The Emergency Medical Services Advisory Board can deliberate or take action only if a matter has been listed on an agenda properly posted prior to the meeting. During the public comment period, speakers may address matters listed or not listed on the published agenda. The Open Meeting Law does not expressly prohibit responses to public comments by the Emergency Medical Services Advisory Board. However, responses from the Board members to unlisted public comment topics could become deliberation on a matter without notice to the public. On the advice of legal counsel and to ensure the public has notice of all matters the Emergency Medical Services Advisory Board will consider, Board members may choose not to respond to public comments, except to correct factual inaccuracies, ask for Health District Staff action or to ask that a matter be listed on a future agenda. The Emergency Medical Services Advisory Board may do this either during the public comment item or during the following item: "Board Comments – Limited to Announcements or Issues for future Agendas."

Pursuant to NRS 241.020, Notice of this meeting was posted at the following locations:

Washoe County Health District, 1001 E. 9th St., Reno, NV
Reno City Hall, 1 E. 1st St., Reno, NV
Sparks City Hall, 431 Prater Way, Sparks, NV
Downtown Reno Library, 301 S. Center St., Reno, NV
Washoe County Administration Building, 1001 E. 9th St, Reno, NV
Washoe County Health District Website www.washoecounty.us/health
State of Nevada Website: https://notice.nv.gov

Supporting materials are available to the public at the Washoe County Health District located at 1001 E. 9th Street, in Reno, Nevada. Ms. Dawn Spinola, Administrative Secretary to the Emergency Medical Services Advisory Board, is the person designated by the Emergency Medical Services Advisory Board to respond to requests for supporting materials. Ms. Spinola is located at the Washoe County Health District and may be reached by telephone at (775) 326-6049 or by email at dspinola@washoecounty.us. Supporting materials are also available at the Washoe County Health District Website www.washoecounty.us/health pursuant to the requirements of NRS 241.020.

WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

MEETING MINUTES

Emergency Medical Services Advisory Board

Date and Time of Meeting: Thursday, August 3, 2017, 9:00 a.m.
Place of Meeting: Washoe County Health District
1001 E. Ninth Street, Building B, South Auditorium
Reno, Nevada 89512

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1. *Roll Call and Determination of Quorum

Chair Slaughter called the meeting to order at 9:00 a.m.

The following members and staff were present:

Members present: John Slaughter, Manager, Washoe County, Chair
Kevin Dick, District Health Officer, Vice Chair
Steve Driscoll, Manager, City of Sparks
Bill Thomas, Assistant Manager, City of Reno (non-voting member)
Terri Ward, Hospital Continuous Quality Improvement Representative, Northern Nevada Medical Center (via telephone)
Dr. Andrew Michelson, Emergency Room Physician, St. Mary's

Members absent: Sabra Newby, Manager, City of Reno

Ms. Spinola verified a quorum was present.

Staff present: Leslie Admirand, Deputy District Attorney
Dr. Randall Todd, Division Director, Epidemiology & Public Health Preparedness
Christina Conti, Preparedness and Emergency Medical Program Manager
Heather Kerwin, EMS Statistician
Dawn Spinola, Administrative Secretary, Recording Secretary

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2. ***Public Comment**
Limited to three (3) minutes per person. No action may be taken.

Chair Slaughter opened the public comment period. As there was no one wishing to speak,

Chair Slaughter closed the public comment period.

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3. Consent Items (For possible action**)**
Matters which the Emergency Medical Services Advisory Board may consider in one motion. Any exceptions to the Consent Agenda must be stated prior to approval.

A. **Approval of Agenda**
August 3, 2017

Chair Slaughter noted the agenda to be approved was for August 3, 2017.

B. **Approval of Draft Minutes**
April 6, 2017

Vice Chair Dick moved to approve the Consent agenda. Mr. Driscoll seconded the motion which was approved unanimously.

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4. *Prehospital Medical Advisory Committee (PMAC) Update
Dr. Andrew Michelson

Dr. Michelson stated the PMAC met in mid-June. Much of the meeting was discussing the fast ED assessment that REMSA wants to start using, which is a stroke assessment. It helps to understand when someone's severity of stroke presentation is something that should be potentially brought to a facility that has interventional services, which currently is only Renown.

Dr. Lee, the medical director of REMSA, had asked that PMAC to either support that or not. Dr. Michelson would bring back a question to the PMAC and Dr. Lee, on how they plan to adapt the use of the fast ED assessment. This is a reminder that the PMAC is there for recommendations; in no way are they making hard directions that everyone must follow. The goal of that committee is such that all those medical directors have their voices shared and that there are discussions held.

There was little progress during the PMAC meeting in reviewing the protocols. However, it is the task force formed to work on regional protocols including, looking at the protocols in detail, weigh in, as PMAC is primarily composed of the EMS agency medical directors. There's a timing issue for getting all those docs to show up at the same time and be prepared with the same data.

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5. *Program and Performance Data Updates
Christina Conti

Ms. Conti stated she was available to answer any questions on the program report. Following up with the NTSB training, since that training and our last meeting, the regional family assistance center plan, which is an annex to the mass fatality plan, has been updated, and it is currently with Dr. Knight for review and signature.

The state EMS committee formed three subcommittees: Trauma protocols subcommittee, air ambulance regulations and the state EMS policies and procedures. The WC EMS Oversight program will be on the policies and procedures workgroup so that WC can continue to be aware of what changes the state EMS program wants to implement.

The final thing within the meetings with partner agencies section to highlight is something we are proud of and we don't have an end product just yet but an evacuation video was created

for the mutual evacuation aid annex, MAEA. Currently those trainings are only held in person but with the creation of this training video, the health supervisors and EMS providers train at their continuing education programs throughout the year. It was a great partnership with the VA. One of the things to note, the VA hospital volunteered the time and personnel to film the video so there's no cost to the region for the development of this training video. The region is incredibly appreciative.

The regional response heat map is now live. Ms. Conti stated they hope this becomes a great resource for the region. When the data for all the partners for June is received, then the last quarter for FY16/17 will be uploaded and it'll have a full year available.

The final thing Ms. Conti pointed out is the data request to EMS Oversight program. When the political jurisdictions created the EMS Oversight Program, one of the goals was to have a place where partners could go for assistance to obtain data.

Mr. Driscoll had a question on the evacuation piece. Mr. Driscoll opinioned there was quite a bit of work done early where the region identified all the different facilities, the beds, the capabilities. Knowing that's been a little while, has that inventory been maintained, and is it current so if we run into a situation we know where those folks can go in the sister facilities?

Ms. Conti replied that yes, the MAEA just got updated, and it's on an every-other year cycle. One of the first things done is those hospital bed counts. The region has also begun adding the sub-acute care facilities so that their numbers can be in there as well.

Good morning, Rishma Kimji, City of Reno. We have some great news on the CAD to CAD project. Tiburon and TriTech have reached out to both City of Reno and REMSA and notified us that they are doing the back-end work now on their side with the programming. And then they will reach out to us in the next 30 days to create a kickoff meeting with both sides, so City of Reno and REMSA, and their project teams on their side, and we'll have a kickoff meeting. They're hoping to have a testing version available by end of October. They want at least a four-week testing period, we're going to push for at least a six- to eight-week testing period, that way we can get through if there are issues with not just the programming, but with the codes and any other CAD issues that may arise from it. We are hoping to have a go-live date of January next year, but again we won't have concrete dates until we have a kickoff meeting in the next 30 days. But we're very excited that they are finally moving ahead, and we should have something available to us next year.

Chair Slaughter asked clarification on the data request matrix where it says a complaint to the Manager's office, which of the three Manager's offices was that complaint made to. Ms. Conti replied it was Washoe County.

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6. *Presentation to the EMS Advisory Board

- ALS Implementation, Sparks Fire Department

Good morning, Sparks Fire Chief, Chris Maples and Captain Ed McDonald, our department EMS coordinator, to give an update on our paramedic program and answer any questions.

EMS is a core service nearly all fire departments provide. Nationwide, EMS calls make up the majority of fire department responses, and Sparks is no exception. Over 82 percent of the calls SFD responded to in FY17 were medical. Until earlier this year, Sparks Fire was the only large department in the area that did not provide paramedic-level care. In June 2015

former Fire Chief Tom Garrison began exploring a variety of data including call types, response times, on-scene times, the performance of the two-tiered EMS system, and the difference between EMS provider certification levels. Through research and statistical analysis, he concluded that a higher level of EMS care was warranted and would benefit the members of our community. His research provided the justification to implement a paramedic program, and in August, 2016, the Sparks City Council authorized the department to begin providing that level.

After Chief Garrison's retirement it was up to Captain McDonald to get the program up and running and SFD began staffing paramedics at Stations 4 and 5 in April. The intent of moving to a higher level of EMS care was to provide our community with the same level of care that residents of Reno and Washoe County were receiving. Additionally, we wanted to ensure that no matter what type of medical emergency someone was having, the best field care would be available with the first arriving crews, whether those crews were REMSA or Sparks Fire.

Although Stations 4 and 5 are not the busiest stations, the response times are typically longer and this is where paramedics could have the greatest impact on patient care. Since April, we've been analyzing the data to determine how effective it's been; Captain McDonald will share some of this information with you.

Good morning, Ed McDonald, Sparks Fire Training Captain and EMS Coordinator. Going to this program we had 15 certified paramedics in the department that had been maintaining their certification level though training and continuing education. We brought in new equipment and new protocols we needed to ensure by April 3 they were going to be ready to go. Through in-house training, and a 40-hour, state-approved continuing education courses approved by the medical director and through third-party EMS educators, who made sure we were up to date with best practices, and validated our program -we were able to exercise our equipment, our protocols, during that week as well, and make some gains there.

Since April 3rd, SFD has hired five additional firefighter paramedics that started with paramedic certifications and will be functioning very soon on their own as firefighter paramedics with the department. Station 4 and Station 5, were our best opportunities, and have proven to be successful. Over the last four-month period SFD has been able to administer new paramedic medications, including pain management options and cardiac medication approximately 40 times and have used cardiac monitors,12 EKGs, manual defibrillation on approximately 50 cases. SFD has also assisted in transport approximately 20 times and have cases where they have been able to join protocols and equipment to maximize patient care.

Chief Maples wanted to touch on any significant cases that we have had. In this instance, we had a subject who drove to one of the stations, and said you guys are paramedics, right? The crew said yes, and she said I need you to put me on a cardiac monitor, fast, this individual had been dealing with a cardiac dysrhythmia over the course of about five years and it had never been captured. The crew was able to capture it, she was transported, but by the time she got to the ER, the cardiac dysrhythmia resolved again. It's just one case where the citizen was very appreciative and so was the medical community.

Chief Maples stated SFD will continue to evaluate their program to make sure it's effective and will make adjustments as needed. As they are able to hired more paramedics, they will staff the other stations beginning with Station 2 early next year. However, additional staffing of paramedics is dependent on our ability to hire more paramedics, either

through attrition, or if funding becomes available to increase our current staffing levels. With that, Ed and I are available to answer any questions you may have regarding the paramedic program.

Mr. Thomas questioned if they have three firefighters in the station for fire and then two for medical. Chief Maples clarified, no, they run three-man engine companies and one of those crew members will be a paramedic. Mr. Thomas followed up that SFD will then continue to respond to medical with three. Chief Maples answered in the affirmative.

Mr. Thomas then asked if they respond with a different device, or a different vehicle, or the same. Chief Maples stated, no, they run all their first-line apparatus.

- REMSA Health Line & Community Paramedicine, REMSA

Good morning, my name is Elaine Messerly, the Director of the Community Health Programs at REMSA, and one of our programs is our Nurse Health Line (NHL -Attachment A). From July 2016 through June 2017, the NHL has received over 25,000 calls, averaging per month is over 2,300 per month. These are patients who are not having an emergency or don't feel that they are having an emergency, and not quite sure where to go for their health care, and so they are calling into our NHL. As you can see, over 50 percent of patients are adults from 19-65 years and 30 percent of the people who get care from us are children less than two years of age. Young parents are calling and using the NHL maybe during afterhours or weekends when their pediatricians are not available to see what they need to do with their child.

There are over 200 protocols that the nurses can use when someone calls in to the NHL. These are the top 10 most frequently used protocols over the past year. Abdominal pain is the highest protocol and chest pain is the second. When someone calls into the NHL, the first thing that the nurse does is check for airway, breathing and circulation. Before they ever choose a protocol, they're talking to the patient to see if there is an emergency going on. If it's deemed that the patient needs an emergency response, they'll get the patient right over to the 911 system without ever going to a protocol to identified emergencies early on in the call. The goal is to get the caller to the appropriate level of care within the community where the patient is. The levels of care range from a 911 response, take themselves to the ER, see a provider within one to four hours, see a provider within 12 hours, one to three days, or stay at home with self-care instructions. Over the past year, 135 patients that called into our NHL and said if our service was not available they were going to call 911--those patients were not sent an ambulance. 359 patients said they were going to take themselves to the emergency room if our service wasn't available and they did not need to go to the ER. Those are avoided visits.

The biggest barrier is the hours of operation for urgent care clinics and MD offices. If it's on a holiday, a weekend or afterhours and someone needs to see their physician within 12 hours, we're probably going to have to send them to the ER because there's no urgent care clinics open at that time, and there are no providers available. Even though we may identify they don't need an ER visit, right now in our community we have to send them to the ER.

Additional barriers are when you go to the ER, you don't have to pay a co-pay up front, but when you go to urgent care or doctor's office you have to pay a co-pay. Even if we identify for them to go somewhere else besides the ED, they may take themselves to ED anyway to avoid a co-pay. Many callers of the NHL are Medicaid and uninsured patients, as Medicaid and uninsured persons are not accepted at some of our urgent care clinics.

In the past year we've gotten two contracts with two hospital systems and with one health

plan to help us keep our NHL sustainable. We're working really hard to get some more contracts to make sure that this service can be sustainable in our community. We still have a number that our entire community can utilize our service without having an insurance or a hospital that's paying for us, so anyone who calls into the NHL, we're going to talk to them and get them to the right level of care.

We send out patient satisfaction surveys and we ask six questions, and our satisfaction scores were extremely high for our callers that call in.

I want to touch just a minute on Omega calls. What I've been talking about up until this point has been the callers that pick up the phone and dial a phone number that gets them into the NHL. Those are the 28,000 calls called in on a seven-digit number and went to the NHL. Fewer than one percent of those calls actually had an emergency when they called in, and when we identify they have an emergency we get them to the 911 dispatcher.

The other route to the NHL is our 911 dispatch center, has a set of evidence-based protocols, and if the caller has an Omega determinant, a non-acuity, those calls are transferred over to the NHL. The nurse then selects the protocol and gets the patient to a recommended care level. Among calls that have come in to the NHL from the 911 dispatchers as an Omega, only 7 of those callers were returned back to the 911 system as an emergency.

When a call comes into the 911 system, and is determined an Omega call, and then goes to the NHL and then is referred back to the 911 system, 100 percent of those patients are reviewed by Dr. Lee, our CQI coordinator, and myself, to ensure that our system and our safety net is working to ensure that the patients are being cared for safely. So of those seven patients who got returned back to the 911 system from the Omega process, none of them were emergencies. These were patients who said send me an ambulance, I know I just stubbed my toe, but send me an ambulance. We had some patients that the first responders got on scene before the nurse got through the call, and they had called 911 so they want to go to the hospital. When we have patients who we could send to a lower level of care than the ED or actually send them to the ED without an ambulance, we have a process where we can send them a cab, and REMSA is paying for the cab services, for them to get to their health care provider and home, and some of these patients actually refused a cab as well. So of these seven people, none of them were true emergencies.

Mr. Driscoll asked about the nursing program, as he recalled it started with a grant, so how it is being funded, now that the grant is over.

Ms. Messerly responded they have two contracts with two of the hospital systems and one through an insurance company who are actually paying for patients who call into our NHL who have that insurance or who are with that hospital system and they are working on more.

Dr. Michelson asked if there was a follow-up system for those people other than the six-question questionnaire in the event a patient had a high-risk chief complaint and were deemed non-emergent, and the recommendation was not to seek emergent care.

Ms. Messerly answered although they do not currently have a follow-up process. They have looked into it however within the contracts that hold, the follow-up system is with the health care providers or the hospital systems on their end.

Mr. Thomas opined the NHL and Omega protocols are very productive tools for reducing costs, reduce hospital visits, and ambulance charges. Mr. Thomas then asked how do you

publicize this and how do you get it out to the public. Has anybody given thought to a way to maybe growing the senior part of the users? Mr. Thomas guessed a lot of the people who don't use the system properly, maybe seniors, because they're more inclined call an ambulance and go to an ER.

Ms. Messerly responded to the first question, that for the grant, a report was provided to CMMI, followed by an independent study by RTI International to assess the grant data. REMSA is currently in the process of writing a white paper that will be public knowledge as to how they determined our cost savings throughout the four-years during the grant. This will get the word out to the community.

I spend a lot of time with the senior population trying to get the word out. Right now, our number is on the back of their card for any senior with our contracted insurance provider. When we first started, we had a public number accepting all calls from anyone, which is still open, and did a lot of marketing in the senior communities.

Mr. Thomas stated there is a perceived financial benefit and interest from the local government standpoint in terms of calls that might be avoided and also a financial benefit to the hospitals. Maybe as a region we should explore how we continue this, if this is grant funded, and the grant evaporates. As far as everybody maybe kicking in some money to make sure we have a very robust nurse call in line for the citizens of our community.

Ms. Messerly agreed and clarified that REMSA currently does not have any grant funding as the grant funding ended July 1, 2016. The NHL provides cost savings on every level of patient care.

Mr. Dick commented that the Community Health Needs Assessment and the Community Improvement Plan have identified access to health care as a major issue in our community, and that REMSA pursuing this with the Innovation grant, and now maintaining it and working to develop sustainable funding for it is an important effort to try to improve access to health care. He understands this not only helps to control costs of people inappropriately accessing care at the wrong level, but also provides an entry way for people to get the care that they need. He optioned that both presentations from Sparks and REMSA this morning are capturing how we better use our EMS system and resources to improve access to health care for people in our community.

Ms. Ward asked if there was any data proving or substantiating that protocols had not been incorrectly initiated.

Ms. Messerly replied the NHL went through a quality process and became ACE accredited with the International Academy of Emergency Dispatch. REMSA is the first to be accredited and maintain their score including random audits of calls. For example, audits are done when a nurse does not pick a protocol. An attempt is made to select a protocol if they are symptomatic at all, but sometimes callers just want a refill or they call to ask for a phone number.

Mr. Driscoll commented as we continue to do some PSAs for appropriate use of 911. The other side is the positive getting the word out on this program to alleviate the burden on 911. Mr. Driscoll then asked if there was a future marketing plan for enhancing the utilization.

Ms. Messerly answered REMSA launched this program with the campaign on the radio and the television and it was very clear when to call 911 and when to call the NHL. Part of the issue is the sustainability. REMSA needs figure out payment for our system and funding the NHL and then to market it to everyone.

- REMSA System Status Management Overview, REMSA

Adam Heinz, Director of Communications for REMSA. Good morning, Chairman and members of the Board, does Ms. Ward have access to the presentation that says Growth Planning? (Attachment B) Ms. Ward: Yes sir.

I oversee our emergency medical dispatch, our air medical communications specialist, as well as our senior data analyst that was so gracious to provide this presentation. The previous meeting, Assistant Manager Thomas asked REMSA to provide insight into how we project and plan for growth. Specifically geographic growth, as well as, population growth.

It's a multi-faceted type of growth plan, some changes occur daily at REMSA, others are ongoing, and some through franchise requirements. High-performance EMS is deployed similar to the police department, and so it's not as evident that we're growing. I'm going to show you some graphs that are going to show specifically relating to scheduled units that are available in the County.

At 10:00 am our executive leadership meet to talk about system performance from the day before and internal performance such as schedule. These are in addition to the very stringent requirements of the District Board of Health for our oversight. Upcoming weather, with it being hot, do we need to deploy different ambulances or different types of resources certain places to ensure coverage. Special events – we know that Reno, Sparks and Washoe County is a destination place that sees an influx in people and to ensure that we're covered for that. Disaster mitigation –the Lemmon Valley incident, where the flood and the Hesco barriers were placed, there was an identified access challenge. Our daily meetings, identifying those issues and evaluate our ambulances deployment to ensure coverage.

A lot of this is the catalyst for permanent system changes. If we look at this graphically, just individual daily changes show the growth and purposeful planning of the EMS system. For example, this is one of 35 graphs that we look at, hourly by day, day of week, and this is just for one day, specifically looking at volume including hospital delays and staffing. We don't have to get too into detail unless you'd like to, but this is just one representation of what we're looking at daily at REMSA Communications.

The bi-annual review is the framework to build our staffing model. We use scheduled unit hours, people that are providing coverage. The previous 20 weeks of call volume r to project what we are going to need for the upcoming six months. That essentially is 20 Mondays at 1:00, 20 Mondays at 2:00, etc., etc., to be able to build a model. Sophisticated software program that reviews data and provides information on average calls, peak calls, and what should be staffed to ensure coverage. There are built-in buffers for unforeseen events. This can't project a multi-casualty incident so we have to ensure that the system is ready for that. Not only in internally within REMSA, but with our mutual aid and co-response partners.

That dark, shaded area is providing us the average calls for that hour of that day. The grey is the maximum calls, and blue represents a sophisticated algorithmic process that indicates if you have ambulances that are above that level, it may be wasteful. If you can see, what is labeled as D, the blue line, that's what we are staffing during those hours. This has to be modified to apply humanistic constrains, for example it may say somebody should start at 1:45am, which is difficult for staff to do. We have our data analysts and scheduling folks apply those criteria and produce something similar to this. This is Saturday, and the purple bars are the 90th percentile demand, or the call volume. The grey is that task time based on 50 to 60 minutes of an ambulance being committed to a 911 call is what it looks like for

coverage. The solid grey line at the top is what our schedule is and includes the buffer.

That bi-annual review, starting in 2015, spring and then fall, so that we can plan our schedule based on seasons. In winter, we see different types of calls for complaint, as well as spring into summer there are differences due to special events, the heat, and people visiting our town. During each shift bid additional scheduled units are added into the system. This graphic takes us from 2011 up until April, showing the monthly commitment to the community, as well as the daily there for the annual at the bottom. We're continually adding units into the system to ensure that we are prepared for that. As represented by our ability to meet compliance, tells us that we are meeting that demand at least to suffice the stringent requirements for REMSA.

Additionally, we do a franchise map review every three and five years. Different things are reviewed including geographic population and coverage. One of the challenges that we saw was an increase in the number of calls. If we look at Zone A, there was a higher percent of calls, as Reno, Sparks, Washoe County begins to grow, and there's an expectation that you receive a REMSA paramedic ambulance within 8 minutes 59 seconds in Zone A. There were decreases in Zones B, C and D, those suburban and rural areas, posing a challenge. If you decrease the number of calls, you have to increase the number of calls that you are compliant in. There's not many calls in those areas, so one day you may meet one call, and then the next day you don't and you are 50 percent compliant. That's what this represents here, to show you the challenges of the dynamics that we face as we continue to evolve. However, monthly for the last 30 years REMSA has been meeting that compliance standard.

An additional example is where we created one of only four static posts, "Wingspan" a growing area that includes Sparks and Washoe County out Pyramid Highway. During the initial 10 months of the new 2016 response zone map implementation we were not satisfied with the response in that area, and moved the post. We have about 60 days' worth of data, but we were able to forecast, through using a model, to see that we are to be more compliant in those calls. This is a testament to the agile nimbleness of the ability to move things to ensure that we are covering the populations we serve.

REMSA is working with RTC and NDOT to address future access and impediment issues related to the Spaghetti Bowl including not just during construction periods, but how to better design the area. We appreciate that opportunity. An additional example is a community near Cold Springs, Stone Gate, we've met with their senior developers to facilitate EMS response to the future residents. There are a lot of great discussions that come of that and we're appreciative of it.

EMS system innovations include things we do in order to ensure sustainability. This includes the Omega program and NHL which allow low-acuity patients to get where they need, decreasing the need for an ambulance response. The inter-facility, intermediate life support (ILS) allows REMSA to transport 35 to 40 people from hospitals and non-acute care facilities to skilled nursing facilities, doctor's offices, or to their home. The ILS program has significantly decreased the demand in the ALS system side, not decreasing any of the ALS units, just an adjunct to them, which allows for ALS units to be available for 911 calls.

Public service campaigns provide the opportunity to educate the public on the use of 911 and reduce burden on resources to be available s for the people that are experiencing emergencies. Special event medical coverage, decreases the need for ambulances to respond into the venue, and saves time. The average response time for our bike team downtown, many times uncompensated, is about three minutes. Approximately 30 percent of our calls

are non-transport, either the patient refuses care, it's a non-medical problem, or cancelled, so they're able to decrease the need for an ALS unit to respond and be tied up for that. Specialty teams, TEMS and SAR, provide care to the patient and decrease the need for ambulances as do ALS single response, paramedics strategically placed to provide immediate rapid response and cancelling ambulances if not needed. With that if you have any questions I'd be glad to entertain them.

Chair Slaughter asked I'm not sure where else I'll need to ask this question so I'm going to do it now, and if we have to we can talk about it somewhere else. When we talk about Burning Man, I believe I understood that for the second year in a row, REMSA will have a unit in Gerlach, within an agreement with the County, Truckee Meadows Fire Protection District (TMFPD) and REMSA, thank you for that.

Mr. Heinz replied that is correct.

Chair Slaughter requested data about the impact of the event in Gerlach, directing the request to staff as well as to REMSA, to track the week of, before and after to make some comparisons. Clarified that REMSA is not on the playa, but will assist the County in Gerlach itself. With the two systems, REMSA and the Gerlach volunteer ambulance, determine a way to start tracking some data for that event.

Mr. Thomas thanked Mr. Heinz for the helpful information clarified that the REMSA report was based on emergency medical response, not transport –so reflect demand.

Mr. Heinz confirmed all calls, including facility transfers, all demand was included.

Mr. Thomas followed up with an additional question if the fire response was modeled into the system. Mr. Thomas recalls his own personal experience in Reno there were six people who showed up to an incident. As a resource-constrained environment that may not be the optimum way to respond when there are more calls than people to respond to them. Then lastly, how does the Health District standard for REMSA, 8 minutes, 59 seconds, relate to the local government response times? For example, at the City of Reno we shoot for 6 minutes. Is there overlap? Are we double-counting? How do we rectify that between the two agencies providing a response to a person who needs someone to show up?

Mr. Heinz answered relative to the responses with the fire department. REMSA, as an ACE-accredited center, conducts emergency medical dispatch (EMD), which triages calls based on chief complaint. Each fire jurisdiction, based on their response criteria, their geography, their oversight, decides what calls they respond to. When somebody calls 911 they may tell the dispatcher they have a medical emergency and don't know what's going on. That requires the fire service to respond immediately, and then the caller is transferred to REMSA whose dispatchers may find out the patient has an Omega or a non-acute complaint. REMSA has worked in collaboration with the fire services to communicate call priority, and routinely have fire officers call REMSA through the med channel for response information and then decide whether or not they are going to respond or cancel. This saves a resource for a higher-priority medical call.

Once the CAD to CAD project occurs, that information will be sent over and then each jurisdiction can decide whether or not they are going to respond. There have been recent talks with jurisdictions that want to save apparatus for true emergencies and are utilizing the academy's recommendations. Ms. Conti is also involved and facilitating those discussions.

Relative to response criteria, the annual report previously looked at response times regardless of which agency, REMSA or Fire, responded first and the Heat Map also shows

this for the whole county.

Mr. Driscoll requested that the PowerPoints from today be added to the packet and provided to the members of oversight committee for the records. Mr. Driscoll also emphasized that since this is a public meeting, information provided during the meeting is posted to websites and that requested that the presentations are provided in the packet, to allow for time to review the data and be able to better analyze and provide questions. He recognized and appreciated the amount of work that goes into them, but wished he had the presentations in time to look over them and potentially answer questions for his jurisdiction.

Ms. Ward thanked Mr. Heinz for presentation around the projections and the growth needs and asked about the strategic plan for human capital and recruitment, to meet the needs. Ms. Ward noted there are challenges with anything affiliated with health care with recruitment and retention of employees, and they are vital in the service that we provide.

Mr. Heinz thanked Ms. Ward for the question, and responded that yes, it is a challenge for all involved in pre-hospital emergency care. REMSA has identified as an area of opportunity to improve in their Strategic Plan. Mr. Heinz stated REMSA meets weekly regarding recruitment and retention. REMSA also hosts a paramedic program and are looking at different ways to incentivize program completion and recruiting directly into REMSA, perhaps through a form of commitment to REMSA for a period of time.

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7. Presentation, discussion and possible acceptance of the EMS Program's FY 16-17 Annual Report template (For possible action**)**
Heather Kerwin

Ms. Kerwin stated she had nothing further to add to the staff report, but pointed out that it very closely mirrors the previous annual report for the sake of consistency. Ms. Kerwin was available to answer any questions.

Mr. Driscoll moved to accept the template. Vice Chair Dick seconded the motion which was approved unanimously.

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8. Presentation and possible acceptance of an update on the Nevada Trauma Registry data for Washoe County (For possible action**)**
Heather Kerwin

Ms. Kerwin stated she wanted to highlight that this is the first time Washoe County has received the trauma data, for two full calendar years, 2015 and 2016. The tables in the county trauma data report were adopted from the National Trauma Data annual report for 2016. Ms. Kerwin was available to answer any questions.

[Chair Slaughter left the meeting at 10:05 a.m.]

Mr. Thomas apologized for not having read the report and asked if there were any conclusions or recommendations as a result of this report.

Ms. Kerwin replied over 60 percent of the trauma incidents involved a fall or motor vehicle accidents, so preventive messages would be to reduce likelihood of falls, and ways to stay safer on the roads.

Mr. Thomas sought clarification on falls and asked if the falls were due to construction

activity, work activity, or just people around their houses.

Ms. Kerwin responded after reviewing this data in conjunction with unintentional injury fatality data, there is a higher proportion of falls among adults over 50 or 60 years of age. Which will likely increase as the Baby Boomer generation ages and is one trend to keep an eye on.

Mr. Driscoll stated we know in hospital environments and care environments, fall protocols have been greatly improved and increased over the last decade. Mr. Driscoll asked if there is some attempt by us as a public agency to partner with them or on our own to do some kind of marketing, PSA-type campaigns to work specifically on falls as one of the two.

Ms. Kerwin replied she was not aware of any, but can work on it in the future.

Ms. Ward stated if there is a subcommittee or some type of collaboration she would love to be a part of that, as they have done a lot of work at Northern Nevada and had a huge decrease in falls.

Mr. Dick opined we could engage Senior Services, as well, in a partnership around fall prevention. There's public messaging that's occurring on accident prevention from law enforcement and NDOT, and those types of things, but is not aware if there's really a coordinated sort of regional effort. It may be worthwhile to look at how partnerships can be enhanced around both those areas of utilizing existing organizations working together on a common message.

Chris Maples, Sparks Fire Department Chief, commented that Sparks Fire Department has a program that's called Remembering When, and it's specifically designed to address slip-and-fall hazards for seniors and would be willing to collaborate with anybody, including the nurse health line, to get that message out.

[Chair Slaughter returned to the meeting at 10:09 a.m.]

Mr. Driscoll moved to accept the report and approve distribution. Chair Slaughter seconded the motion which was approved unanimously.

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9. Presentation, discussion and possible acceptance of a presentation regarding the conferences attended by the EMS Statistician (For possible action**)**
Heather Kerwin

Ms. Kerwin, EMS Oversight Statistician, presented on slides for the 2017 annual conference for the Council of State and Territorial Epidemiologists (Attachment C). The Council of State and Territorial Epidemiologists (CSTE) helps foster relationships among epidemiologists not just across our nation, but internationally as well, their work is primarily focused on advancing public health policy and epidemiologic capacity. CSTE also develops case definitions for reportable and infectious diseases, and standards for practice and effective use of epidemiologic data. CSTE conference is the largest gathering of applied epidemiologists in the nation, with over 700 presentations and round table discussions during the three-day conference.

Most of the EMS-related information was within the surveillance and informatics, substance abuse, and injury epidemiology tracks. These presentations largely focused on falls, heat stroke, related injuries, and motor vehicle accidents. The substance use tracks focused on opioids and Fentanyl overdose-related injuries and deaths.

Ms. Kerwin attended over 45 presentations and breakout sessions. Examples of sessions attended included identifying risk factors for opioid overdose deaths, and bystander versus EMS-administered naloxone, and uses of syndromic surveillance data to monitor opioid-related overdoses, which is currently occurring at the Health District. There was a presentation on

importing electric case report forms, if and when, the region migrates to standardized data collection for patient care in the field, those data can then be reported through an automated system. There were also presentations on emergency preparedness and infection control practices in urgent cares.

Emerging themes include the opioid epidemic, and the shift to Fentanyl analogs, derivatives of opioids, which have a much higher potency level at much smaller dosage. Also that the emergency room and hospital EMS data are widely used for early warning systems, and those include everything from overdoses to environmental hazards and foodborne illnesses. Additionally retrospective studies are being used to describe populations impacted by events such as motor vehicle accidents, falls, heat-related illnesses this can help provide context for marketing campaigns aimed at prevention.

Ms. Kerwin demonstrated how syndromic surveillance works, as a live feed of data from health care services including EMS, ED, fire, paramedic providers, hospitals, pharmacies, and laboratory into ESSENCE software which creates alerts and warnings for specified conditions.

Future projects include working with state partners to explore any utilization or application of Nevada's prescription drug monitoring program data. Ms. Kerwin noted the Health District has also received requests to look at smoke inhalation, and any uptick in marijuana-related impacts with the legalization of recreational marijuana, and ESSENCE was used to review hospitalizations for those issues.

Ms. Kerwin stated they will continue to work with local hospitals to obtain the pertinent information so they can better evaluate our pre-hospital patient care. Ms. Kerwin finished by stating they will continue to work improving health outcomes with the overall understanding that data collection and analysis should be done with the intention to improve public health and was available for questions.

Vice Chair Dick moved to accept the report. Mr. Driscoll seconded the motion which was approved unanimously.

Chair Slaughter stated we're going to open Items 10 and 11 at the same time at request of staff.

10. Presentation and possible acceptance of an update on the five-year Strategic Plan, a requirement of the Interlocal Agreement for Emergency Medical Services Oversight (For possible action**)**
Christina Conti

11. Presentation and possible direction to staff on changes to completion dates outlined within the five-year Strategic Plan, a requirement of the Interlocal Agreement for Emergency Medical Services Oversight (For possible action**)**
Christina Conti

Ms. Conti appreciated the indulgence of the Chair and the Board. Agenda Item Number 10 is the quarterly update on what's happening with the strategic plan. Agenda Item Number 11 is noting that we have missed some deadlines that were originally laid out in the planning process and asking for direction from the Board on those new dates will be approved.

There was a nine-month process with members of the operations and dispatch for all of the political jurisdictions to develop the strategic plan. The group tried to create a plan that was realistic and attainable while pushing the envelope a little bit. The due dates, that had originally put together, were believed to be reasonable and attainable. But, while going through the process,

in order to do a complete and thorough job on reaching those objectives, the region needed more time than originally anticipated.

A quick note on the completed objectives with the Omega protocols, which is the second item listed, we are doing our first annual review of the protocol process. The EMS Oversight Program will take a look at the process that the partners put together and make sure that it is still working as designed and if there's any revisions that need to be put in place to ensure that both partners know that it's an Omega call. Those who responded indicate that the process as outlined is actually quite good and it is working. At this point we don't anticipate a change to that Omega process.

Looking at the in-process objectives, Low Acuity Priority 3 calls would be an item that needs a new date. The group has begun meeting, has a plan to move forward. Mr. Heinz referenced it in his presentations of looking at the Low-Acuity Priority 3 calls and the appropriate responses and if the region can come together and make some agreements on what that looks like. That subcommittee will identify a new completion date that we believe is attainable.

The jurisdictional response measurement needs a new date. We are just waiting for a couple partners to self-identify their measurements and. Otherwise we will be able to be done with that one.

The regional protocols are a perfect example of a project that had no unexpected delays. The task force has been incredible and the knowledge base has been inspiring. The task force met monthly and then increased to every other week to meet that original goal within the strategic plan.

Turning to page 3, there is an objective that requires some clarification one language within the franchise. What we are doing, is going to go back and we're going to listen to the meetings and read the minutes from that EMS Working Group from several years ago, to really understand what the background was for that language. We'll bring the information back to the District Health Officer; however we need more time to do that research.

The CAD-to-CAD interface as well as the AVL, we heard the update from Ms. Khimji, so those due dates are on track. However, the strategy 3.3.1, underneath the AVL, is something that we need to work on pretty quickly. We would like the AVL capability so that in the dispatch centers they can see where all of the different partner agencies are in response to different calls. At the time we were developing the strategic plan, not all partners knew their existing capabilities, if all their apparatus had the AVL technology that could then feed back to the dispatch centers. This is simply an assessment of where we are, so that we as a region can plan for where we are going with the advancement of the technology of CAD-to-CAD.

E-PCR is stalled at this moment because there are a lot of data-mapping elements that are being worked out through the individual jurisdictions, and so once those units are operating without error then this strategic planning item can proceed with being work done.

The annual hospital outcome data, Ms. Kerwin touched on that, we're working with Northern Nevada Medical Center (NNMC). We brought some examples of calls and we found that the REMSA ID, run number, is searchable in the hospital database. That is going to make the matching process of the calls that much better, when we get those calls from NNMC, we will sit down and start mocking up what the different analysis could look like, before we bring it to the region, to ensure that we're answering the different questions for hospital outcome.

PMAC, Dr. Michelson already touched on.

The annual franchise map review, this is another example of the subcommittee that put the

strategic plan together selecting a date we felt was realistic. However, we have a July 1 date on that. Ms. Kerwin does not get the data for the month of June until the middle of July. We can't do an annual review process based on the calls received before we even get the data, so we are going to be looking to change that date as well.

The last one is brand new with all the strategies included, and it's looking to see if we can do a regional quality improvement program. That is a several-year item.

Mr. Driscoll opined based on the circumstances and the reasonableness of delaying, do you have stretch dates that keeps you focused, that would allow you, to meet your new timelines on a stretch, not on a relaxed basis?

Ms. Conti stated if I understand your question, that's what we would like to begin doing. We have not in the past reset a date. It's been trying to achieve what's in there whether it was reasonable or not, which is why the task force started those every-other-week meetings. If we are not going to meet something, have the discussion with those that are involved in that project, and then together, assign a reasonable date that then becomes the hard line that we would move towards. Our goal would not be to continue pushing it out but to assign a new date.

Mr. Dick affirmed having a strategic plan that does have stretch goals to it, and would rather have to push back a date for achieving that goal versus having a relaxed plan where we're hitting all of the dates easily because we're not challenging ourselves very much. What I would suggest is that when you're coming to report to the Board on your progress with implementing the strategic plan, at the same time, you bring us any adjustments that you're seeing in the schedule and the deadlines, based on how you are progressing and what you anticipate hitting.

Ms. Conti stated this item is to approve the update of the 5-year strategic plan. On Agenda Item Number 11, the recommendation is actually what Mr. Dick said, that we would like the Board to direct us to bring back those new dates when we bring back the quarterly updates on the 5-year strategic plan.

Vice Chair Dick moved to approve Items 10 and 11. Mr. Driscoll seconded the motion for discussion.

Mr. Driscoll asked with all the adjustments that you're suggesting that be reviewed for possible new dates on a stretch goal type basis, are all of those ones that wait for approval three months from now? Are there some that the team would like some specific direction on so that they can be working towards satisfying certain outcomes inside between now and the next meeting?

Ms. Conti asserted that we had to push back our meeting from July due to quorum issues, we actually meet again in two months, and our packet is due in six weeks. I would prefer to be able to get with the partners and bring back those attainable goals. For regional protocols, the goal was June 30, and we will have those final protocols to medical directors in a week. I don't feel like there is a barrier to having it come back in the October meeting as long as the Board's comfortable with that. We haven't stalled these projects, we're continuing to move on them and we'll have those discussions for dates.

Mr. Driscoll opined that he understands this process, having been involved in it pretty heavily. Understanding where you're going and what you're trying to do, and you're accomplishing good things. I'm just wondering, in a 6-week period of time, if you were struggling with maybe direction, if the Board appointed a single point of contact where you can get some direction to get us to the end goal two months from now if that would be helpful. I'd be willing to do an amendment to the motion to provide you with that oversight.

Ms. Conti said that would be really helpful to us.

Mr. Dick stated he would be willing to amend the motion to include that. I think that Mr. Driscoll's been, as he noted, very involved with the strategic plan, and I would be quite comfortable with him serving as point for the EMSAB. Mr. Driscoll opined that he'd willing to take on that responsibility.

Mr. Dick, so moved. Mr. Driscoll seconded the amendment.

Chair Slaughter clarified ll in favor of the motion, I think we have one motion for two items. Ms. Conti affirmed yes, and for clarification of the motion, I believe that the amendment would be to Item 11. Chair Slaughter said yes, thank you. **The motion passed unanimously.**

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12. Presentation, discussion and possible acceptance of an update on the regional protocol project, an objective of the Washoe County EMS 5-Year Strategic Plan (For possible action**)**

Christina Conti, on behalf of Brittany Dayton

Ms. Conti stated the regional protocol project, as I alluded to in the last agenda item, has been an incredible process to watch. The task force was created out of the PMAC committee, and is comprised of two representatives per jurisdictional partners. One of the things to note is that the regional protocols have no deviation from the partner agencies with the exception of the medications that they might carry. That has the possibility to change when the medical directors begin their review and recommendations. To this point, all of the partners within Washoe County, including North Lake Tahoe Fire Protection District, share the goal to utilize the same protocols. When we were doing the strategic plan, it was something that we really didn't believe was achievable to 100 percent to push the recommendations forward. We anticipated that there might be some variances. To get to the end of this project and have no identified variances in this moment that is pretty incredible.

Ms. Conti mentioned we had a June 30 target deadline, and we almost made it. The task force brought to the PMAC on June 14, an almost complete protocols for them to review. As Dr. Michelson said, that meeting was quite full and they weren't able to really discuss the items that were there. The task force met several times with their final meeting on August 1, and the document has now had a second final review. I say second, because each protocol was worked through and then received a final look before it got put into the document. .

By Monday, that document will be sent to the partners so that they can do their editing. The editing isn't necessarily the how to do, it's what is written to make sure that we as non-medical that we are providing that backbone support accurately captured the abbreviations of those methods.

The medical directors and PMAC members will receive the document on Monday August 14th. The task force decided on a four-week review period, because it correlated very well to the next PMAC meeting. Our desire and our hope is that those medical directors will meet with their operations personnel from the fire jurisdictions to discuss those protocols. Any revisions or recommendations that they would like to see made can then be discussed among all of those medical directors and the PMAC members at that PMAC meeting. The task force has already scheduled their next meeting, which would be the next week, to take a look at and discuss those recommended changes, and then the anticipated end goal is to bring the completed document at the next EMSAB meeting.

The task force needs to re-look at what that implementation date looks like because that date

was January 1, we haven't hit that yet, I'm going to make an assumption, it is not a reasonable one any more. Because we have to wait for all the medical directors to sign those protocols before training can occur.

We are incredibly proud of this project with the partners. It has been, like a said, it has been inspiring to watch. Each jurisdiction had the two, we have a couple of the members here and so if you have any questions, I would defer to my colleagues if they wanted to add about this process.

Mr. Driscoll moved to accept the update. Mr. Dick seconded the motion which was approved unanimously.

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13. Presentation, discussion and possible acceptance on an update of the public service announcement (PSA) project relating to the appropriate use of 911 (For possible action**)**
Heather Kerwin, on behalf of Brittany Dayton

Ms. Kerwin opened by acknowledging that Brittany Dayton met regularly with leadership from across the spectrum of organizations that might be impacted by inappropriate use of 911. Ms. Dayton was able to coordinate with leadership from hospitals, all of the jurisdictional EMS partners, as well as law enforcement, to come together for a press conference on April 23rd. The press conference provided the opportunity to talk about some of the issues in their specific jurisdictions, related to their jurisdictions and their component within the health system, and how inappropriate use of 911 impacts the system.

Multiple segments were shown on two local television stations and PSAs were aired on Tahoe News Broadcast. A total of three PSAs were received, one from Sparks Fire Department and Sparks Police Department, as well as Carson City Sheriff's Office. All three are available on the Health District web page and we'd encourage people to look at all three PSAs.

Vice Chair Dick moved to accept the report. Mr. Driscoll seconded the motion which was approved unanimously.

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14. *Board Comment
Limited to announcements or issues for future agendas. No action may be taken.

Chair Slaughter mentioned his interest in getting some data on Burning Man. I'm really interested in the entire corridor during those periods of time, that corridor being Pyramid Highway, County Road 34 all the way to Gerlach, all the way to the entrance off of Highway 34. I don't know what the time periods are, but I would trust the staff to work on that.

Mr. Driscoll confirmed that we were going to have a follow-up presentation on Item Number 12, final presentation of protocols would be on our next agenda. So, just to make sure that that's on there.

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15. *Public Comment
Limited to three (3) minutes per person. No action may be taken.

Chair Slaughter opened the public comment period. As there was no one wishing to speak, **Chair Slaughter closed the public comment period**.

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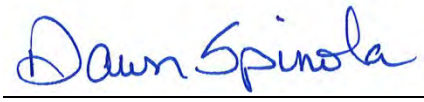
16. Adjournment
At 10:45 a.m., **Mr. Driscoll moved to adjourn. Mr. Dick seconded the motion.**

Respectfully submitted,



Administrative Secretary

Approved by Board in session on _____, 2017.

WASHOE COUNTY
HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

STAFF REPORT
BOARD MEETING DATE: October 5, 2017

TO: EMS Advisory Board

FROM: Christina Conti, EMS Program Manager
775-326-6042, cconti@washoecounty.us

SUBJECT: Program and Performance Data Updates

Meetings with Partner Agencies:
On August 22, leadership from Fire, REMSA and the EMS Oversight Program met to discuss the Multi-Casualty Incident Plan and possible revisions. The primary focus of the meeting was the Medical Branch component of a multi-casualty incident (MCI). There was significant discussion about on-scene operations and some improvements that could be made to enhance communication and coordination of MCIs with multiple agencies on-scene. It was determined that Battalion Chiefs and REMSA supervisors should meet to discuss each other's on-scene responsibilities and review draft forms that may enhance communication. Those meetings are scheduled for September 25 and October 4. Battalion Chiefs and REMSA Supervisors will meet to discuss MCI on-scene coordination. These are the individuals that are anticipated to arrive first to an MCI and fill the on-scene leadership positions.

Beginning on August 24, regional partners from both Fire and REMSA began meeting monthly to address the strategic planning item related to developing appropriate protocols to determine service levels through the EMD process. The partners have outlined the call types to review and have already reviewed non-identified Omega calls.

The EMS Coordinator attended a tabletop exercise scheduled on August 30 at the REOC for the Reno Air Races. The representatives in attendance discussed the upcoming event and emergency response plans. Fire, dispatch, EMS, law enforcement, WCHD and RARA personnel discussed the planned emergency vehicle routing as well as communications if an incident occurred.

On August 31, the EMS Oversight Program Manager toured the Truckee Meadows Community Collage paramedic program. It was an informational tour that provided some background education for Ms. Conti.

The Nevada Governor's Council on Developmental Disabilities held its quarterly meeting on September 7. The agenda included an item to distribute of grant funds based on four of strategic plan objectives. The EMS Oversight Program applied for $30,000 to develop training materials to be utilized by public safety and emergency responders to increase awareness of essential resources and skills needed to work with individuals with intellectual/developmental disabilities

during an emergency response. Official documentation of the grant award has not been received; however, the grant was approved by vote during the meeting.

On September 13, the dispatch subcommittee met. This committee is comprised of City of Reno, REMSA, City of Sparks and Washoe County dispatch supervisors. The purpose of these meetings is to work together as a region for the development of any process and/or issues that arise. The subcommittee has identified some future projects to work on together. For example, formalizing a regional "flee to" emergency plan to ensure the continuity of operations planning is documented for the dispatch centers. It is also a forum to discuss best practices and case studies from around the nation.

On September 14, EMS program staff met with REMSA and Reno Fire Department to discuss the homeless shelter and the downtown bus station. These two locations were identified during the map review process as "hot spots" that an alternative response should be considered.

The EMS Coordinator attended a power outage tabletop at the emergency operation center on September 19. The tabletop scenario was a winter storm with significant amounts of snow causing a large scale power outage across Washoe County for 72 hours. Regional partners discussed the response approach to this type of incident and how community partners would address the needs of citizens. The EMS and PHP programs will continue to work with Washoe County Emergency Management to improve the process for identifying vulnerable populations (i.e. individuals with durable medical equipment at home) that may need assistance during a disaster.

The regional protocols task force continued meeting throughout August and a final draft of the protocols was sent out for review by Medical Directors on August 14. The task force reconvened on September 20 to discuss any requests, concerns and/or recommendations of their agency Medical Directors to the final draft of the regional protocols document.

Regent Care Center of Reno is one of the skilled nursing facilities that recently signed onto the Mutual Aid Evacuation Annex (MAEA). One September 25 EMS and PHP staff conducted a tabletop exercise at their facility to train staff in the MAEA evacuation process and tagging system.

CAD-to-CAD (C2C) Update:
City of Reno, DoIT, has established a testing server, which Tiburon is configuring now with their middleware and software for the C2C. DoIT, along with City Attorney's office, is reviewing an MOU/ Business Associate Agreement with REMSA to ensure an understanding in regards to operations of the C2C programming. The region is still on schedule to begin testing by Nov, given that REMSA is able to upgrade their CAD system by then as well.

Mass Gatherings:
Below are mass gathering/special event permits reviewed by the EMS Program this quarter:

- Youth Outdoor Skills Camp
- Great Reno Balloon Races

- Barracuda Championship
- Reno Air Races

Other Items of Note:
On September 8 the EMS Coordinator graduated from the Chamber's 2017 Leadership Reno Sparks class. The class raised more than $95,000 for a local non-profit, Awaken, and provided much needed technology, equipment and transportation to grow their organization. The nine month program also provided education about leadership skills/styles and the culture/community of Reno/Sparks.

Data Requests to EMS Oversight Program

Requestor	Summary of request	Date of request	Request completed
EMSAB	Inquiry of Duck Hill calls for 2017 Legislative Session and/or ongoing monitoring of area.	4/6/2017	Drive time analysis completed 9/7/217; Data have been requested of all partner agencies-pending
EMSAB	Update Heat Map with most current data.	Ongoing	YES-8/3/2017
SFD	Low acuity calls	8/1/2017	YES-8/18/2017
EMSAB	Impacts of Burning Man	8/3/2017	Proposal approved 8/29/2017; Data to be matched-pending
REMSA	Cardiac arrest map	8/28/2017	YES-9/7/2017
SFD	Assisted living/skilled nursing facilities	9/8/2017	YES-9/22/2017

Investigations Conducted by EMS Oversight Program

Date Received	Individual/Organization Requested Investigation	Reason for Request	Investigation Outcome
6/22/17	Citizen compliant to WC Manager's Office	Perceived delay in response	It was identified that there were challenges with the address. No Washoe County agency had a delay in response, once they were notified of the call.

WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

STAFF REPORT

ADVISORY BOARD MEETING DATE: October 5, 2017

TO: EMS Advisory Board Members

FROM: Heather Kerwin, EMS Statistician
775-326-6041, hkerwin@washoecounty.us

SUBJECT: **Presentation, discussion and possible approval for distribution the Washoe County EMS Oversight Program FY17 Annual Data Report.**

SUMMARY

The purpose of this agenda item is to present for discussion the EMS Oversight Program Annual Data Report for FY17. The FY17 Annual Report serves as an educational and informational resource highlighting the work performed and achievements of the entire region as it relates to EMS. The FY17Annual Report is designed to ensure understanding of how the EMS system is designed to work in our community.

PREVIOUS ACTION

The previous EMS Program Annual Report for FY16 was approved on October 6, 2016 and utilized all calls matched and used in the quarterly report analyses for FY16.

BACKGROUND

The FY17 Annual Report highlights regional achievements and utilizes the workgroup approved data tables and jurisdictional performance metrics. The FY17Annual Report should be utilized as an educational and informational resource for our community to discuss EMS system performance more effectively. It serves as a true report for the EMS Advisory Board on the status of the EMS system and the achievements from all the partner agencies.

FISCAL IMPACT

There is no additional fiscal impact should the Advisory Board approve the presentation and distribution of the Washoe County EMS Oversight Program FY17 Annual Report.

RECOMMENDATION

Staff recommends the Board approve the presentation and distribution of the Washoe County EMS Oversight Program FY17Annual Report.

POSSIBLE MOTION

Should the Board agree with staff's recommendation, a possible motion would be: Move to approve the presentation and distribution of the Washoe County EMS Oversight Program FY17 Annual Report.

2017

Washoe County EMS Oversight Program

Annual Report FY17

WASHOE COUNTY
HEALTH DISTRICT
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Washoe County EMS Oversight Program

Christina Conti, MPPA
Preparedness and EMS Program Manager

Brittany Dayton, MPA
EMS Program Coordinator

Heather Kerwin, MPH, CPH
EMS Program Statistician

Jackie Lawson
Preparedness and EMS Program Administrative Support

Dawn Spinola
Preparedness and EMS Program Administrative Support

Acknowledgements

The Washoe County EMS Oversight Program would like to thank the following for contributing to the FY17 Annual Report:

- Washoe County GIS Technological Services/Regional Services for creating the maps contained within this document.
- Regional partner agencies for providing their highlights and accomplishments.

When to call 9-1-1

- ✓ Life threatening medical emergencies such as heart attack, stroke, or cardiac arrest.
- ✓ Crimes in progress.
- ✓ A serious crime that just occurred.
- ✓ Suspicious activity occurring.
- ✓ Any fire - if you know the location!

When NOT to call 9-1-1

- ☒ Medical emergencies that do NOT require emergency department care.
- ☒ For information or directions.
- ☒ Earthquakes or power outages.
- ☒ Crimes when you have NO suspect information.
- ☒ Crimes that occurred hours or days before.
- ☒ Noise disturbances or parties.
- ☒ Lost or injured pets.
- ☒ Complaints against neighbors or businesses.

Table of Contents

The Emergency Medical Services (EMS) Oversight Program Annual Report contains a summary of the Washoe County regional EMS system from July 1, 2016 through June 30, 2017 (FY17). Within the report there are seven sections highlighting the EMS system within Washoe County, to include EMS response agencies and their jurisdictional boundaries, regional performance data, as well as regional EMS accomplishments and goals for FY18.

About the Washoe County EMS Oversight Program

An assessment of the Washoe County EMS system was conducted in 2012 by a public safety consulting firm, TriData; this study resulted in 36 recommendations to the region for the improvement of EMS services, including the establishment of a Regional EMS Oversight Program (Program). On August 26, 2014 an Interlocal Agreement (ILA) for Emergency Medical Services Oversight was fully executed between the City of Reno (RENO), City of Sparks (SPARKS), Washoe County Board of Commissioners (WASHOE), Washoe County Health District, and Truckee Meadows Board of Fire Commissioners (FIRE). The ILA created the Program, the purpose of which is to provide oversight of all emergency medical services provided by Reno, Sparks, Washoe, Fire, and Regional Emergency Medical Services Authority (REMSA).

The Program is staffed with the equivalent of 3 full-time employees; a full-time Program Manager, a full-time Program Coordinator, a part-time Program Statistician, and a part-time Office Support Specialist. Additionally, the establishment of the ILA and the Program created specific duties and expectations of the signatories. A summary of the eight duties of the Program, and seven duties of the signatory partners, as designated per the ILA, are provided below.

The Program is tasked with the following:

1. Monitoring the response and performance of each agency providing EMS in the region
2. Coordinate and integrate medical direction
3. Recommending regional standards and protocols
4. Measure performance, system characteristics, data and outcomes for EMS to result in recommendations
5. Collaboration with partners on analyses of EMS response data and formulation of recommendations for modifications or changes of the regional Emergency Medical Response Map
6. Identification on sub-regions to be analyzed and evaluated for recommendations regarding EMS response
7. Provide an annual report on the state of EMS to contain measured performance of each agency and compliance with performances measures established by the Program for each agency
8. Create and maintain a five-year strategic plan to ensure continued improvement in EMS to include standardized equipment, procedures, technology training and capital investments

The signatory partners are tasked with the following:

1. Provide information, records and data on EMS dispatch and response for review, study and evaluation by the EMS Program
2. Participate in working groups for coordination, review, evaluation and continued improvement of EMS
3. Participate in the establishment and utilization of computer-aided-dispatch (CAD)-to-CAD interface[1]
4. Work cooperatively with the EMS Program to provide input on the five-year strategic plan and ensure two-way communication and coordination of EMS system as future technologies, equipment, systems and protocols evolve
5. Participate in the EMS Advisory board
6. Strive to implement recommendations of the EMS Program or submit recommendations to their respective governing bodies for consideration and possible action
7. Submitting recommendations regarding the EMS system to the EMS Program for implementation or consideration and possible action by the District Board of Health

The ILA also created an Emergency Medical Services Advisory Board (EMSAB), comprised of the following members:

a. City Manager, Reno
b. City Manager, Sparks
c. County Manager, Washoe County
d. District Health Officer
e. Emergency Room Physician (DBOH Appointment[2])
f. Hospital Continuous Quality Improvement (CQI) Representative (DBOH Appointment[2])

The EMSAB was established to provide a concurrent review of topics within the EMS system. The purpose of the EMSAB is to review reports, evaluations and recommendations of the Program, discuss issues related to regional emergency medical services and make recommendations to respective jurisdictional boards and councils.

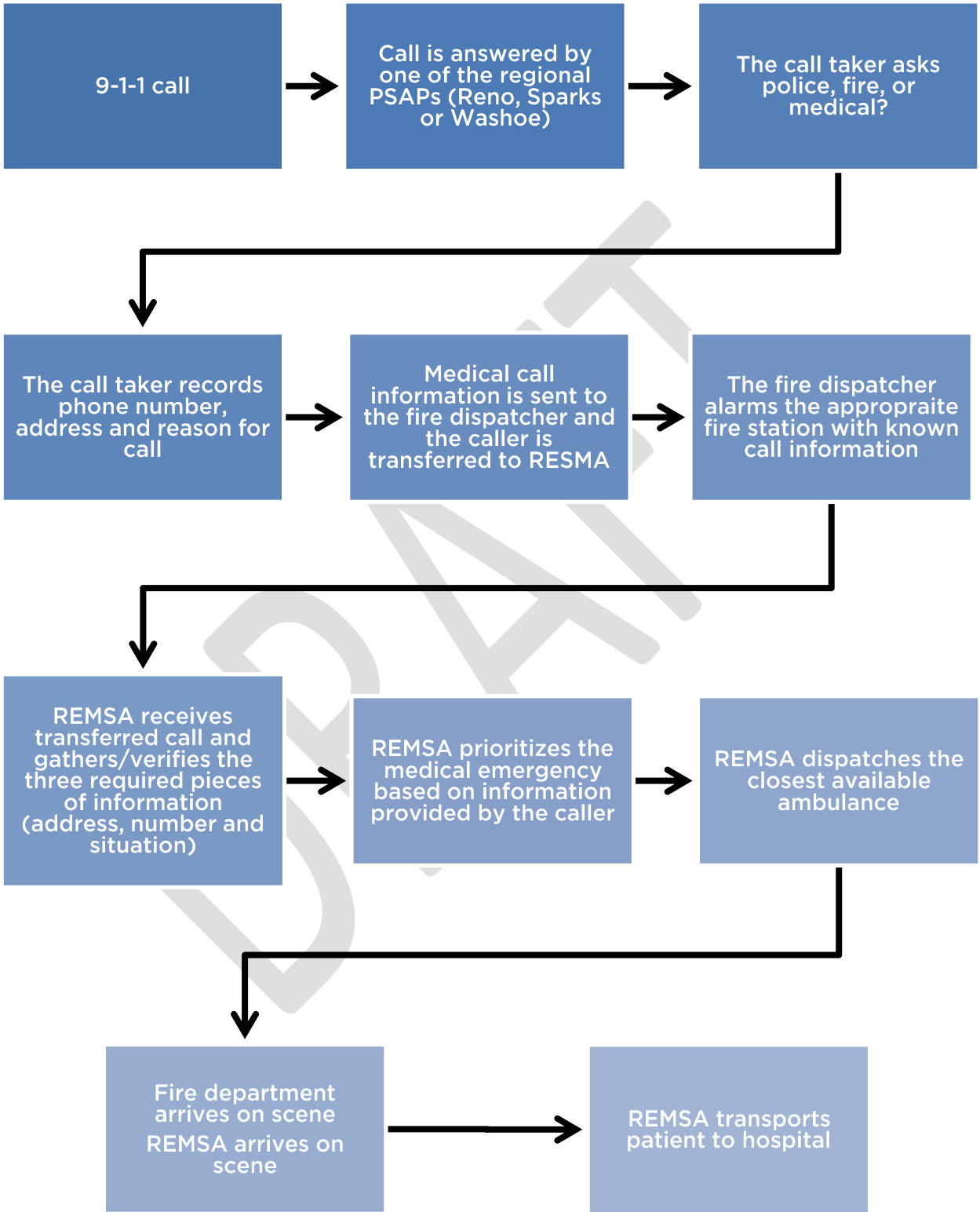
[1] CAD-to-CAD is a two-way interface with allows for call-related information to be transferred between all agencies involved with an incident to have access to live updates and incident status information.
[2] DBOH is the Washoe County District Board of Health; the governing board which oversees health-related issues within Washoe County.

Washoe County's 9-1-1 and EMS System

Washoe County has a two-tiered response system to emergency medical calls. A 9-1-1 call is received at a Public Safety Answering Point (PSAP), to determine if a caller is requesting police, medical or fire response. If medical is requested or needed, the caller is transferred to REMSA for Emergency Medical Dispatch (EMD). The two-tiered system is designed so that a fire agency is dispatched first to a medical EMS incident in their jurisdiction, since fire stations are located within neighborhoods throughout the region. While fire is being dispatched, the caller is questioned by REMSA to determine the call priority and dispatch their closest ambulance. The performance of the EMS System within Washoe County is dependent on all parties working together.

Figure 1 illustrates how a 9-1-1 call is transferred through the EMS system. Starting from the initial call coming into the PSAP, to the call taker questioning, dispatch of fire, transferring the 9-1-1 call to REMSA, REMSA dispatching an ambulance, EMS (Fire and REMSA) responders arriving on scene, and REMSA transporting the patient to a hospital.

Figure 1: 9-1-1 Call Routing in Washoe County



Washoe County EMS Partner Agencies

The EMS system within Washoe County is comprised of multiple partner agencies. These agencies work together daily to ensure the needs of the community are met. These EMS partner agencies include:

- City of Reno[3]
- City of Reno Fire Department
- City of Reno Public Safety Dispatch
- City of Sparks[3]
- City of Sparks Fire Department
- City of Sparks Public Safety Answering Point
- Gerlach Volunteer Fire Department
- North Lake Tahoe Fire Protection District
- Pyramid Lake Fire and Rescue
- Reno-Tahoe Airport Authority Fire Department
- REMSA
- Truckee Meadows Fire Protection District[3]
- Washoe County[3]
- Washoe County Health District[3]
- Washoe County Sheriff's Office

Jurisdictional Response and Station Maps

Emergency Medical Services in Washoe County are provided by the following career fire agencies: Reno Fire Department, Sparks Fire Department, Truckee Meadows Fire Protection District, North Lake Tahoe Fire Protection District, Reno Tahoe Airport Authority Fire Department, and Pyramid Lake Fire and Rescue. The City of Reno and City of Sparks Fire Departments' jurisdictions encompass the city limits of their respective cities (Figure 2), while Truckee Meadows Fire Protection District's jurisdiction encompasses the more rural areas of unincorporated Washoe County north to the Rural Fire Boundary (Figure 3). The southwest corner of Washoe County falls under the jurisdiction of North Lake Tahoe Fire Protection District (NLTFPD). NLTFPD provides fire and ambulance coverage and transport for the residents of Incline Village, Crystal Bay and surrounding communities. Pyramid Lake Fire and Rescue's jurisdiction includes the Pyramid Lake Tribal Land reservation boundaries.

Washoe County citizens also are served by the following volunteer fire agencies: EMS coverage north of the Rural Fire Boundary is covered by Gerlach Volunteer Ambulance and Fire Department, their jurisdiction includes the towns of Gerlach,

[3] Signatory of the ILA.

Empire, and surrounding rural region. The Red Rock Volunteer Fire Department serves a rural area north of Reno supplemented by Truckee Meadows Fire Protection District.

The private ambulance company, REMSA, is responsible for the transport of patients within their designated Franchise response area. REMSA's response area extends from the southern border of Washoe County, north to the border of the Pyramid Lake Paiute tribal lands, east to Wadsworth and west to the border of California (Figure 3).

Figure 2: Jurisdictional Boundaries and Fire Station Locations for Reno Fire Department, Sparks Fire Department and Truckee Meadows Fire Protection District

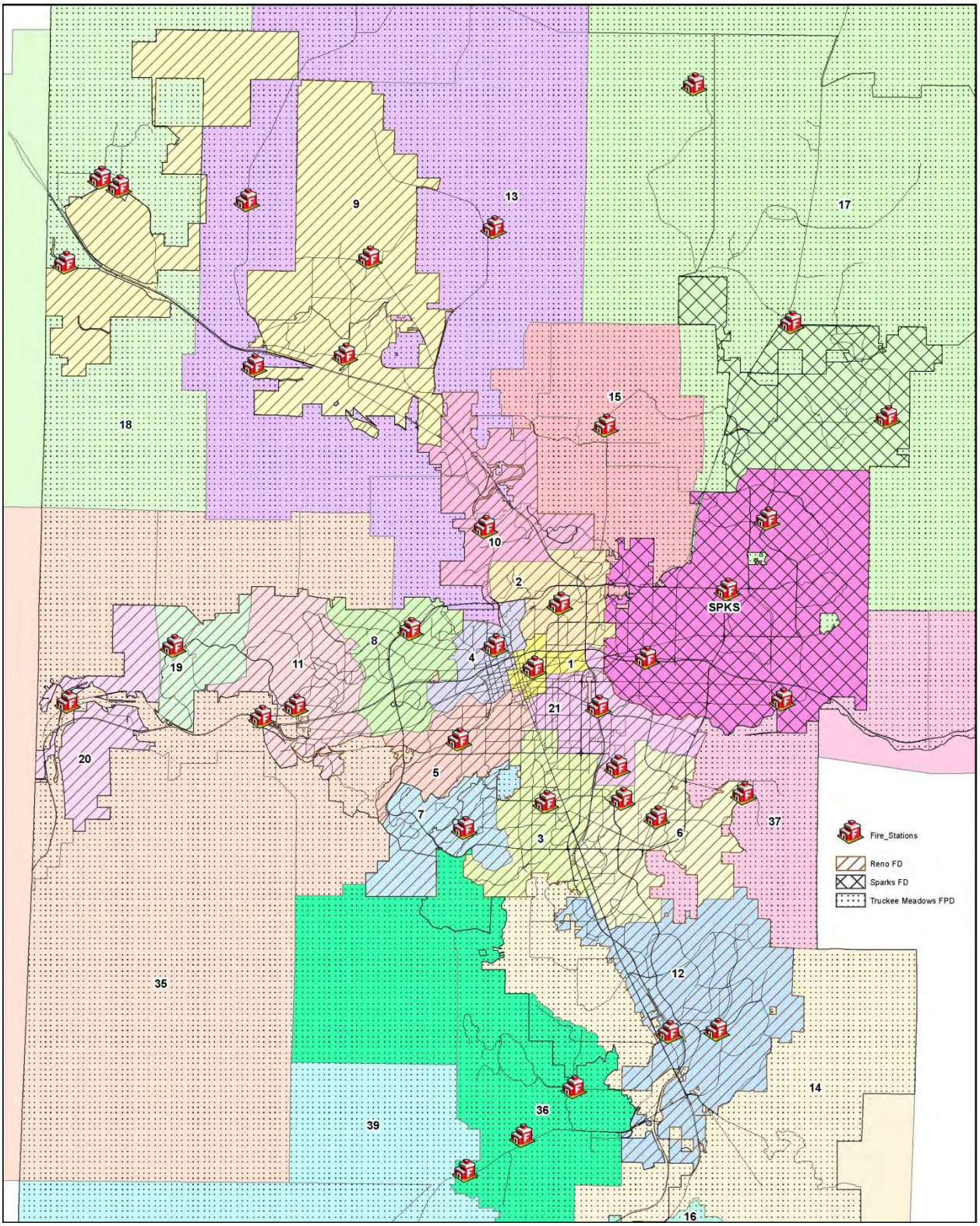
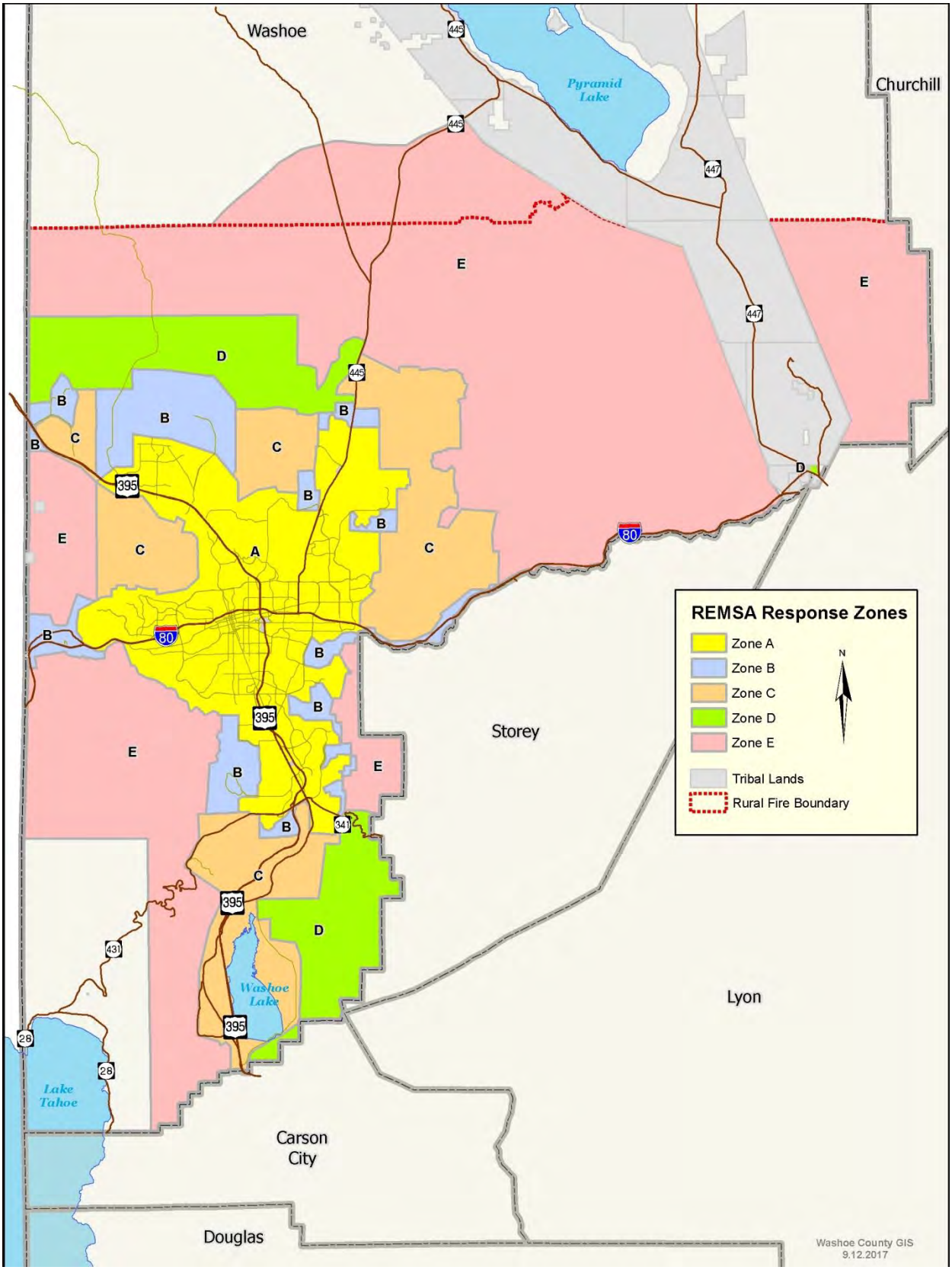


Figure 3: REMSA Franchise Response Map Effective July 1, 2016



Regional EMS Performance Analyses

EMS related calls are reported by three fire agencies in Washoe County: City of Sparks, City of Reno, and the Truckee Meadows Fire Protection District (unincorporated Washoe County), all of which are signatories of the Interlocal Agreement, as well as REMSA. The reported EMS related fire calls are matched to REMSA calls for service to allow for an evaluation of system performance on EMS incident response, from the initial 9-1-1 call through each agency arriving on scene. The purpose of matching fire call data with REMSA call data is to better understand how the EMS system is functioning in our region and determine if implemented protocols are impacting response times and patient outcomes. Additionally it allows the region to review if there are opportunities for improvement.

The analyses presented in this section are representative of the EMS calls for service during July 1, 2016-June 30, 2017. The number used in each analysis is dependent on the time stamp validity for variables used in each table.

Table 1 - Total number and percent of Fire calls matched to REMSA calls by REMSA priority.

REMSA Priority	#	%
1	24,136	47.0%
2	18,942	36.9%
3	7,943	15.5%
9	351	0.7%
Total	**51,372**	**100.0%**

Table 2 - Travel time for fire (time from when fire agency goes en route to fire agency arrival on scene) median, mean (average), and 90th percentile. *Only REMSA priority 1 and 2 calls were used for this analysis.*

Fire Travel Time: En Route to Arrival		
Median	**Mean**	**90th Percentile**
04:07	04:56	07:42
Used N = 39,675		

Table 3 - Travel time for REMSA (time from when REMSA goes en route to arrival on scene) median, mean (average), and 90th percentile. *Only REMSA priority 1 and 2 calls were used for this analysis.*

REMSA Travel Time: En Route to Arrival		
Median	**Mean**	**90th Percentile**
05:26	06:20	10:13
Used N = 41,261		

Table 4 - Median time a patient is waiting from the initial call to the first arriving unit on scene by REMSA priority.

REMSA Priority	Patient's Perspective
1	06:08
2	06:37
3	07:39
9	08:13
All	06:30
Used N = 49,806	

Jurisdictional Performance

The Washoe County EMS Five-Year Strategic Plan includes Objective 2.4 "Define a measurement for EMS Tier 1 response agencies, to support recommendations for system improvements, by March 31, 2017." Sparks Fire Department and Truckee Meadows Fire Protection District have adopted Tier 1 standards to measure performance. Those performance metrics are presented within this section.

Sparks Fire Department

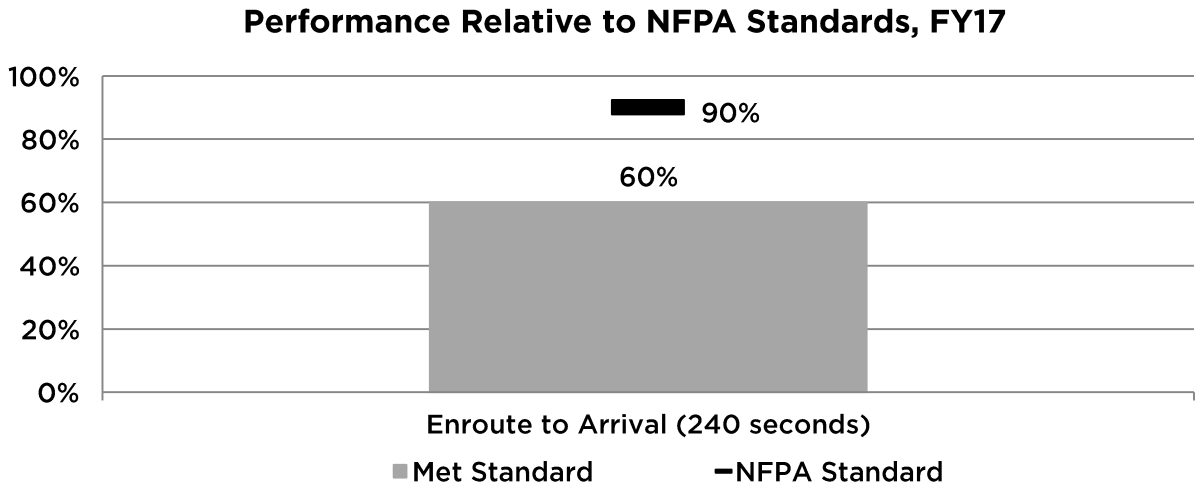
A responding fire captain designates 911 calls as a Priority 1, high acuity, or a Priority 3, low acuity. The following analyses only include those Sparks Fire Department calls that were designated a Priority 1 per the responding captain.

The National Fire Protection Association (NFPA) creates and maintains private copyrighted standards and codes for usage and adoption by local governments.

Per NFPA 1710 4.1.2.1 A fire department shall establish the following "240 second or less travel time for the arrival of a unit with automatic external defibrillator (AED) or higher level capacity at an emergency medical incident."

Table 5 – SFD travel time performance per NFPA Standards. Travel time is the time the responding unit leaves the station, or is en route to the incident, to the time of arrival on scene. *Only SFD Priority 1 calls were used for this analysis.*

Measurement	Standard	Expected	Calls Used	Met Standard		Median Time	Average Time
		%	#	#	%		
Fire en route to arrival	240 seconds or less (4:00 minutes)	90%	5,875	3,538	60%	3:38	3:58



Truckee Meadows Fire Protection District

A Regional Standards of Cover study was conducted by Emergency Services Consulting International (ESCI) for the Washoe County area. Study recommendations were presented in April 2011 during a joint meeting of Reno City Council, Washoe County Board of County Commissioners, Sierra Fire Protection District, and the Truckee Meadows Fire Protection District Board of Fire Commissioners. The language outlining the response standards adopted by TMFPD is provided below.

Regional Standards of Cover Response Time Recommendations

Turnout Time: Fire Dispatch → Fire En route

For 85 percent of all priority responses, the Region fire agencies will be en route to the incident in 90 seconds or less, regardless of incident risk type.

Travel Time: PSAP Created → Fire Arrival on Scene

First-Due Service Tier One

Urban: The first unit response capable of initiating effective incident mitigation should arrive within 8 minutes, 85 percent of the time from receipt of the call.

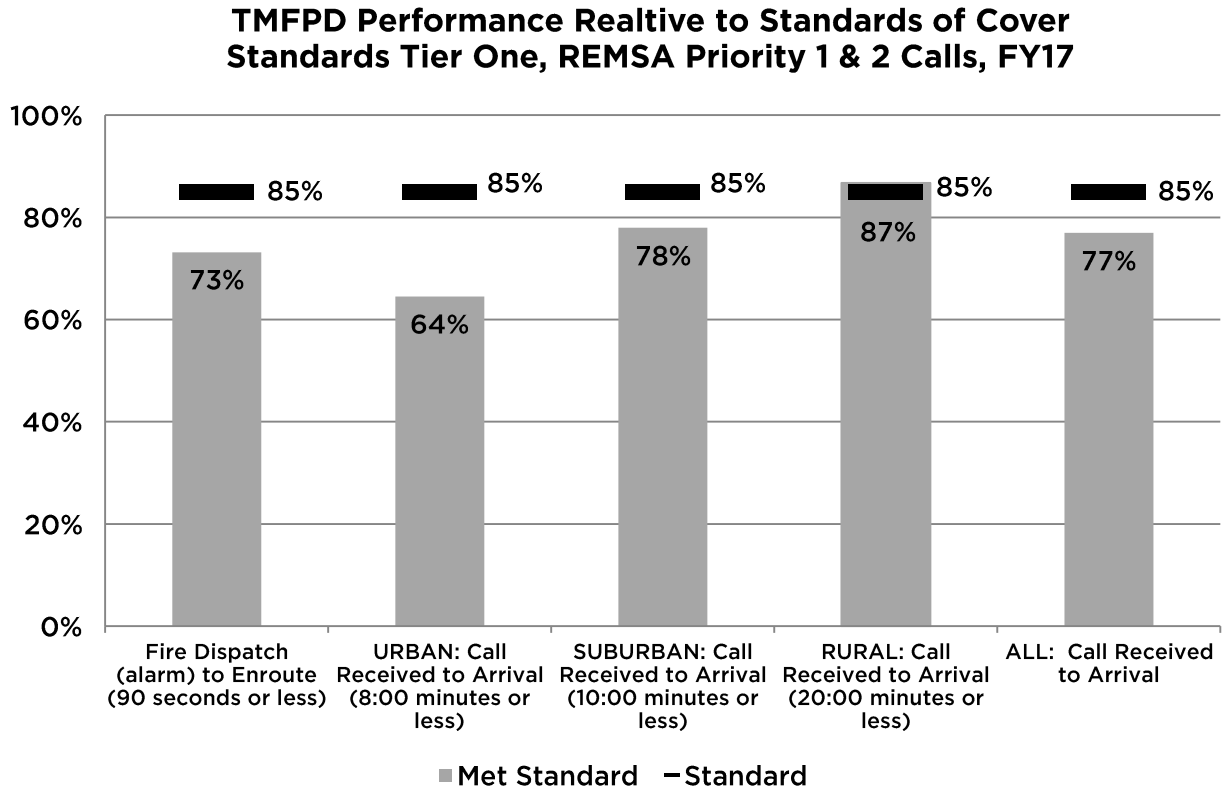
Suburban: The first unit response capable of initiating effective incident mitigation should arrive within 10 minutes, 85 percent of the time from receipt of the call.

Rural: The first unit response capable of initiating effective incident mitigation should arrive within 20 minutes, 85 percent of the time from receipt of the call.

Frontier: The first unit response capable of initiating effective incident mitigation should arrive as soon as practical based on the best effort of response forces.

Table 6 – TMFPD performance per Regional Standards of Cover Tier One. *Only REMSA priority 1 and 2 calls were used for this analysis.*

Measurement	Standard	Expected	Calls Used	Met Standard		Median Time	Average Time
		%	#	#	%		
Fire Dispatch (alarm) to En route	90 seconds or less	85%	5,416	3,966	73%	1:05	1:18
Response Time Call Received to Arrival							
URBAN	8:00 minutes or less	85%	762	489	64%	6:52	7:43
SUBURBAN	10:00 minutes or less	85%	4,088	3,190	78%	7:29	9:06
RURAL	20:00 minutes or less	85%	615	538	87%	11:20	12:53
All calls	~	85%	5,465	4,217	77%	7:43	9:23



EMS Oversight Program Accomplishments FY17

Regional Five-Year Strategic Plan

Within the ILA there are eight duties outlined for the EMS Oversight Program. One of the items explicitly tasked the EMS Oversight Program to "Maintain a Five-Year Strategic Plan to ensure the continuous improvement of Emergency Medical Services in the area of standardized equipment, procedures, technology training, and capital investments to ensure that proper future operations continue to perform including Dispatching Systems, Automated Vehicle Locations Systems, Records Management Systems, Statistical Analysis, Regional Medical Supply and Equipment, and other matters related to strategic and ongoing Emergency Medical Services and approved by RENO, SPARKS, WASHOE and FIRE."

Beginning in August 2015, the EMS Program Manager worked with regional partners to develop a five-year regional strategic plan. The stakeholders participating in the development of the plan included representatives from each jurisdiction and REMSA from dispatch and operations, as well as a regional communications representative. Over the course of 11 months, the workgroup identified the components that would be included in the strategic plan. The final document of the strategic plan, accepted by the EMS Advisory Board and District Board of Health in October 2016, shows the efforts of the region in creating a path forward to improve the EMS system within Washoe County and outlines goals and objectives to be completed over the course of the next five years.

Regional Response Heat Map

Beginning in October 2016, the EMS Program Statistician conducted meetings with representatives of partner jurisdictions to provide insight on areas to be measured and how best to provide those data. The meetings resulted in the development of an online regional response heat map. The heat map utilizes the EMS response time from the patient's perspective, measured as the difference between the initial 911 call to the first arriving agency on scene. The map currently contains data from July 1, 2015 through June 30, 2017, and will be updated quarterly. The online regional response heat map serves to inform regional performance regardless of which agency arrived first. The regional heat map can be accessed at https://www.washoecounty.us/health/programs-and-services/emergency-medical-services-oversight-program/ems_response.php

Regional Protocols

The Washoe County EMS 5-Year Strategic Plan Goal #5 is to design an enhanced EMS response system through effective regional protocols and quality assurance. An element of Goal 5 is the development of regional protocols (objective 5.1). EMS Program staff began this project by selecting a contractor, EMS Consultant Group, to review the current EMS protocols utilized by each jurisdiction, identify variances and provide recommendations for evidence-based best practices. The contractors developed 129-page analysis which was presented to the Pre-hospital Medical Advisory Committee (PMAC) in December 2016. Afterward, the PMAC moved to establish a task force with two personnel from each agency to begin developing regional protocols. The task force formed in February 2017 and met regularly to discuss and develop protocols that could be implemented region wide. The project will continue into the first quarter of the next fiscal year.

PSA for 911 Education

Nationwide, there is growing concern related to the misuse of the 911 system. Locally, excessive non-emergent calls have placed a strain on PSAP personnel and first responders and could impact callers who have life-threatening emergencies. The region held a press conference May 23, 2017, during which leadership from dispatch, law enforcement, fire, EMS and local hospitals provided insight on the impact of the misuse of 911. The goal of the press conference was to educate the community on when and when not to call 911. Three regional partners, Sparks Police Department, Sparks Fire Department, and the Carson City Sheriff's Office developed Public Service Announcements that address the implications of the over utilization and inappropriate use of the 911 system. The public service announcements can be accessed here https://www.washoecounty.us/health/programs-and-services/emergency-medical-services-oversight-program/911_Education.php

Mutual Aid Evacuation Annex (MAEA) Evacuation Training Video

The feedback from full-scale hospital evacuation exercise included the need for a short just-in-time training video on the MAEA to serve as a quick process reminder for hospital staff. The VA Sierra Nevada Healthcare System donated their hospital and personnel to film a short training video. The video will be provided to regional hospitals to use for internal trainings.

Full-Scale Exercise of a Hospital Evacuation

In an effort to ensure the Washoe County Health District's Mutual Aid Evacuation Annex (MAEA) is an effective plan, the EMS Program conducted a full-scale evacuation exercise on October 19, 2016. The exercise scenario involved a complete evacuation of Tahoe Pacific Hospital – South Meadows due to a power outage and malfunction of the back-up generator system. The exercise included more than 80 staff and volunteers from 13 regional agencies and community partners.

MCIP Trainings for Regional Leadership

The EMS Program offers training on the Multi-Casualty Incident Plan (MCIP) to the leadership of agencies which would be involved in an MCI response, including EMS, fire, law enforcement and hospitals. The training is designed to provide a high-level overview of the plan and offer leadership personnel an understanding of the duties fulfilled by field-level staff during an MCI response, the communication elements necessary to work with other agencies and a summary of the Incident Command System (ICS).

Inclusion of Additional Facilities in the MAEA

An additional improvement to the MAEA was the inclusion of skilled nursing, memory care and long term care facilities in the plan. Historically, the MAEA had only included acute care facilities in Washoe County. Over the past year, the EMS and Public Health Preparedness (PHP) Program have worked to introduce the plan to additional facilities throughout the county and have on-boarded five skilled nursing/long term care facilities to the plan.

Partner Agency EMS Highlights & Accomplishments FY17

Partner agencies provided their EMS related highlights for FY17, which include accomplishments such as awards and national recognition, increased capacity in terms of scope of work, increased staffing levels, newly hired personnel, updates to protocol and equipment upgrades. These are instrumental in assuring the best level of care is provided to the citizens and visitors of Washoe County.

City of Reno Fire Department Highlights for FY17

The Reno Fire Department has seen a steady increase in call volume and is trending to respond to over 41,000 calls over the current calendar year. Over 70% of those calls are EMS related.

During FY17 RFD conducted a recruit academy which resulted in the hiring of 14 new EMTs, AEMTs, and Paramedics. During this same time period, the department added three full time ALS units in effect doubling our paramedic response capabilities.

New EMS Captain and Training Agenda: The EMS Division assigned Paramedic Nathan Goins as its new EMS Captain. The Department completed two EMS Division level trainings during this period emphasizing treatment of pediatric emergencies and handling documentation of patients refusing medical care. Additionally, the department reinstituted its quarterly station to station training. The initial class provided hands on retraining to all crews in advanced airway management and CPAP and mechanical ventilation. The purchase of a new "premature-infant" manikin was used for umbilical cannulation and airway training.

American Heart Association Training Site: RFD has aligned with AMRG's (American Medical Response Group) AHA Training Center, as an approved AHA Training Site. We conducted BLS/ACLS/PALS instructor courses for eight of our paramedics with the intention of holding future classes internally and for the public. Additionally, RFD is on schedule to replace all of its ZOLL M series AED's with the newer more capable ZOLL Pro series model.

Vaccination "POD" Training: The majority of our advanced level medical personnel were trained and/or re-trained in vaccination administration in conjunction with the City of Reno's and Washoe County's emergency POD (Point of Distribution) training.

QA/QI: Improved upon the department's Quality Assurance/ Quality Improvement (QA/QI) using ZOLL Analytics to filter EMS calls for review.

MCI Drill Exercise: Participated in the regional "Broken Propeller" Mass Casualty Incident drill assuming the roles of; Incident Command, fire suppression, scene safety, patient triage, Triage Unit Leader, patient movement and patient treatment.

Policies & Procedures: RFD has revised its EMS Policies and Procedures with regards to medical documentation and refusal of care, Fire Line Medic resources, Working Fire Rehabilitation. Smoke Inhalation treatment protocol was updated with the implantation of Cyano-Kits (cyanide antidote) on all of the Paramedic response units.

Community Participation: RFD EMS Division is actively involved in the Regional Protocol Committee, the Committee on Omega and low acuity calls, Inter-local Hospital Coordinating Council, Physicians Medical Advisory Committee, Nevada EMS Advisory Commission, Nevada Fire Chiefs EMS Committee, and Northern Nevada EMS Chiefs Consortium.

City of Sparks Fire Department Highlights for FY17

- Completed analysis and received City Council Approval to implement Paramedic Services
- Developed and implemented new EMS Protocols for ILS and ALS Services
- Procured 3 Zoll X-Series Monitors with ETCO2, 12-lead EKG, Pacing, Defibrillation and Cardioversion Capabilities
- Received AFG Grant to procure four additional Zoll X-series Monitors
- Provided 40 hour in-service and validated 15 of SFD's current Paramedics
- Initiated Paramedic Level Services at Station 4 & Station 5 on April 3, 2017
- Hired five Firefighter/Paramedics
- Participated in Regional Protocol Process
- Implemented RMA and AMA procedures
- Participated in joint EMS Training with REMSA
- Began process to upgrade Patient Care Reporting program
- Worked with SPD on Hostile (Active Assailant) MCI response
- Deployed MEDL and Line EMT/PMs on numerous wild land fire assignments throughout the West

Truckee Meadows Fire Protection District Highlights for FY17

Expanded Chest Compression Device utilization: All 11 TMFPD stations are now equipped with mechanical chest compression devices which work as a force-multiplier during the treatment of cardiac arrest patients. These devices also allow the safe performance of chest compressions during ambulance transport, as well as enhance the overall crew efficiency and lower rescuer fatigue.

Division Chief positions filled: The TMFPD has increased its Administrative Staff with the additions of Joe Kammann as Division Chief of EMS and Matt Loughran as Division Chief of Training.

Acquired new cardiac monitors: The District has purchased and implemented new Zoll X-series cardiac monitors on all Type 1 engines and ambulances. These new devices are lighter, more efficient, and increase the physiological parameters that can be monitored during patient care.

79 Certified Paramedics now on staff: In a continual process of providing the most trained employees possible to the citizens of the Truckee Meadows Fire Protection District, the current count of State of Nevada certified Paramedics has increased to 79 personnel in various ranks throughout the District. The ability to have paramedics serving in multiple positions in a station has greatly increased the training and mentorship capabilities within the TMFPD.

Hazardous Material Toxicology Paramedic Program: The TMFPD is proud to be the first Fire Department in the area to design and implement an Advanced Life Support HAZMAT Paramedic program. This unique program will allow trained TMFPD Paramedic Hazardous Materials Technicians to treat responders and civilians that become exposed to chemical hazards in the prehospital environment.

New Patient Care Reporting system: As an upgrade to the current reporting system, the TMFPD has purchased licensing, equipment, and had a server built to allow conversion to the Zoll EPCR charting program. This new system will ensure consistent agency reporting of information, as well as allow a seamless integration of the Zoll monitors, PCR, and QA/QI program.

Expanded Mutual Aid Agreement with REMSA: REMSA and the TMFPD have been able to modify their existing Mutual Aid Agreement to allow for a more streamlined process for the purchase and response of TMFPD ambulances. The additional ambulances will be available to respond during disasters, MCIs, or as needed to assist with ALS response capabilities during times that our partner agencies become overwhelmed. The new agreement also allows the TMFPD to staff special events within our jurisdiction and provide them with Advanced Life Support services. TMFPD and REMSA have already been able to successfully join forces and staff the 2017 Barracuda Championship as a result of this new agreement.

QA/QI Process Goals: The Quality Assurance / Quality Improvement process implemented at the TMFPD has resulted in a 100 percent chart review system. The QA/QI Committee has been responsible for several improvements to patient care throughout the department. One example was the rate of successful advanced airway placements. By suggesting the addition of training intubation manikins at each station, a comprehensive airway training program, and with the availability of both Grandview laryngoscope blades and Mcgrath video laryngoscopes at every station, TMFPD has seen a very high prehospital intubation success rate.

Purchase of new ambulances: The District has purchased 2 additional ambulances to be used for mutual aid response within the TMFPD. This brings the total to 3 ambulances within the TMFPD fleet. The additional ambulances will be available to be placed in service the first quarter of FY18.

REMSA & Care Flight Highlights for FY17

REMSA ALS Bike Team: REMSA implemented an ALS bike team to provide the community early access to ALS intervention in densely populated areas. Specially trained Paramedics and A-EMTs can now maneuver through congested areas during busy weekends or special events in downtown Reno or Sparks.

Care Flight Plumas County Ground Operations: As of July 1, 2017, Care Flight Ground Operations successfully completed its first year of integrated EMS operations in partnership with Plumas District Hospital in Quincy, CA. In addition to getting Quincy designated as the first rural HEARTSafe community in California, we created an efficient and reliable rural EMS system that has greatly improved EMS and healthcare delivery in that area of Plumas County.

Care Flight Critical Care / Fixed Wing: Over the past year, Care Flight has started a Critical Care Ground Transport service in January and in March 2017, Care Flight added a fixed wing operations based out of Reno Tahoe International Airport, staffed twenty-four hours a day seven days a week.

CAMTS: July 2017, the Commission on Accreditation of Medical Transport Services (CAMTS) reaccredited Care Flight for a full three-year accreditation. This full accreditation includes all three platforms, Helicopter, CCT, and Fixed Wing. Care Flight has maintained continuous CAMTS accreditation for 15 years.

24 Hour Post Implementation: In order to provide faster, more consistent coverage to the outlying areas of Reno/Sparks/Washoe County, REMSA established the first three fixed stations.

- Mt Rose and Wedge: This is a 16-hour post that covers Mt. Rose Hwy, Arrowcreek, Damonte Ranch, Toll Road, Pleasant Valley, and Washoe Valley.
- Eagle Canyon and Pyramid Hwy: This is a 16-hour post that covers the North Pyramid Hwy area. This includes Spanish Springs and Wingfield Springs.
- Red Rock and 395: This is a 24-hour post that covers Stead, Red Rock, and Cold Springs.

We have seen a noticeable decrease in our response times to these areas of the County. Future plans include the possible expansion of the 16 hour stations to 24-hour coverage within the next year.

Tri-Annual International Airport Disaster Drill: On April 27th 2017 REMSA participated in a full scale Mass Casualty Incident (MCI) exercise held at the Reno Tahoe International Airport (RTAA). The RTAA is required to conduct a "full scale "exercise every three years. This exercise usually includes a MCI and includes area first responders from Police, Fire and EMS.

This year's scenario involved an Improvised Explosive Device (IED) that went off in the cargo hold of an international passenger jet as the passengers were deplaning. REMSA participated in dozens of preliminary meetings to assist with exercise design, realistic play and first responder integration. REMSA initially responded to the incident with four ALS units and five EMS Supervisors. We integrated with Airport Fire and the Reno Fire Department as Medical Branch providing Triage, Treatment and Transport for the patients. Our Communications Center coordinated the transports and provided communication with all area hospitals. A total of 99 patients were contacted on scene with 89 patients transported in 92 minutes. REMSA also provided an evaluator to the EMS component of the exercise.

30 / 35 Years Celebration: REMSA celebrated 30 years of providing EMS service to the region. Beginning on 1986 with a small staff and only a few ambulances, REMSA has grown to over 500 employees, a fleet of 44 ambulances, and a fully integrated health system that continues to strive for real regional partnerships that enhance the delivery of medical care to patients across our region.

TEMS National Tactical Medic Competition: May 2017, REMSA Tactical Paramedics participated in the 2nd Annual *National Tactical Medic Competition* in Charlotte, North Carolina. The competition was created to allow tactical medical providers from around the country, the opportunity to collaborate and compete in a community of peers. Candidates were evaluated on physical fitness, critical decision making in multiple casualty incidents, and clinical proficiency. REMSA Tactical Paramedics placed 4th overall.

American Heart Association-Mission Life Line Gold Plus Award: REMSA was awarded the American Heart Association's Mission-Lifeline Gold Plus award for implementing quality improvement measures for the treatment of patients who experience heart attacks. The Gold Plus award is given for achieving 75 percent or higher adherence for 24 months on all Mission: Lifeline EMS quality measures. REMSA is the only private EMS agency in the state to achieve the Gold Plus recognition.

Gerlach Volunteer Fire & EMS Department Highlights for FY17

The small department greatly increased activity in FY17, thanks to continued assistance from Truckee Meadows Fire Protection District (TMFPD) and the State of Nevada. The emphasis this year for the station was training volunteers. Seven volunteers received their Ambulance Driver's License from the State of Nevada, four graduated from the EMR program, and six passed the State-sponsored skills test for EMT (five are currently awaiting testing dates from Pearson). It has emerged stronger and more sustainable as a Combination Fire Department, with two full-time employees, several Intermittent Employees, and a strong Volunteer base. Additional volunteers are being recruited, and regular service calls are being conducted by the two ambulances stationed at the Gerlach Department. The coverage area remains almost 5,000 square miles and the department responded to 102 calls this year, with call spikes during the annual Burning Man festival.

Pyramid Lake Fire Rescue EMS Highlights for FY17

The Pyramid Lake Fire Rescue EMS (PLFREMS) agency responds to calls for service in a 742.2 square mile area. They have two career firefighter/EMT's, two firefighter AEMTS's, and twenty volunteers which also include four AEMT's, two EMT's and seven EMRs. During calendar year 2016 the volunteers responded to over 708 calls for service. PLFREMS successfully established Memorandum of Understanding with

both REMSA and Gerlach Volunteer Fire Department. The MOUs work to ensure appropriate resources are being dispatched to incidents rather than always dispatch two agencies. A great accomplishment for PLFREMS is the development of the EMT Training program within the High School setting. PLFREMS is only the second government agency within Nevada to have this program, which will begin during the 2017-2018 school year.

EMS Oversight Program Goals for FY18

The EMS Oversight Program is aiming work with regional partners to achieve the following goals within the next fiscal year.

1. Re-establish the Emergency Department Consortium
2. Develop protocols for low acuity/priority 3 calls
3. Establishment of a CAD-to-CAD interface
4. Implementation of regional protocols
5. Expansion of Multi-Casualty Incident Plan to include emergency planning for large scale, multiple incident location emergency response.
6. Work on improving continuity of care through regional processes relating to information flow.

WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

STAFF REPORT

ADVISORY BOARD MEETING DATE: October 5, 2017

TO: EMS Advisory Board Members

FROM: Christina Conti, EMS Oversight Program Manager
775-326-6042, cconti@washoecounty.us

SUBJECT: **Presentation, discussion and possible approval of annual REMSA Franchise Map review recommendation.**

SUMMARY

A revised REMSA Franchise Map went into effect July 1, 2016. The purpose of this agenda item is to present for discussion the outcome and recommendations of the annual REMSA Franchise Map review process. The EMS Oversight Program does not recommend any changes be made to the REMSA Franchise Map at this time.

PREVIOUS ACTION

The EMS Advisory Board approved and recommended the draft map response zones within the REMSA ambulance franchise service area be presented to the District Board of Health on January 7, 2016.

The District Board of Health reviewed and approved the draft REMSA response zone map within the Washoe County REMSA ambulance franchise service area on January 28, 2016.

The District Board of Health reviewed and approved the implementation plan of the approved REMSA response zones within the Washoe County REMSA ambulance service area on February 25, 2016.

The EMS Advisory Board approved the REMSA Franchise Map review methodology on April 6, 2017.

BACKGROUND

During the March 2015, the EMS Advisory Board meeting a recommendation was made to develop a data-driven REMSA response map. The region formed a map revision workgroup that was comprised of representatives from all partner agencies and Washoe County GIS. Additionally, a company, Inspironix, was contracted to develop recommendations for the map revisions to be reviewed by regional workgroup members.

The map revision workgroup met regularly from May to December 2015 to develop a project charter that would govern the process and then to review a variety of draft versions of a revised REMSA Franchise map. The workgroup focused on population density that was the primary driver of call volume.

The EMS Advisory Board heard updates on the revision process at each meeting during that time period. During the January 7, 2016 regular meeting, the EMS Advisory Board approved and recommended the revised map to be presented for approval to the District Board of Health (DBOH). The revised REMSA Franchise map was then presented and approved at the January 28, 2016 DBOH meeting. During the meeting, it was stated the implementation plan would be developed and brought back to the DBOH at a future date. The REMSA Franchise map implementation plan was approved during the February 25, 2016 DBOH meeting with an implementation date of July 1, 2016.

During the development of the Regional EMS 5-Year Strategic Plan, an objective was approved that established the ambulance franchise map review methodology. During the April 6, 2017 EMS Advisory Board meeting the REMSA Franchise Map review methodology was approved and included proposed methodology for annual reviews, 5-year reviews and 10-year reviews.

The proposed annual review methodology stated each year (2017-2020 and 2022-2025) the calls which occurred during the fiscal year would be mapped to determine any possible response concerns including, an increase in calls occurring in Zone B, C, D, or E or a lack of calls occurring in portions of Zone A.

The EMS Statistician, EMS Oversight Program Manager and Washoe County GIS collaborated to conduct the annual review of the ambulance franchise map. The beginning step was to create a new "year 1" or baseline data for the map review. The data utilized during the creation of the ambulance franchise map was March 2014-2015, allowing the workgroup to utilize the most up-to-date period of time. However, as it relates to the map review, a fiscal year timeline needed to be utilized.

To create a new baseline year 1, program staff compared the data utilized to develop the map against the fiscal year that most closely aligns with the data used to create the map, Fiscal Year (FY) 2015. FY15 includes nine months of data used to create the initial map. After determining there were minimal differences, all data for FY15 will be utilized as the baseline year 1 for all future map revision processes. Program staff then worked with GIS to compare the subsequent two years of call data against the baseline year 1 data to determine if any "hot spots" appeared that would suggest the map should be revised. Year 1 was FY15, year 2 was FY16 and FY17 is identified as year 3. The rationale for reviewing FY16 was that these calls were occurring during the map revision process. By reviewing year 2 (FY16), program staff could ensure there were no anomalies in call volume and locations of calls while the map was being developed.

After review of the three years of call data, EMS program staff is not recommending any revisions to the ambulance franchise map.

However, during the map revision process, several items were identified and work with regional partners to address those issues has already begun. For example, some "hot spots" were identified within Zone A that should be proposed to receive an alternative response.

Of note, the increase in call volume between FY15 and FY17 was 26.6%. The Washoe County region cannot sustain the continued growth in call volume without changes to the response to calls. The strategic planning item addressing appropriate protocols to determine service levels for low acuity Priority 3 calls is paramount for this item.

FISCAL IMPACT

There is no additional fiscal impact should the Advisory Board approve the presentation, discussion and possible approval of annual REMSA Franchise Map review recommendations.

RECOMMENDATION

Staff recommends the Board approve the presentation, discussion and possible approval of annual REMSA Franchise Map review recommendations.

POSSIBLE MOTION

Should the Board agree with staff's recommendation, a possible motion would be: "Move to approve the presentation, discussion and possible approval of annual REMSA Franchise Map review recommendation."

WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

STAFF REPORT
BOARD MEETING DATE: October 5, 2017

TO: EMS Advisory Board Members

FROM: Brittany Dayton, EMS Coordinator
775-326-6043, bdayton@washoecounty.us

SUBJECT: Presentation, discussion and possible acceptance of an update on the regional protocol project, an objective of the Washoe County EMS 5-Year Strategic Plan.

SUMMARY

The Washoe County EMS 5-Year Strategic Plan Goal #5 is to design an enhanced EMS response system through effective regional protocols and quality assurance by December 31, 2018. An element of this goal is the development of regional protocols. The purpose of this agenda item is to provide an update to the Board and possible approval of the regional protocols that were developed by the protocols task force (objective 5.1).

PREVIOUS ACTION

During the October 6, 2016 EMS Advisory Board meeting, the Board approved the Washoe County EMS 5-Year Strategic Plan and recommended presentation to the District Board of Health.

The January 5, 2017 EMS Advisory Board meeting included a brief update on the contractor's presentation to PMAC and the next steps for the regional protocols project.

The April 6, 2017 EMS Advisory Board meeting included an update on the progress made by the task force and steps taken to meet the June 30 deadline for developing a regional protocols document.

The August 3, 2917 EMS Advisory Board meeting included an update on the regional protocols project and the next steps for finalizing and implementing the regional protocols developed by the task force.

BACKGROUND

The EMS Oversight Program was created through an Interlocal Agreement (ILA) signed by the City of Reno (RENO), City of Sparks (SPARKS), Washoe County (WASHOE), Truckee Meadows Fire Protection District (FIRE), and the Washoe County Health District. Within the ILA there are eight duties specifically outlined for the EMS Oversight Program.

One of the items explicitly tasked the EMS Oversight Program to "Maintain a Five-Year Strategic Plan to ensure the continuous improvement of Emergency Medical Services in the area of standardized equipment, procedures, technology training, and capital investments to ensure that proper future operations continue to perform including Dispatching Systems, Automated Vehicle Locations Systems, Records Management Systems, Statistical Analysis, Regional Medical Supply and Equipment, and other matters related to strategic and ongoing Emergency Medical Services and approved by RENO, SPARKS, WASHOE and FIRE."

At the June 4, 2015 EMS Advisory Board meeting, through discussion with the Board, the purpose of the strategic plan was identified as a document that would create milestones, furthering the EMS system in Washoe County.

The EMS Program Manager worked with regional partners to develop the regional strategic plan. The stakeholders participating in the developing of plan included representatives from each jurisdiction and REMSA from dispatch and operations, as well as a regional communications representative. Over the course of 11 months the workgroup identified the components that would be included in the strategic plan. The first meetings were used to review the SWOT analysis and to identify goals for the region. Subsequent meetings reviewed the individual goals and the objectives within. To ensure the process was efficient, each meeting had an identified objective to accomplish. All items drafted by the EMS Oversight Program remained in red and turned to black once the group has discussed and reached consensus on the draft.

After approval by the EMS Advisory Board, the EMS Program Manager presented the Washoe County EMS 5-Year Strategic Plan to the District Board of Health (DBOH) on October 27, 2016. The Board unanimously approved the strategic plan.

In anticipation of possible approval, staff researched and spoke with several contractors about the proposed regional protocol project. EMS Consultant Group (Dr. Jordan Barnett and Mr. Eric Rosen), based in Philadelphia, was ultimately selected.

Immediately following approval of the EMS 5-Year Strategic Plan, staff began working on objective 5.1 with EMS Consultant Group. The contractors were provided the following project deliverables:

- Review current EMS agency protocols and identify protocol variances.
- Provide recommendations based on evidence-based practices.
- Facilitate Medical Directors discussion at PMAC.
- Develop regional protocols based on existing protocols.

Staff provided the contractor with a combined PDF of the protocols from the various participating agencies, promoting the ease of cross agency analysis. The contractors reviewed the protocols of all agencies, provided a summary of existing protocols and a recommendation for which protocols to use in the development of a regional protocol document. Recommendations were based on evidence-based practices, Emergency Medicine texts, American Heart Association Pediatric Advanced Life Support and Advanced Cardiac Life Support guidelines, and the American College of Surgeons Advanced Trauma Life Support guidelines.

The contractors' 129-page analysis was sent to PMAC members on December 1, 2016 for review prior to the December PMAC meeting. PMAC held their quarterly meeting on December 14, 2016 where Dr. Barnett and Mr. Rosen presented their initial analysis and facilitated discussion about select protocols.

PMAC moved to establish a task force to begin working on unified protocols. The task force will have two members of each agency (i.e., EMS coordinator and line staff).

The task force has met several times since the beginning of February 2017. The group is scheduled to meet every other week through June 2017 to develop a complete draft of EMS protocols for the region.

The initial meeting focused on a format of the regional protocols document, and subsequent meetings focused on discussing the recommendations of the contractors for all protocols. The group decided to approach the process by reviewing protocols in four categories: operational, medical, trauma and cardiac.

PMAC held their quarterly meeting on March 8, 2017 where the members received a status update on the project and examples of the draft protocols developed by the task force.

Since February the group has reviewed, developed, and reached consensus on more than 50 protocols. As of June 8, 2017 there were thirteen protocols remaining for the task force to review.

On June 14, 2017 PMAC held its regularly scheduled meeting and EMS Oversight Program staff provided an update on the project as well as the timeline for finalization. The task force met on June 22, 2017 to being a final review of the protocols in their entirety. The review of the document continued during the August 1, 2017 meeting.

A draft was distributed to the task force on August 4, 2017 and the task force had a week to review and make final input. On August 14, 2017 the final document was sent to task force members with the expectation that the regional protocols would be reviewed with agency Medical Directors between August 14 and September 19. Additionally, the PMAC representatives received the final draft protocols on August 15, 2017 for their review.

The regularly scheduled PMAC meeting occurred on September 13, 2017 and PMAC discussed the protocols and provided some recommendations for the task force. EMS Program staff as well as task force members attended to answer questions about the proposed protocols and next steps for implementation.

The task force reconvened on September 20, 2017 to discuss any Medical Director requests, concerns and/or recommendations. The task force discussed several possible edits but the meeting resulted in minor changes to the protocols. The updated document will be sent to the group for final review and it is anticipated the protocols will be finalized on September 29 and implemented by April 1, 2018.

FISCAL IMPACT

There will be no additional fiscal impact to the adopted FY18 budget as expenses for this contract were anticipated and projected in the EMS Oversight Program budget.

RECOMMENDATION

Staff recommends the Board accept the regional protocols document.

POSSIBLE MOTION

Should the Board agree with staff's recommendation a possible motion would be: "Move to accept the regional protocols."

Washoe County Regional EMS Protocols

October 5, 2017

EMS Advisory Board

Task Force Agencies

- North Lake Tahoe Fire Protection District
- Truckee Meadows Fire Protection District
- Sparks Fire Department
- Reno Fire Department
- REMSA
- Gerlach Volunteer Fire Department
- Reno-Tahoe Airport Authority Fire Department
- Washoe County Health District (facilitators)

Regional Protocols Process

- EMS Advisory Board approved the 5-Year Strategic Plan
  - Objective 5.1: Develop a regional set of protocols for the delivery of prehospital care
- EMS staff research contractors and worked with EMS Consultant Group
  - Reviewed agency protocols and identified variances
  - Provided recommendations
  - Facilitated MD discussion at PMAC
- PMAC moved to establish a protocols task force

Regional Protocols Task Force

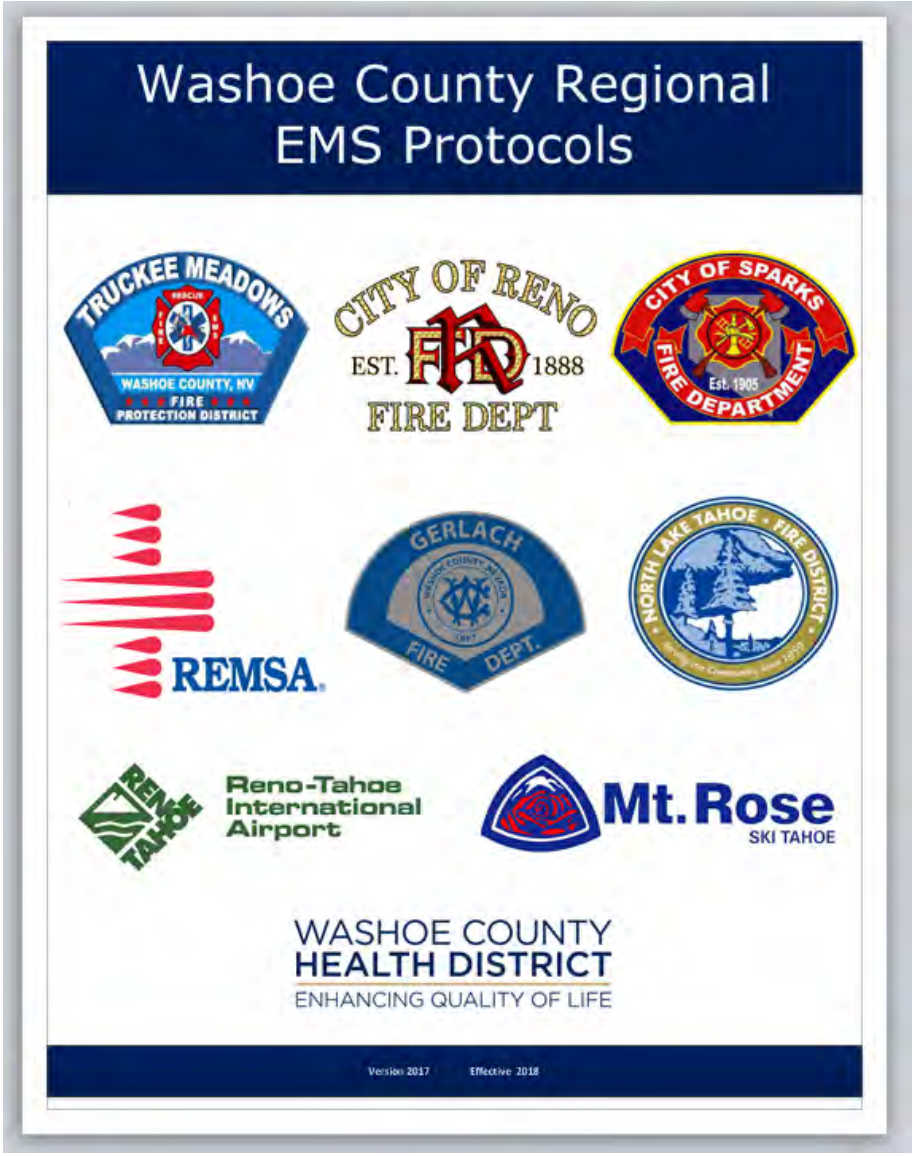
- Task force started meeting in February 2017
  - Two personnel requested from each agency
    - Field personnel and EMS Supervisor
- A complete draft of the protocols was developed and distributed for task force review on August 14
  - Task force members were asked to review with their Medical Directors
- PMAC met on September 13
  - Discussed protocols and provided recommendations

Regional Protocols Task Force

- The task force met for a final time on September 20 to discuss Medical Director requests, concerns and/or recommendations.
- The final draft was created on September 29 for presentation to EMSAB

Washoe County Regional EMS Protocols

- Foreword
- References
- Universal Treatment Protocols
- Adult Treatment Protocols
- Pediatric Treatment Protocols
- Operational Protocols
- Appendixes
  - Medications
  - Formulary
  - Procedures
  - Agency Authorized Skills List

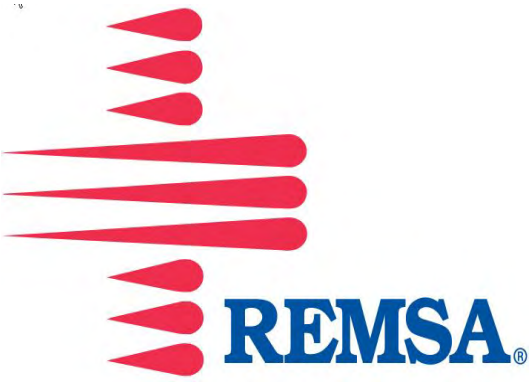


Regional Protocols Next Steps

- Medical Director signatures
- Task Force logistics meeting
- Develop revision cycle process
- Create and conduct training on protocols for agencies to implement by April 1, 2018

Questions?

Washoe County Regional EMS Protocols



Reno-Tahoe International Airport

Mt. Rose SKI TAHOE

WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

Version 2017 **Effective 2018**

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Washoe County Regional EMS Protocols Signature Page

Dr. John Watson, Medical Director for Reno Fire Department, Truckee Meadows Fire Protection District and Gerlach Fire Department

Dr. Wayne Hardwick, Medical Director for Sparks Fire Department and Reno-Tahoe Airport Authority Fire Department

Dr. Lisa Nelson, Medical Director for North Lake Tahoe Fire Protection District and Mt. Rose Ski Patrol

Dr. Bradford Lee, Medical Director for REMSA

The Washoe County Regional Protocols were last reviewed and approved on _____ for use beginning April 2018.

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Foreword

This patient care document has been specifically developed for Washoe County EMS responders. The purpose of this manual is to provide guidance for *ALL* prehospital care providers. In any such protocol, certain assumptions are made regarding the condition of the patient, expected responses to treatment, and the availability of resources. Since these assumptions will not always be true, the emergency medical technician must use these protocols as a guide, as well as, agency specific Medical Director endorsed medications and procedures.

NOTHING contained within these protocols is meant to delay rapid patient transport to a receiving facility. Patient care should be rendered while en-route to the hospital when transport is available.

The majority of these protocols generally reflect a conservative and accepted standard for treatment. The technician in charge at an emergency medical incident is encouraged to use judgment in the application of these protocols. If a treatment plan appears to be insufficient for any reason, medical control consultation is encouraged. The medical control physician directing care in the field retains discretion in ordering specific forms of treatment, even if that treatment is in conflict with these guidelines. Obviously, to proceed with an order directed by medical control requires that both the physician and the provider acknowledge and agree that the patient's condition and extraordinary care are not addressed elsewhere within these medical protocols, and that the order is in the best interest in the care of the patient. Additionally, the provider must feel capable, based on the instructions given by the medical control physician, of correctly performing the directed care. Whenever such care is provided, it is necessary for the patient care report (PCR) documentation to describe the circumstances which necessitated the deviation, as well as document the physician's name who gave the order(s), the treatment change and the time of the order.

Occasionally, a situation may arise in which a physician's order cannot be carried out due to the provider's sense that the administration of an ordered treatment would endanger the patient, the particular medication is not available, or that a physician's order is outside of protocol or NRS statute. If this occurs, the provider must immediately notify the medical control physician as to the reason the order cannot be carried out, and indicate on the PCR what was ordered, the time and the reason the order could not be administered.

Per Nevada Administrative Code 450B.180 a "Patient" is:

Any person who is sick, injured, wounded, or otherwise incapacitated or helpless and who is carried in an ambulance or air ambulance or is cared for by an emergency medical dispatcher, emergency medical responder, emergency medical technician, advanced emergency medical technician, paramedic or registered nurse.

Pediatric Patient Definition

- Pediatric treatment protocols are to be used on children who have not yet experienced puberty.
    - Signs of puberty include chest or underarm hair on males, and any breast development on females.

Commitment to STAR Care

The following is a checklist you can use to analyze almost any patient care issue you might encounter. Go through the list in order from top to bottom, and ask yourself if your care meets each criterion. If it does, chances are that you can defend your actions in almost any forum.

- **Safe -** Were my actions safe -- for me, for my colleagues, for other professionals and for the public?
- **Team-Based -** Were my actions taken with due regard for the opinions and feelings of my co-workers, including those from other agencies?
- **Attentive to Human Needs -** Did I treat my patient as a person? Did I keep him/her warm? Was I gentle? Did I use his/her name throughout the call? Did I tell him/her what to expect in advance? Did I treat his/her family and/or relatives with similar respect?
- **Respectful -** Did I act toward my patient, my colleagues, the first-responders, the hospital staff and the public with the kind of respect that I would have wanted to receive myself?

Foreword

STAR Care (Continued)

- **Customer-Accountable -** If I were face-to-face right now with the customers I dealt with on this response, could I look them in the eye and say "I did my very best for you."
- **Appropriate -** Was my care appropriate--medically, professionally, legally and practically – considering the circumstances I faced?
- **Reasonable -** Did my actions make sense? Would a reasonable colleague of my experience have acted similarly, under the same circumstances?
- **Ethical -** Were my actions fair and honest in every way? Are my answers to these questions?

EMS Agency Medical Directors

Brad Lee, MD, REMSA
John Watson, MD, Reno Fire Department, Truckee Meadows Fire Protection District & Gerlach Volunteer Fire Department
Lisa Nelson, DO, North Lake Tahoe Fire Protection District
Wayne Hardwick, MD, Sparks Fire Department & Reno-Tahoe Airport Authority Fire Department

Washoe County Hospitals

Incline Village Community Hospital
Northern Nevada Medical Center
Renown Regional Medical Center
Renown South Meadows Medical Center
St. Mary's Regional Medical Center
Veteran's Affairs Sierra Nevada Healthcare System

Phone Numbers

REMSA Dispatch	775-858-6005
Sparks Dispatch	775-353-2231
Reno Dispatch	775-334-2306
TMFPD Dispatch	775-785-4253
RPD/WCSO Dispatch	775-334-3855
Nevada Highway Patrol Dispatch	775-688-2830
Northern Nevada Medical Center ER	775-356-4040
Renown Main ER	775-785-6295
Renown South Meadows ER	775-982-7373
Saint Mary's ER	775-322-9424
Veteran's Affairs (VA) ER	775-328-1200
State of Nevada Elderly Services	888-729-0571 or 775-784-8085 (after hours)
Washoe County Child Protective Services	775-785-8600 or 775- 784-8090 (after hours)
Poison Control Center	1-800-222-1222

From time to time, protocols may be added or revised with approval of Medical Direction. Recommendations are welcome and appreciated at anytime. Recommendations may be submitted to the Washoe County Health District EMS Coordinator for consideration and referral to the Medical Directors via email at EMSProgram@washoecounty.us.

Glasgow Coma Scale		
EYE OPENING	Spontaneous	4
	To voice / verbal command / shout	3
	To pain	2
	No response	1
VERBAL RESPONSE	Orientated / Converses (PEDS: Appropriate words, smiles, coos)	5
	Confused (PEDS: Inappropriate words, cries)	4
	Inappropriate words (PEDS: Cries and/or screams, irritable)	3
	Incomprehensible sounds (PEDS: Grunts, restless, agitated)	2
	No response	1
MOTOR RESPONSE	Obeys verbal commands	6
	Localizes pain	5
	Withdraws to pain (PEDS: Flexion, withdrawal)	4
	Flexes to pain (Decorticate rigidity)	3
	Extends to pain (Decerebrate rigidity)	2
	No response	1
GCS Total = Eye Opening + Verbal Response + Motor Response		

APGAR			
DESCRIPTION	**0**	**1**	**2**
Appearance	Blue, Pale	Body: Pink / Ext: Blue	Completely Pink
Pulse	Absent	< 100	> 100
Grimace	No Response	Grimace	Cries
Activity	Limp	Some Flexion	Action Motion
Respirations	Absent	Slow, Irregular	Strong Cry

Mean **A**rterial **P**ressure (**MAP**)

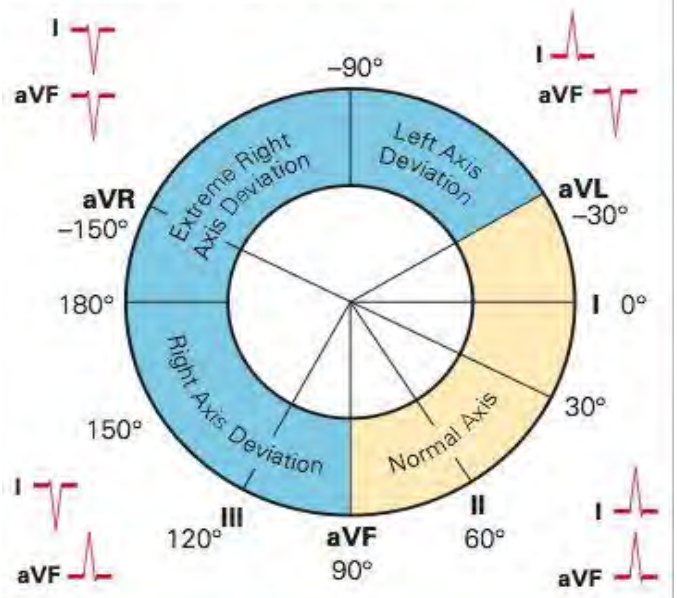
MAP = ((DBP x 2) + SBP)/ 3
OR
MAP = DBP + 1/3 (SBP – DBP)
OR
MAP = DBP + (PP/3)

Bloomsbury Sedation Scale	
+3	Agitated/restless
+2	Awake/comfortable
+1	Awake/calm
0	Roused by voice, remains calm
-1	Roused by movement/stimulation
-2	Roused by painful stimulation
-3	Unable to rouse/natural sleep

AGE	HEART RATE	RESPIRATIONS	SBP
Neonates (1-28 days)	120-160	40-60	>60
Infant (1-12 months)	100-120	25-50	70-95
Children (1-8 years)	80-100	15-30	80-110
School Age (8-11 years)	65-110	18-30	97-112
Adolescent (12-15 years)	60-90	12-26	112-128
Adult	60-100	12-18	100-135

Electrical Axis of the Heart

The electrical axis is the sum total of all electrical currents generated by the ventricular myocardium during depolarization. Analysis of the axis may help to determine the location and extent of cardiac injury, such as ventricular hypertrophy, bundle branch block, or changes in the position of the heart in the chest (from, e.g., pregnancy or ascites).
The direction of the QRS complex in leads I and aVF determines the axis quadrant in relation to the heart.



♥ **Clinical Tip:** Extreme right axis deviation is also called indeterminate, "no man's land," and "northwest."

FAST-ED Stroke Score

Item	FAST-ED Score	NIHSS Score Equivalence
Facial Palsy		
Normal or minor paralysis	0	0-1
Partial or complete paralysis	1	2-3
Arm Weakness		
No drift	0	0
Drift or some effort against gravity	1	1-2
No effort against gravity or no movement	2	3-4
Speech Changes		
Absent	0	0
Mild to moderate	1	1
Severe, global aphasia, or mute	2	2-3
Eye Deviation		
Absent	0	0
Partial	1	1
Forced deviation	2	2
Denial/Neglect		
Absent	0	0
Extinction to bilateral simultaneous stimulation in only 1 sensory modality	1	1
Does not recognize own hand or orients only to one side of the body	2	2

Suspected Infection	2 or more SIRS Criteria	Minimum One indicator of Acute Organ Dysfunction
Pneumonia	HR > 90 bpm	Acute Altered Mental Status
UTI	Temp < 96.9 OR > 100.4°F	SBP < 90 mmHg OR MAP < 70 mmHg
Bacteremia	RR > 20 bpm	SBP decrease > 40 mmHg from baseline
Abscess/Cellulitis	$PaCO_2$ < 32 mmHg	BS > 140 mg/dl without hx of diabetes
Abdominal	WBC ≤ 4 OR ≥ 14	Acute Hypoxia/Increase in O_2 requirements
Bone/Joint	Bands > 10%	Arterial hypoxemia (PaO_2/FiO_2 < 300)
Endocarditis		Acute oliguria (< 0.5 mL/kg/hr for 2 hrs)
Meningitis		Creatinine > 2 mg/dl or increase in 0.5 above baseline
		Coagulopathy INR > 1.5, PTT > 60 sec
		Thrombocytopenia Platelets < 100K
		Bilirubin > 2 mg/dl
		Lactate > 2 mmol/L

UNIVERSAL TREATMENT PROTOCOLS

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Patient with signs and symptoms of:

- Shock
- Cardiovascular instability
- Hyperkalemic arrhythmias

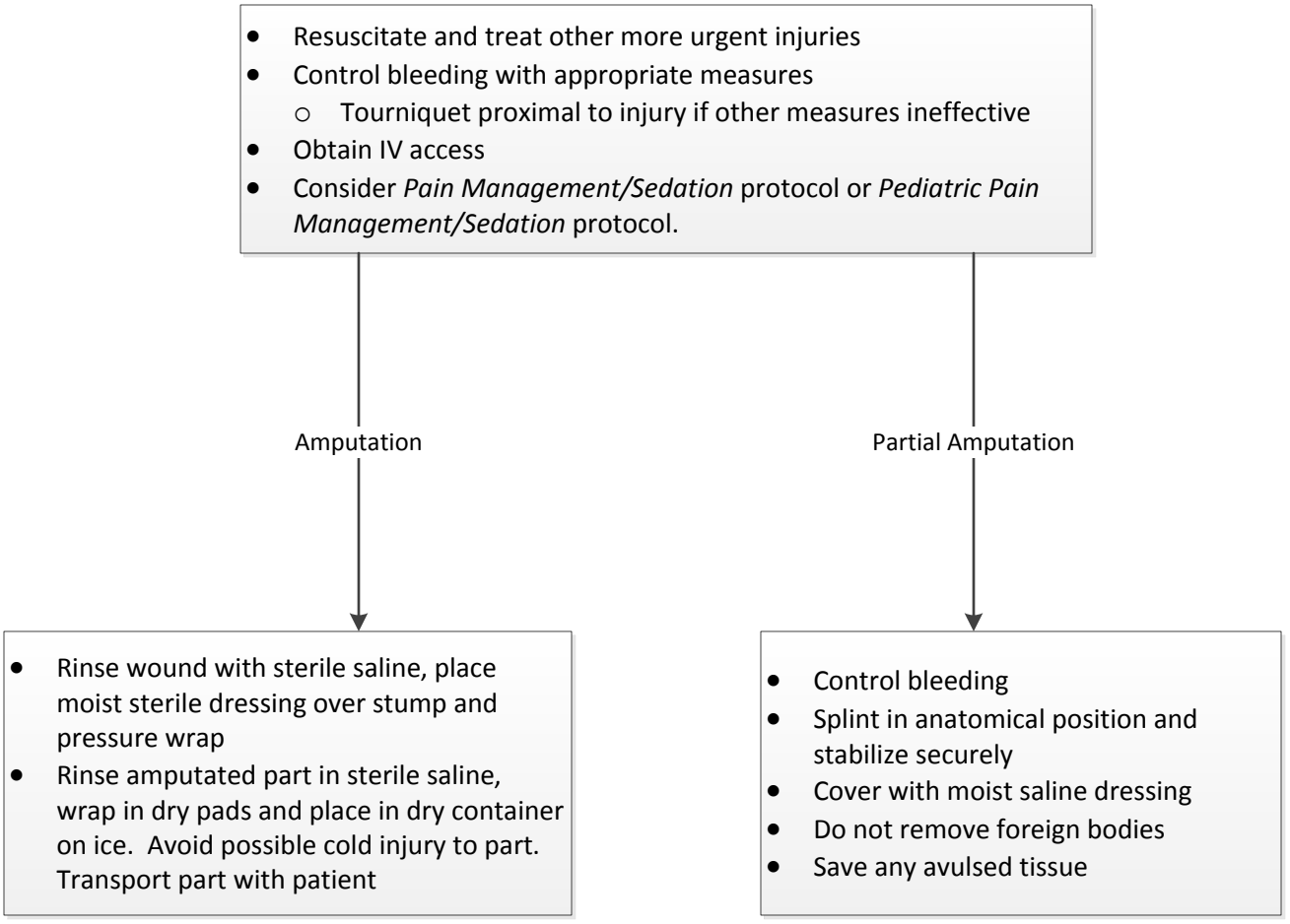
AND

- Have a documented diagnosis of Congenital Adrenal Hyperplasia

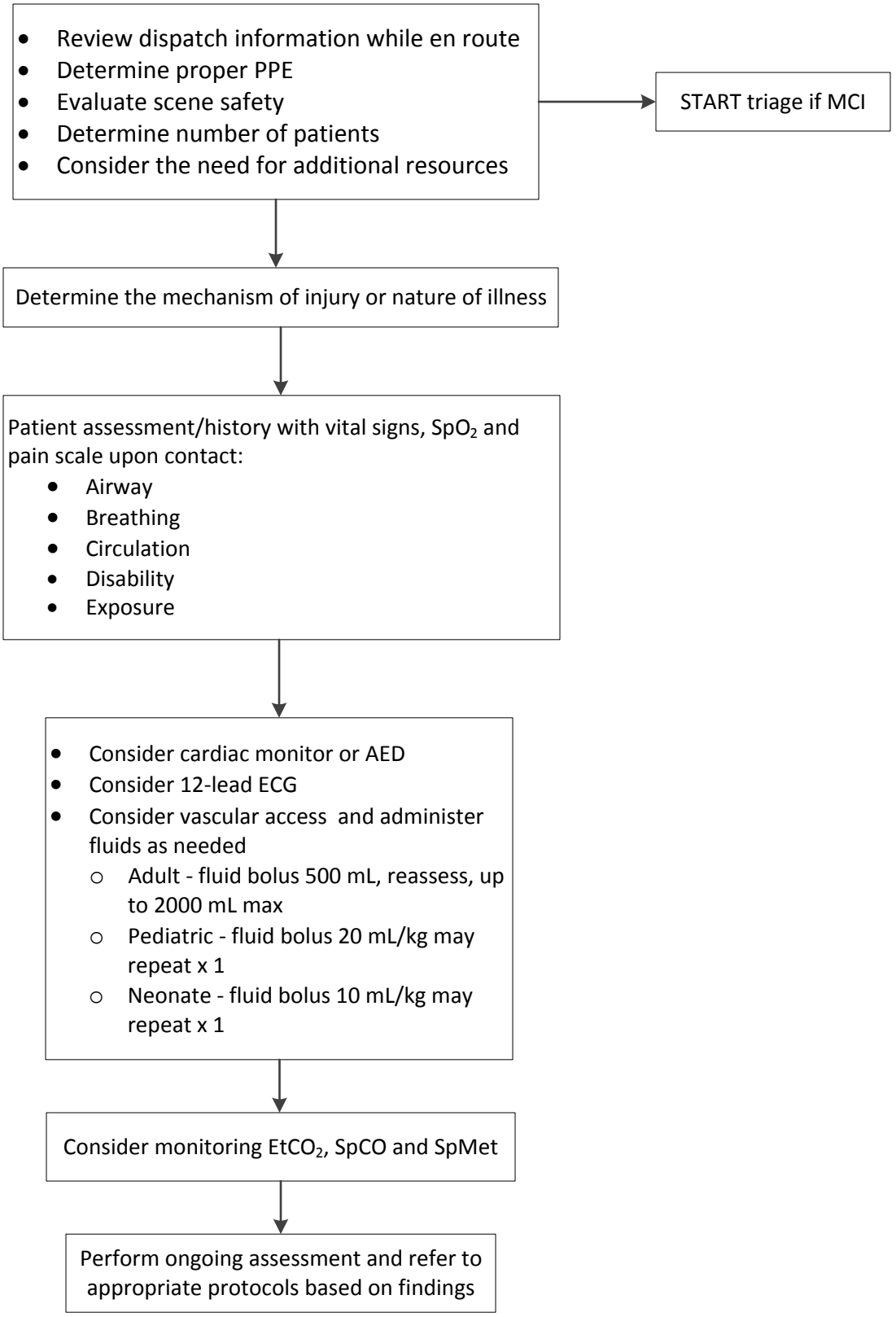
- Assess oxygenation and administer O_2 as needed
- Cardiac monitor
- Manage airway
- Determine blood glucose level
- Obtain IV or IO access
- If available, administer either:
  - HYDROCORTISONE SODIUM SUCCINATE
    - 1-2 mg/kg IV/IO for children
    - 100 mg IV/IO/IM for adolescents and adults

  OR
  - METHYLPREDNISOLONE
    - 0.5 – 1 mg/kg IV/IO for children
    - 125 mg IV/IO/IM for adolescents and adults

Amputation


Resuscitate and treat other more urgent injuries
Control bleeding with appropriate measures
Tourniquet proximal to injury if other measures ineffective
Obtain IV access
Consider *Pain Management/Sedation* protocol or *Pediatric Pain Management/Sedation* protocol.
Amputation
Partial Amputation
Rinse wound with sterile saline, place moist sterile dressing over stump and pressure wrap
Rinse amputated part in sterile saline, wrap in dry pads and place in dry container on ice. Avoid possible cold injury to part. Transport part with patient
Control bleeding
Splint in anatomical position and stabilize securely
Cover with moist saline dressing
Do not remove foreign bodies
Save any avulsed tissue

General Patient Assessment



Less than Lethal Munitions Care

Washoe County Regional Protocols

Less than lethal munitions are discriminate weapons that are explicitly designed and employed to incapacitate personnel while minimizing fatalities and undesired damage to property and the environment. Unlike weapons that permanently destroy targets through blast, fragmentation, or penetration, less than lethal munitions have relatively reversible effects on personnel.

- Any patient who has encountered less than lethal munitions needs to have a full assessment to identify any injuries or medical conditions which would require treatment and should be transported to the Emergency Department for further evaluation and care, unless the patient has the capacity and competence to refuse care and sign an AMA.
- In any patient, who has been involved in an encounter with law enforcement and who experienced a great deal of physical activity and who has been placed in restraints, the provider should consider the possibility of "In Custody Death." The recent use of drugs, alcohol, obesity, or medical history may increase the risk for sudden cardiac arrest.
- Assess and treat with appropriate protocol according to findings and patient signs and symptoms.

Pepper Spray (Oleoresin Capsicum)/ CS Gas (Tear Gas) Exposure Care

- Be aware of cross contamination when treating patients
- Severe complications are possible with the following patients:
  - Elderly
  - Cardiac
  - COPD
  - Asthma
- Flush the affected eye(s) with normal saline.
  - Be careful not to flush into an unaffected eye
- Capsicum exposure can also be neutralized with commercial wipes or spray
- Always wear gloves & eye protection when flushing contaminated patients
- If the patient is experiencing eye pain secondary to pepper spray, apply appropriate ophthalmic anesthetic agent to numb the affected eye(s)

→ Treat respiratory complaints per *Respiratory Distress* Protocol

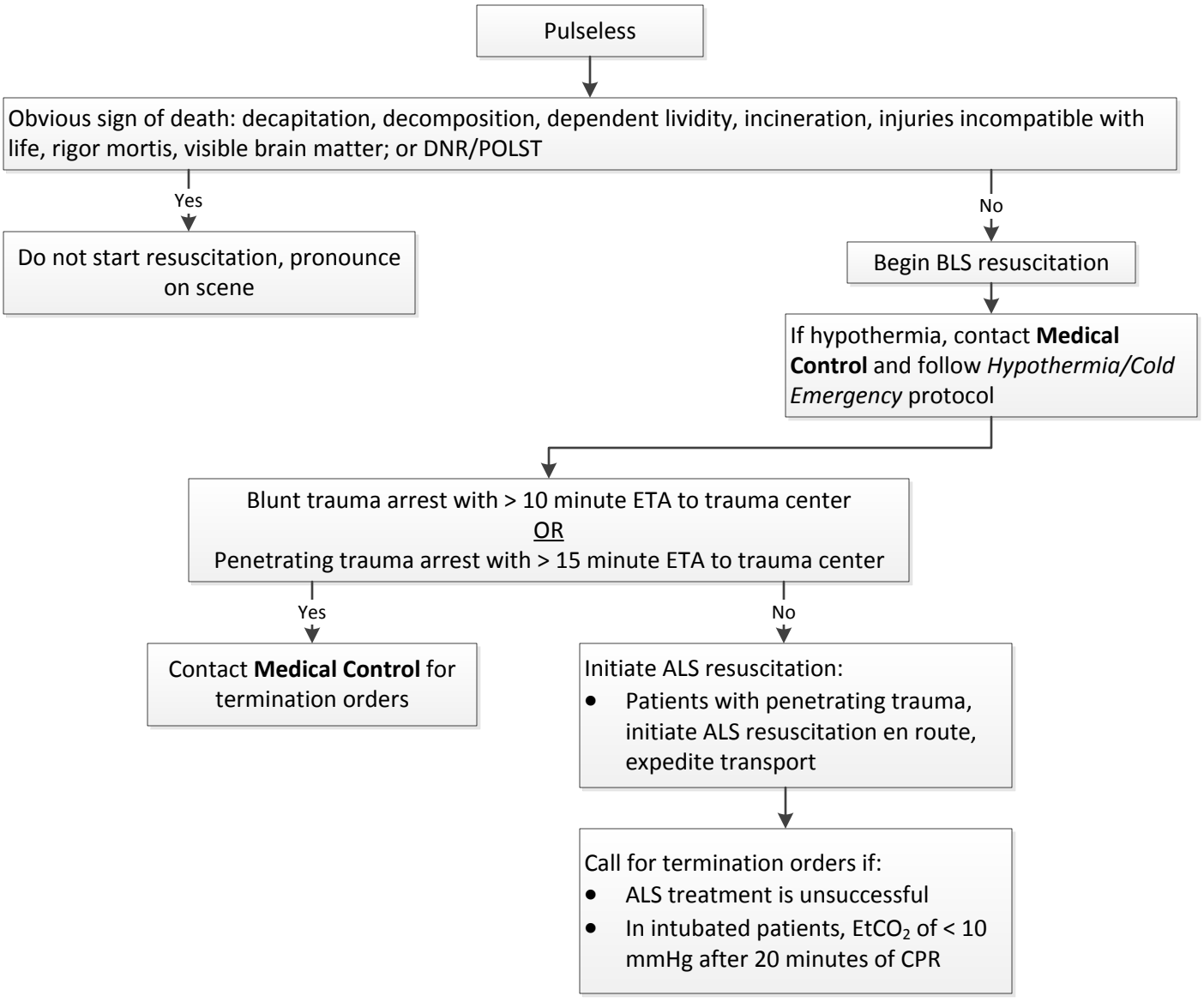
Taser Dart Care

- Assess the patient for secondary injuries after Taser application
- Energy from a Taser can ignite flammable liquids and gasses
- If the Taser dart has penetrated the eye or other sensitive area such as the face, neck, or groin:
  - Immobilize the dart; cut the wires right above the dart and transport
- To remove the darts in other areas:
  - Pull the skin taut and pull the dart(s) straight out
- Clean the site around the wound
- Advise the patient to beware for signs of infection

Kinetic Impact Munition Care

- The common kinetic impact munitions include bean bag rounds, plastic or wooden projectiles, and rubber sting balls
- All kinetic impact munitions have the potential to cause severe injury/death
- Persons struck by these munitions require a thorough assessment
- Some kinetic munitions contain pepper spray or tear gas- use the same cautions listed for these substances

Resuscitation/Prehospital Death Determination



When death has been established:

- If possibility of criminal implications, try to leave patient in position found.
- Secure the body and surrounding area until law enforcement arrives.
- Obvious death as described above does NOT require a cardiac monitor strip.
- All other cases of pronounced death MUST have a cardiac monitor strip. Document time of death, name of physician who pronounced death, and the names of law enforcement personnel who take custody of patient if coroner not available.

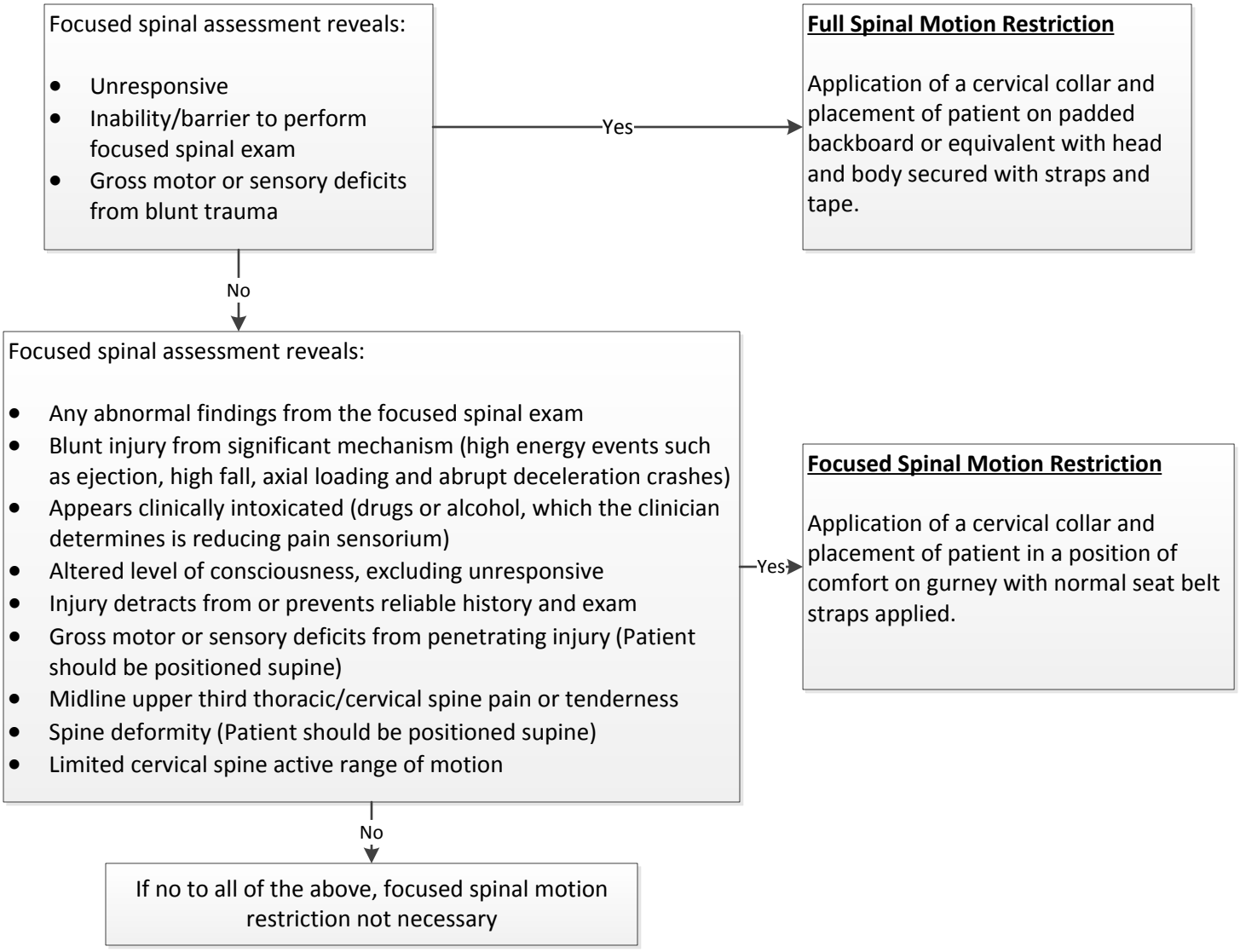
Pearls:

- The paramedic may cease resuscitation if initiated prior to arrival and patient shows obvious and accepted signs of death or if resuscitation is initiated prior to arrival and DNR or POLST is presented.
- Arrests resulting from electrical injury; treatments should be early, aggressive and persistent. Resuscitation efforts have high success rates even when resuscitation attempts are prolonged.

Spinal Motion Restriction

Conduct a focused spinal exam:

- Can the patient focus on the exam or are they in severe distress from other injuries or emotional stressors? (distracting injury)
- Assess distal CMS/bi-lateral grips/push-pull.
- Palpate the entire spine on the boney processes one at a time from C1 to L5. Patient should not have focal midline tenderness to palpation or obvious deformity.
- Ask the patient to rotate their head 45 degrees from side to side without assistance, which should be pain free.

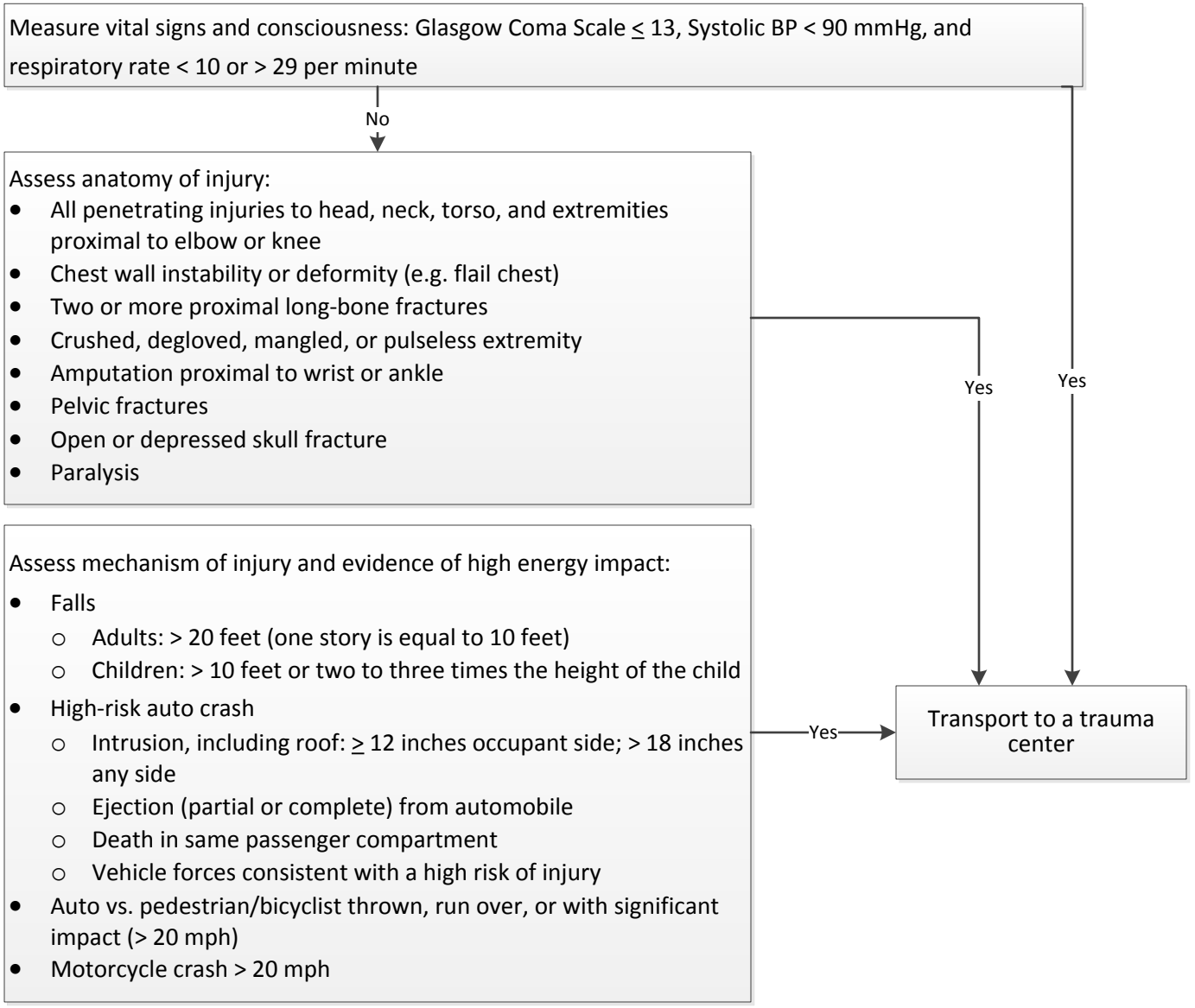


Pearls:

- Consider modified restriction in any patient with arthritis, cancer, dialysis, kyphosis or other underlying spinal or bone disease or who may have increased risk of spinal compromise.
- Any patient may be motion restricted based on EMS provider discretion.

Trauma Criteria and Assessment

Patient with trauma means a person who has sustained injury and meets the triage criteria used to evaluate the condition of the patient (NAC450B.798).



Consider contacting **Medical Control** for direction:

Older Adults
- Risk of injury/death increases after age 55 years
- SBP < 110 may represent shock after age 65
- Low impact mechanisms (e.g. ground level falls) may result in severe injury

Children
- Should be triaged preferentially to pediatric capable trauma centers

Anticoagulants and bleeding disorders
- Patients with head injury are at high risk for rapid deterioration

Burns
- Without other trauma mechanism: triage to burn facility
- With trauma mechanism: triage to trauma center

Pregnancy > 20 weeks

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ADULT TREATMENT PROTOCOLS

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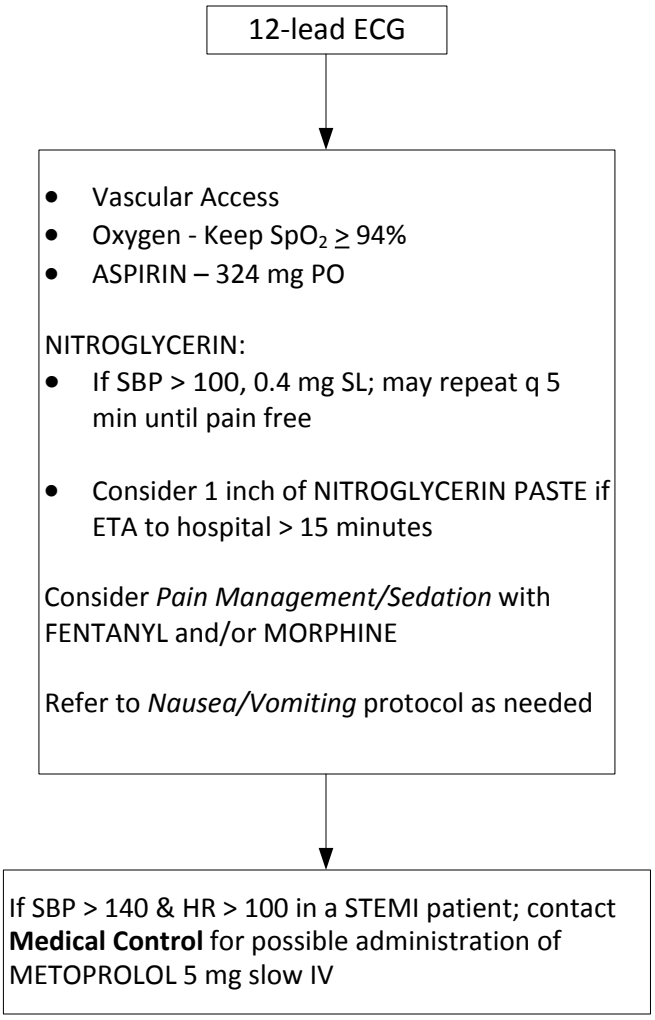
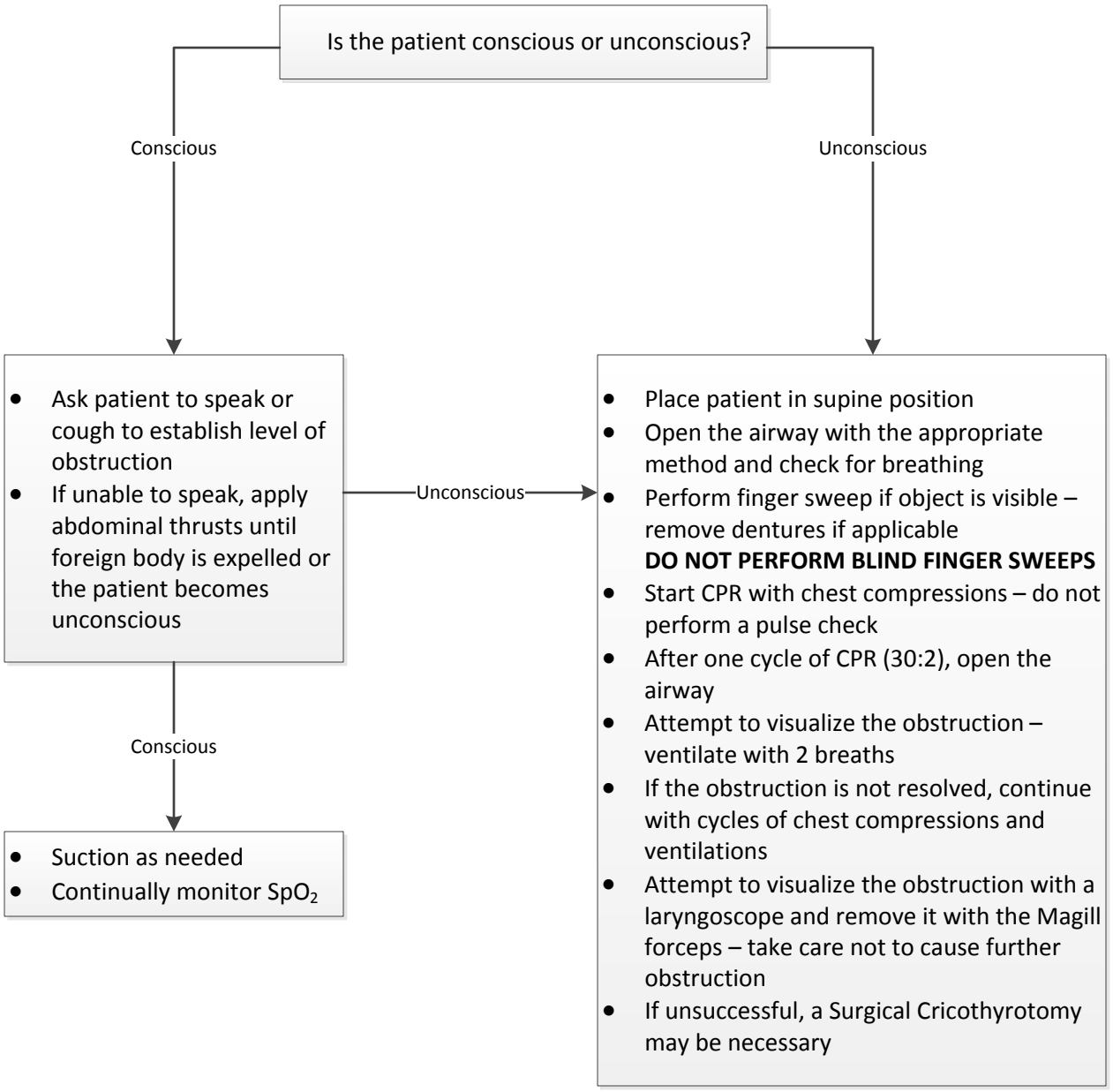
Acute Coronary Syndrome (Suspected)



Pearls:

- NITROGLYCERIN and MORPHINE are contraindicated in patients with RVI, consider fluid bolus.
- NITROGLYCERIN is contraindicated in patients currently taking phosphodiesterase inhibitors.
- 12-lead ECG should be obtained as soon as reasonably possible.
- Diabetic, geriatric and female patients often have an atypical presentation.
- Perform a 12-lead ECG on all patients 35 years of age or older experiencing vague jaw/chest/abdominal discomfort.
- Consider 15-lead or alternate lead placement for inferior MI, suspected ACS with normal 12-lead, or ST depression in the precordial leads.

Airway Obstruction



Pearls:

- If the patient presents with trismus and noisy respirations, insert a NPA and attempt to assist ventilations with a BVM.
- Avoid hyperventilation.
- Maintain $EtCO_2$ at 35-45.

Allergy/Anaphylaxis/Dystonia

Anaphylaxis is defined as an acute onset of an illness (over minutes to several hours) involving the skin, mucosal tissue, or both (e.g., generalized hives, pruritus or flushing, swollen lips-tongue-uvula) and respiratory compromise (e.g., dyspnea, wheeze-bronchospasm, stridor, reduced peak expiratory flow, hypoxemia) and/or reduced BP or associated symptoms of end-organ dysfunction (e.g., hypotonia [collapse] syncope, incontinence).

- Assess oxygenation and administer oxygen as needed
- Assess severity of allergic reaction

Allergy/Anaphylaxis

MILD - Swelling, itching, redness, hives

- DIPHENHYDRAMINE 25-50 mg IM or IV, if established

MODERATE - Mild plus wheezing and difficulty swallowing, mild hypotension:

- Obtain IV access; NS fluid bolus
- DIPHENHYDRAMINE 25-50 mg slow IV push
- ALBUTEROL unit dose HHN, as needed
- Consider EPINEPHRINE, 0.3 mg 1:1,000 IM (if not contraindicated) - with rapid progression of signs/symptoms or history of severe allergic reaction
- If reaction is worsening despite treatment, move to *SEVERE*

SEVERE - Impending respiratory failure, severe hypotension

- Secure Airway
- EPINEPHRINE 0.3 mg (0.3 mL) 1:1,000 IM (if not contraindicated)
- DIPHENHYDRAMINE 25-50 mg slow IV push
- EPINEPHRINE 0.1 mg (1 mL) 1:10,000 IV repeated up to three times followed by 100 mL NS
- Treat signs and symptoms of shock as necessary

Dystonia

- Obtain IV access
- DIPHENHYDRAMINE 25-50 mg IV/IM

Patient restraint – when patient is a threat to themselves, bystanders or EMS personnel

- Patients may be restrained with soft restraints
- Restraining opposing muscle groups (swimmers position) is most effective; never restrain in prone/hog-tied position
- Assess distal CMS after restraint, every 10 minutes
- Maintain and monitor the oxygenation
- Obtain vascular access as needed
- Apply cardiac monitor as needed – **Required with chemical restraint**
- Document reasons for restraint
- Incarcerated person may be restrained at the discretion of Law Enforcement
  - For handcuffed patients, request Law Enforcement accompaniment

Consider use of a chemical restraint:

- HALOPERIDOL 5-10 mg IV/IM q 5-10 min; max 15 mg
- MIDAZOLAM 2-5 mg slow IV/IO/IM/IN q 5 mins titrated to effect; max dose 10 mg
- KETAMINE 4 mg/kg IM OR 1-2 mg/kg IV

Pearls:

- KETAMINE is contraindicated for patients with a history of schizophrenia.
- If using KETAMINE, consider MIDAZOLAM to prevent reemergence phenomenon.
- Hostile, angry or unwilling patients who are competent may refuse service.
- Ensure the patient is searched for weapons prior to transport.

Some patients may bypass the nearest trauma center and be directly transferred to a burn center based on the destination protocol.

Chemical Burns/Hazmat Contamination

- Protect rescuer from contamination
- Remove all clothing and solid chemical which might provide continuing contamination
- Decontaminate patient using running water for 15 minutes if patient is stable
- Assess and treat associated injuries and evaluate for systemic symptoms
- Wrap burned area in clean dry cloth
- Keep patient warm after decontamination
- Contact hospital as soon as possible with type of chemical contamination for consideration of additional decontamination prior to entry into ED

Consider *Pain Management/Sedation* protocol

Electrical Burn/Lightning

- Protect rescuers from live electric wires
- Separate victim from electrical source when safe for rescuers
- Initiate CPR as needed
  - For victims in cardiac arrest, treatment should be early, aggressive, and persistent
  - Victims with respiratory arrest may require only ventilation and oxygenation to avoid secondary hypoxic cardiac arrest
  - Resuscitation attempts may have high success rates and efforts may be effective even when the interval before the resuscitation attempt is prolonged
- Place patient on cardiac monitor
- Obtain vascular access
- Treat any thermal burns as outlined above
- Assess for other injuries

- Consider *Pain Management/Sedation* protocol
- Treat dysrhythmias per protocol

Some patients may bypass the nearest trauma center and be directly transferred to a burn center based on the destination protocol.

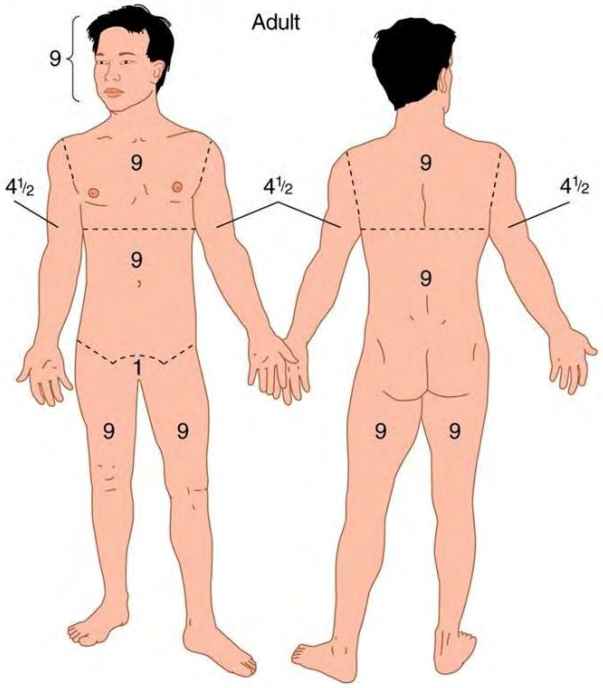
Thermal Burns

- Remove clothing which is smoldering and non-adherent to the patient
- Assess oxygenation and administer Oxygen as needed
- Assess and treat associated trauma/smoke inhalation
- Remove rings, bracelets and other constricting objects
- Determine burn body surface area (BSA)
  - If ≤ 10% body surface area burned, use moist saline dressing for patient comfort
  - If burn is moderate to severe (> 10% BSA), cover with clean, dry dressings
- Obtain vascular access

Administer IV fluids as follows:

- If transport time is greater than 15 minutes administer 500 mL per hour
- If transport time is less than 15 minutes, run IV at wide open rate

Consider *Pain Management/Sedation* protocol



Pearls:

- Parkland Burn Formula – 4 mL NS x BSA (%) x body weight (kg) = total fluids.
  - Administer 50% of total fluids in first 8 hours from time of injury
  - Administer 50% of total fluids over next 16 hours
- BSA is calculated for partial thickness and full thickness burns.

- Unconscious and unresponsive
- Pulseless
- Does not meet *Resuscitation/Prehospital Death Determination* protocol

- Begin CPR- pulse check/rhythm interpretation every 2 minutes
  - Continue CPR following all pulse checks as indicated by patient condition
- Place patient on cardiac monitor or AED
  - Utilize MFE pads and CPR assist devices, if available
- Manage airway as indicated by patient condition
- Consider reversible causes

VF, pVT, TdP

- Defibrillate
- 2 min CPR prior to medication administration
- Obtain vascular access
- Intubation or insertion of supraglottic airway device
- Utilize $EtCO_2$ as soon as possible

EPINEPHRINE 1.0 mg IV/IO every 3-5 min

- Defibrillate
- 2 min CPR

If VF/pVT

AMIODARONE 300 mg IV/IO, may repeat at 150 mg in 3-5 min, for sustained VF, pVT

OR

LIDOCAINE 1.0-1.5 mg/kg IV/IO, followed by 0.5-0.75 mg/kg IV/IO every 5 min to 3 mg/kg max

If the patient converts to a perfusing rhythm after administration of LIDOCAINE, start LIDOCAINE infusion at 2-4 mg/min IV/IO

If TdP

MAGNESIUM SULFATE 2 gm IV/IO over 5 min

Asystole/PEA

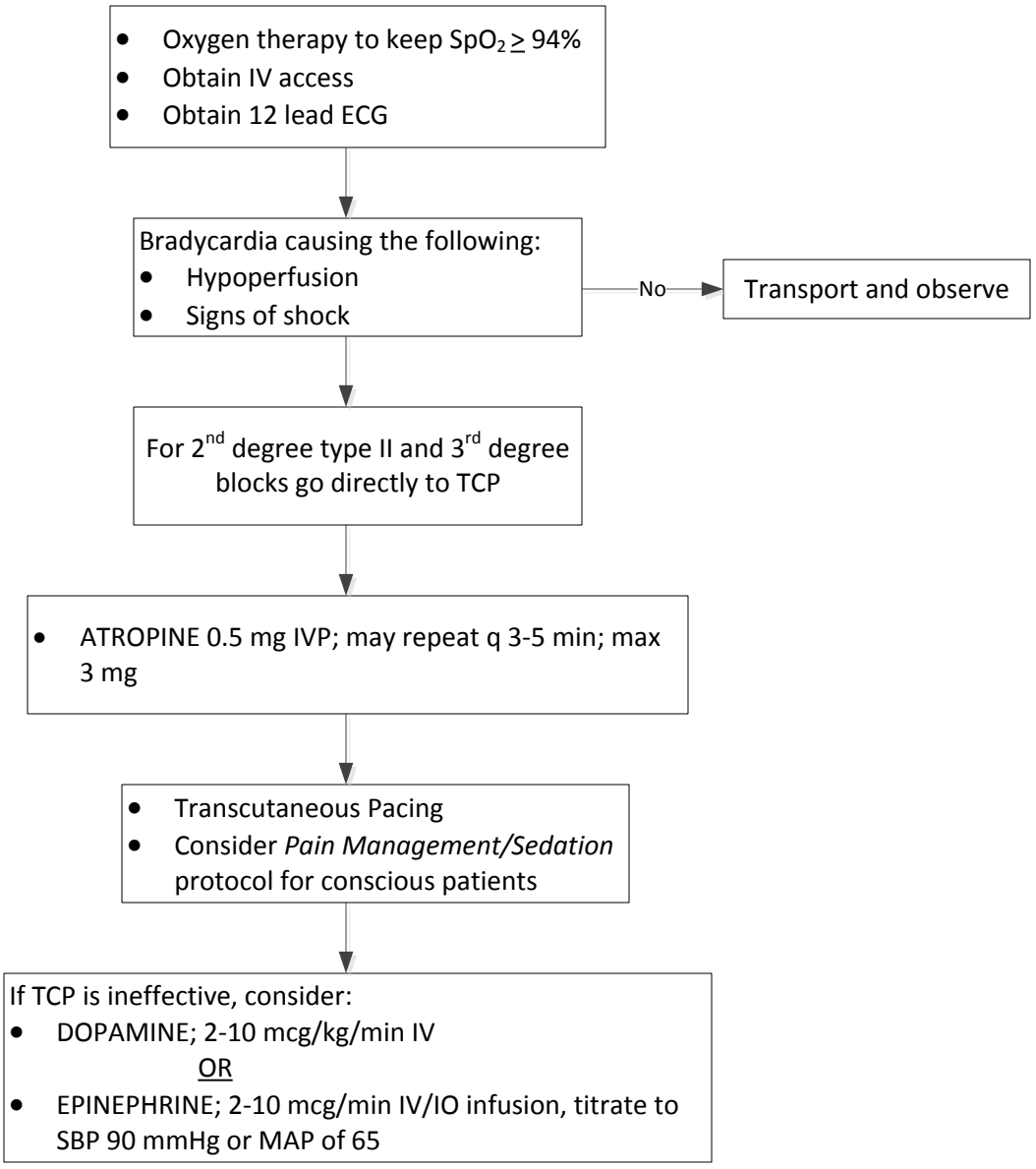
- Obtain vascular access
- Intubation or insertion of supraglottic airway device
- Utilize $EtCO_2$ as soon as possible

EPINEPHRINE 1.0 mg IV/IO every 3-5 min

- Check pulse if organized rhythm
- Consider consultation of **Medical Control** for termination of efforts
- Minimum of 3 rounds of medication are required prior to contact

Pearls:

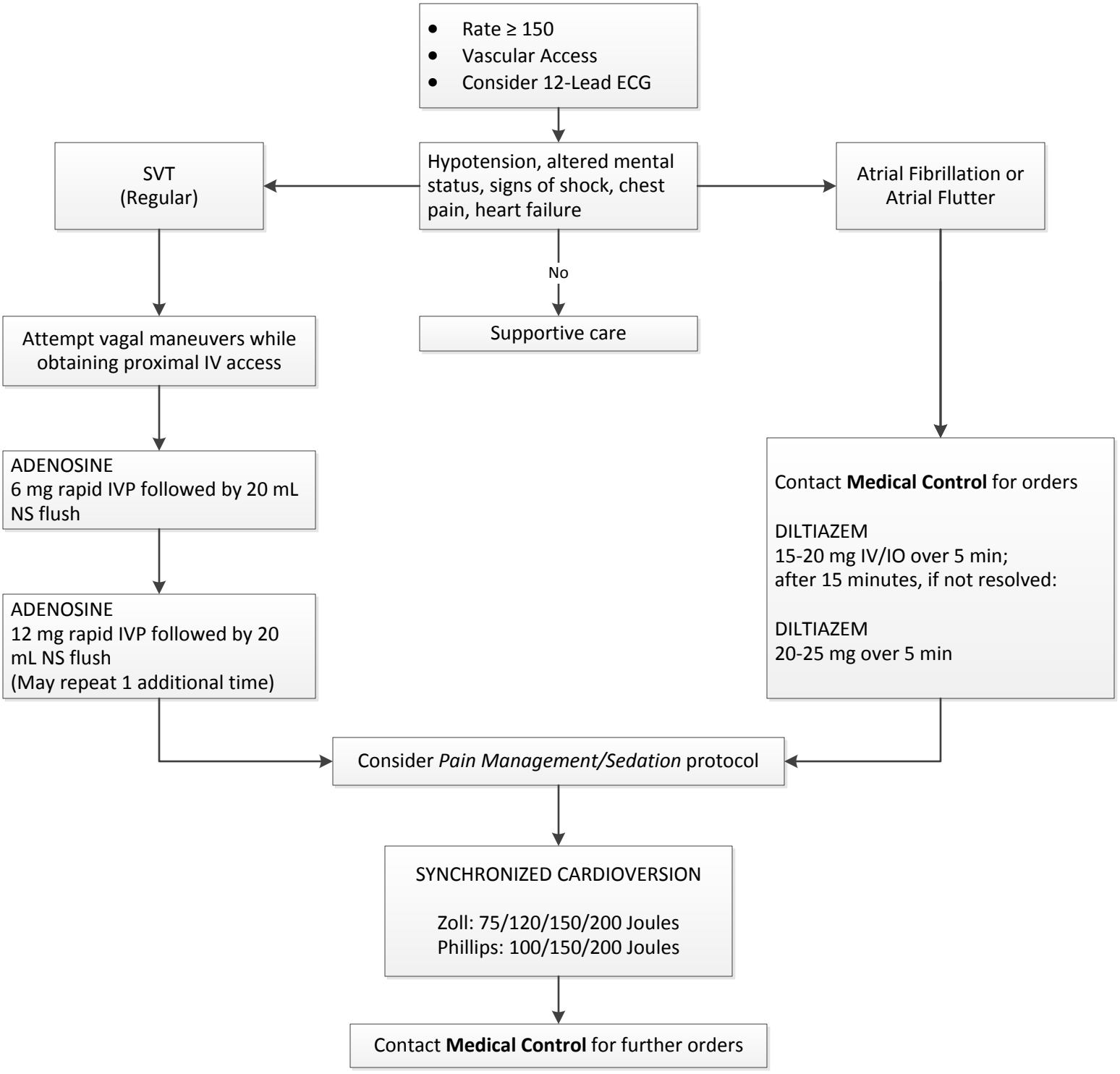
- EPINEPHRINE dose via ETT is 2.5 mg 1:1,000, diluted in 10 mL NS.
- LIDOCAINE dose via ETT is 3 mg/kg x 2.
- Routine use of LIDOCAINE is not recommended.
- Prophylactic use of post conversion AMIODARONE is not recommended.
- For sustained TdP post MAGNESIUM SULFATE administration, continue with AMIODARONE as indicated.
- Use caution when administering two or more ventricular antidysrhythmics , as it may have a proarrhythmic effect.



Pearls:

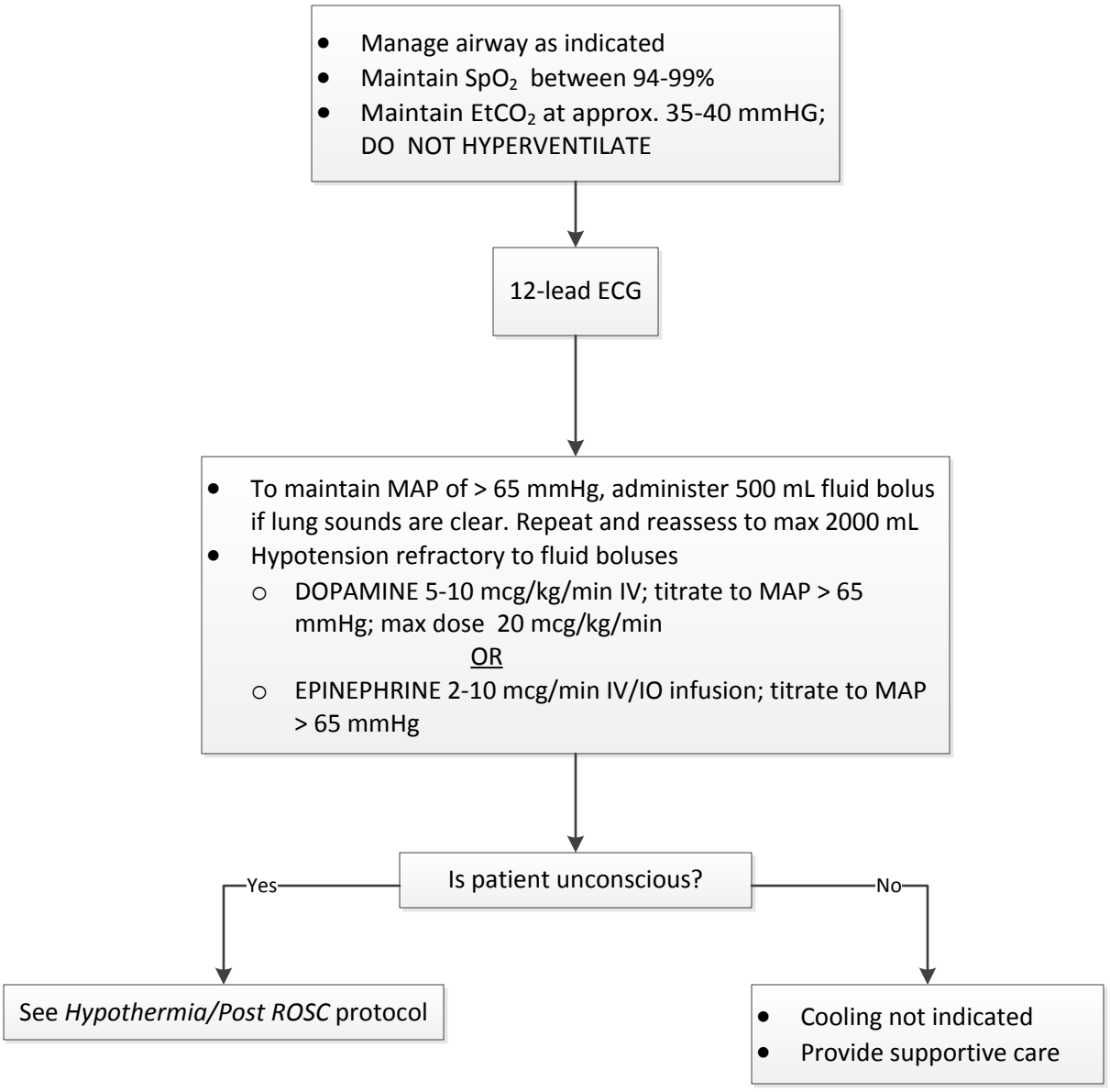
- **M**ean **A**rterial **P**ressure (**MAP**): MAP = ((DBP x 2) + SBP)/ 3.
- ATROPINE administration should not delay TCP in patients with poor perfusion.
- ATROPINE is contraindicated in the presence of acute coronary ischemia or MI.
- Consider calling **Medical Control** for GLUCAGON for patients with suspected beta blocker or calcium channel blocker overdose.
- Consider calling **Medical Control** for CALCIUM CHLORIDE for patients with suspected calcium channel blocker overdose.
- Repeat 12-lead ECG for evolving STEMI.
- Identifying signs and symptoms of poor perfusion caused by bradycardia are paramount.
- Signs and symptoms of bradycardia may be mild and are typically < 50 BPM.
- Do not delay pacing while waiting for IV access.
- Hypoxemia is a common cause of bradycardia; be sure to oxygenate the patient and provide ventilation support as needed.

Cardiac - Narrow Complex Tachycardia w/Pulses



Pearls:

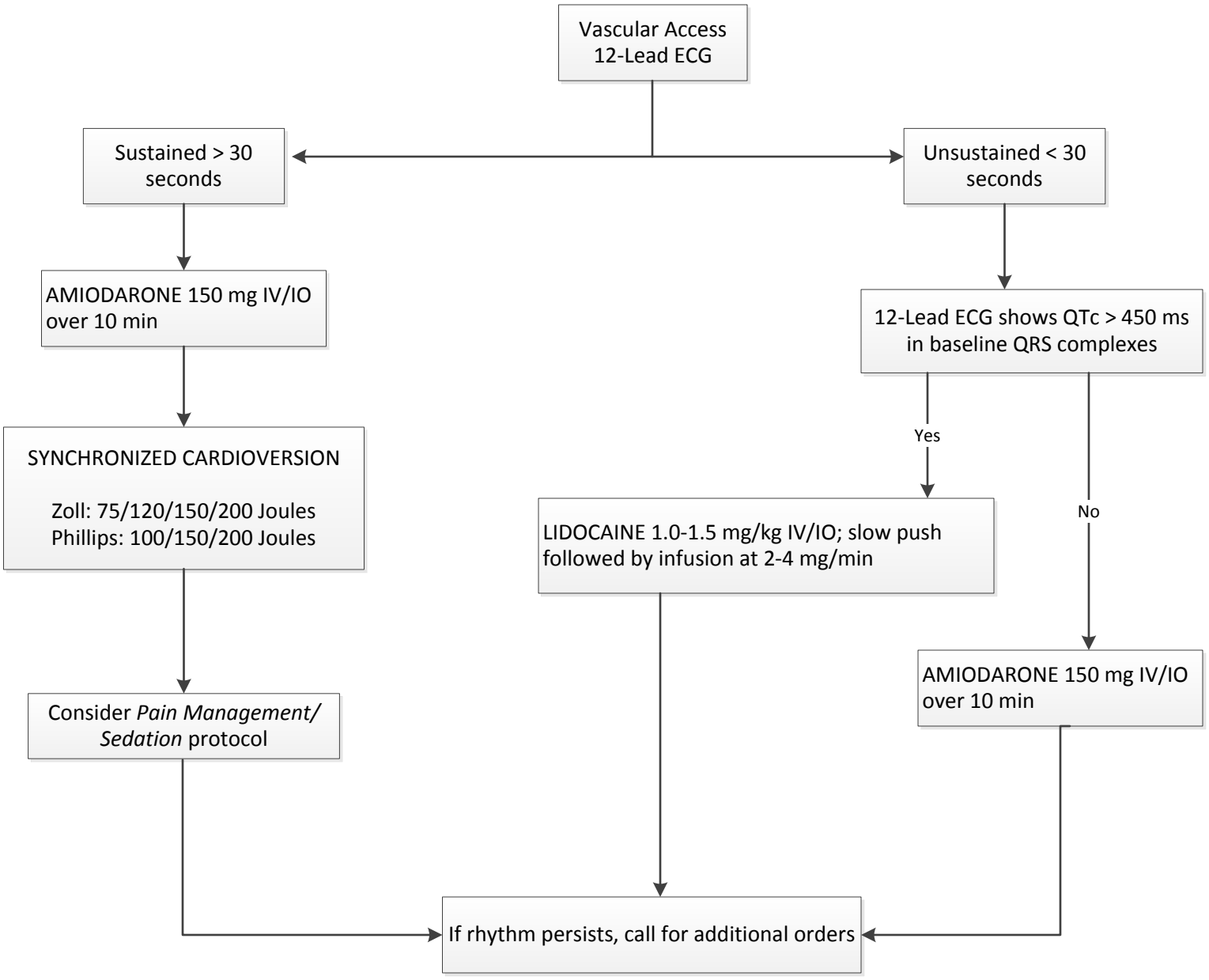
- Should consider DILTIAZEM maintenance infusion 5-15 mg/hr titrated to heart rate when contacting **Medical Control**.
- Determining onset of atrial fibrillation or atrial flutter guides treatment options when contacting **Medical Control**.
- May go directly to cardioversion at any time if severely symptomatic or patient deteriorating.



Pearls:

- **M**ean **A**rterial **P**ressure (**MAP**): MAP = ((DBP x 2) + SBP)/ 3.
- Do not cool post traumatic arrest or pregnant patients.
- Initial $EtCO_2$ may be elevated immediately post resuscitation but will normalize.
- If ROSC in previously hypothermic patient (core temp < 93°F or 34°C), refer to *Hypothermia/Cold Emergency* protocol.
- Use caution in treating immediate post arrest arrhythmias, as they may resolve spontaneously.
- All post arrest patients, excluding trauma, should be transported to nearest PCI capable facility.

Cardiac - Wide Complex Tachycardia with Pulses



Pearls:

- If patient is hemodynamically unstable, consider Cardioversion as primary treatment.
- For Torsades de Pointes, 2g MAGNESIUM SULFATE diluted in NS IV/IO, over 5 min.
- Consider ADENOSINE if regular, monomorphic, and undifferentiated.
- If cardioversion is successful prior to AMIODARONE administration with continued ventricular ectopy, consider AMIODARONE 150 mg IV/IO over 10 minutes.
- If suspected SVT with aberrancy, see *Narrow Complex Tachycardia* protocol.
- It is recommended not to mix antidysrhythmic medications during the course of patient treatment.
- Unsustained WCT can be considered frequent runs or salvos of WCT.

Normal Presentation

- Puncture amniotic sac, if not already broken
- Deliver and support the head
- Suction mouth, then nose; if meconium present, repeat several times
- Deliver upper shoulder, then lower shoulder
- Deliver remainder of the baby
- Clamp and cut umbilical cord
- If multiple births, repeat steps
- Deliver placenta

Breech Presentation

- Position patient on elbows and knees with hips elevated
- Support body of baby during delivery of head
- If head does not deliver but body is out, insert gloved hand into vagina and form a 'V' to protects baby's airway from vaginal wall

Cord Presentation

- Position patient on elbows and knees with hips elevated
- Wrap cord and keep it moist
- Insert gloved hand to lift baby off cord; obtain and document cord pulse

Limb Presentation

- Place patient in left lateral recumbent position

Nuchal Presentation

- Use palm of one hand to push against the motion of the infant and use the fingers of the other hand to unloop the cord from around the neck
- If you are unable to slip the cord around the head, clamp the cord in two places and gently cut the cord between the clamps
- Continue delivery

Uncontrolled Postpartum Hemorrhage

- Administer 500 mL NS; repeat as needed not to exceed 2000 mL
- Fundal massage
- OXYTOCIN infusion 20 units in 1000 mL NS; Give 10 units (500 mL) over 10-20 minutes, then maintenance infusion 2.5 units (125 mL) per hour

Pearls:

- Document all times (delivery, contraction duration and frequency).
- Some bleeding is normal; copious amounts of blood or free bleeding is abnormal.
- Record APGAR at **one** and **five** minutes after birth as a measure of overall cardiopulmonary and neurologic function.

Crush Injury

A crush injury is when a patient or part of the patient's body is entrapped or compressed for a time greater than 30 minutes. It may also be applied to a patient who, due to fall or overdose, has had no movement in an extremity for greater than 4 hours.

- Administer fluid bolus
  - 20 mL/kg for adults, followed by maintenance infusion of 500-1500 mL/hour
  - It is recommended a minimum of 500-1000 mL be given prior to releasing the patient or extremity from the compression
- SODIUM BICARBONATE 1 mEq/kg in 1000 mL of NS wide open (consider this part of fluid bolus)
- If Hyperkalemia suspected, see *Hyperkalemia* protocol
- Extremity management
  - Do not use ice packs or elevation of extremities

- Consider *Pain Management/Sedation* protocol as needed
- FENTANYL is recommended over MORPHINE due to vasodilatory effects of MORPHINE SULFATE

Pearls:

- Compartment syndrome is usually due to a crush injury and because of prolonged compression or pressure the interstitial pressure within a closed anatomical space exceeds the perfusion pressure. It occurs most commonly in the pelvis and lower extremities, but may also occur in the upper extremities or trunk. Compartment syndrome may result in ischemic swelling, muscle infarction, nerve injury and permanent loss of extremity function.

Hyperglycemia/Hypoglycemia

- Establish baseline level of consciousness
- Manage the airway and breathing as indicated by the patient's condition
- Consider possible reversible causes prior to placement of an advanced airway
- Consider cardiac monitor and 12-Lead ECG

If BGL is < 60 mg/dl:

- Consider ORAL GLUCOSE if the patient is alert/ able to protect their own airway
- Establish IV access as applicable
- 12.5-25 gm Dextrose D50% IV/IO, reassess/ repeat as needed

  AND/OR
- 100 mL Dextrose D10% IV/IO, reassess/repeat as needed
- Titrate to achieve blood glucose of ≥ 60 mg/dl and/or level of consciousness
- Consider THIAMINE 100 mg slow IV/IM for chronic alcoholism/malnutrition
- If unable to obtain an IV, administer GLUCAGON 1 mg IM
- If GLUCAGON is ineffective, establish an IO
  - Administer 100 mL Dextrose D10% IO, reassess/repeat as needed

    OR
  - Administer 12.5-25 gm Dextrose D50% IO, reassess/repeat as needed
- Reassess BGL after each intervention as necessary

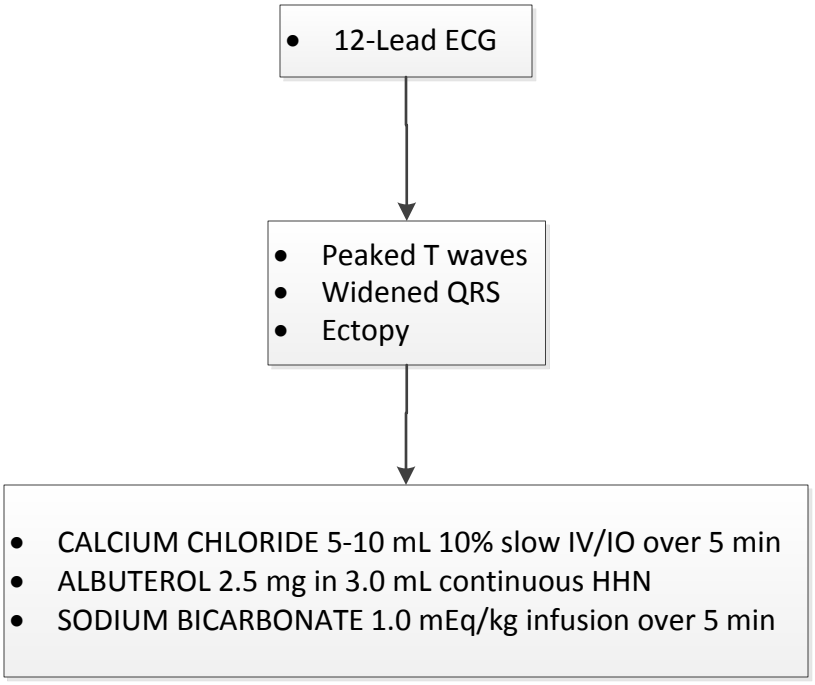
If BGL is > 250 mg/dl

- Consider Fluid bolus up to 20 mL/kg, reassess
- Consider monitoring $EtCO_2$

Pearls:

- Consider DKA or Hyperglycemic Hyperosmolar Syndrome on the patient that is a known person with diabetes and had a recent illness or injury.

Hyperkalemia (Suspected)



Pearls:

- CALCIUM CHLORIDE is contraindicated in patients with suspected digitalis toxicity.
- Patients predisposed to hyperkalemia may include *Crush Injury*, chronic renal failure, and TCA overdoses.
- Hyperkalemia is defined as potassium level higher than 5.5 mmol/l.
- Potassium of 5.5 - < 6.0 mEq/L – Tall tented T waves.
- Potassium of 6.0 - < 6.5 mEq/L – Increasing PR and QT intervals.
- Potassium of 6.5 - < 7.0 mEq/L – Flattening of P waves and ST segments.
- Potassium of 7.0 - < 7.5 mEq/L – Widened QRS complexes.
- Potassium of 7.5 - < 8.0 mEq/L – Deepening S waves and merging of S and T waves.
- Potassium of 8.0 - < 10.0 mEq/L – Sinewave shaped complexes and idioventricular rhythm.
- Potassium of ≥ 10 mEq/L - PEA often sine wave in appearance, VF, VT and Asystole.

Hyperthermia/Heat Emergency

Heat Exhaustion

- Body temperature up to 104°F/40°C
- Minor CNS changes, weakness, dizziness, fainting
- Nausea, headache, dilated pupils, no appetite
- Skin clammy, pale and moist
- Muscle cramps/pain

Heat Stroke

- Body temperature 104°F/40°C or greater
- Altered mental status or loss of consciousness
- Convulsions, seizures
- Tachycardia, hypotension
- Skin (hot, red, dry)
- Severe vomiting or diarrhea

- Remove patient from hot environment and remove clothing
- Begin active cooling of patient with appropriate measures
- Consider cardiac monitor and attempt to obtain body temperature
- Consider vascular access

Treat signs and symptoms of shock as necessary

Treat seizures per the *Seizure* protocol

Pearls:

- Heat exhaustion can rapidly progress to heat stroke if untreated.
- Heat stroke requires very aggressive cooling.
- Active cooling includes application of cold packs (not directly on skin), fanning, air conditioner or air movement.
- Intense shivering may occur as patient is cooled, discontinue aggressive cooling methods.
- Sweating generally disappears as body temperatures rise over 104°F/40°C.
- Wet sheets without good airflow may increase body temperature.
- Patients predisposed to heat emergencies include:
  - Elderly or pediatric
  - Alcohol or drug use
  - Antidepressant, antipsychotics and antiepileptic medications
  - Diuretics, beta blockers or antihistamines

Hypothermia/Cold Emergency

Remove wet clothing and protect from environment

Localized cold injury

- Monitor and reassess
- General wound care
- DO NOT rub skin to warm
- DO NOT allow refreezing

Systemic hypothermia

- Monitor temperature
- Maintain supine position
- Avoid rough movement and excess activity
- Active warming measures
- Vascular access
- Cardiac monitor
- Consider warm NS bolus 500 mL IV/IO; repeat to effect SBP > 90 max 2L
- Monitor and reassess

Transport all severely hypothermic patients regardless of response to treatments. Follow appropriate protocols for other treatment/ transport decisions.

Patient with pulse	
Core Temperature	Treatment
93.2^{O}F – 96.8^{O}F	Passive re-warming and active external re-warming
86^{O}F – 93.2^{O}F	Passive re-warming and active external re-warming to trunk areas only

Patient without a pulse	
Start CPR, defibrillate once if indicated	
Core Temperature	Treatment
< 86^{O}F	CPR, withhold IV medications, limit to one shock for VF/VT/Torsades
> 86^{O}F	CPR, give IV medications at longer intervals, repeat defibrillation for VF/VT/Torsades, passive re-warming and active external re-warming to trunk areas only

Pearls:

- Extremes of age are more prone to cold emergencies.
- If temperature is unknown, treat the patient based on suspected temperature.
- For the severely hypothermic patient, perform procedures gently and monitor cardiac rhythm closely.
- Active warming includes hot packs that can be used on the armpit and groin; care should be taken not to place the packs directly on the skin.
- If available, core temperature is preferred.

Hypothermia Post ROSC

Patients must meet all the following criteria to be eligible for this protocol:

- Have sustained return of circulation post non-traumatic cardiac arrest
- Temperature > 93°F (34°C)
- No purposeful response to voice or pain
- Blood glucose level > 60 mg/dl
- Sustained capnography monitoring in place

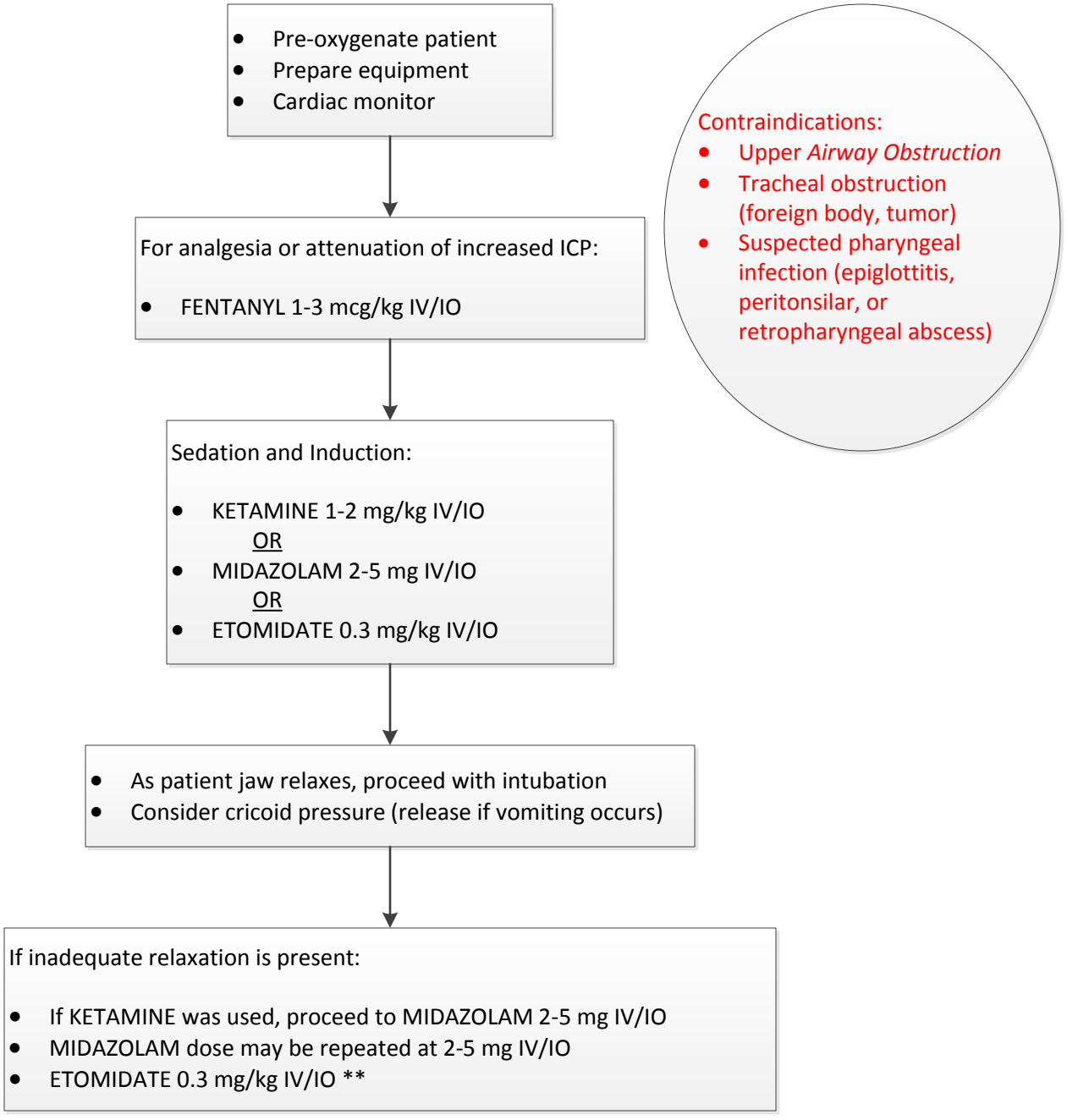
The following patients are **NOT** eligible for this protocol:

- Pregnant patients
- Traumatic or hemorrhagic cardiac arrest patients
- ROSC in previously hypothermic patient

- Ensure continuous monitoring of SpO_2 (94%-99%), $EtCO_2$ waveform, and ECG
- Monitor temperature
- Maintain $EtCO_2$ 35-40 mmHg
- Expose patient and place cold packs in axilla and groin
- Assess neurological status
- Ensure vitals are appropriate and follow respective protocol
- Avoid and immediately correct hypotension (SBP less than 90 mmHg, Mean Arterial Pressure less than 65 mmHg) during post–cardiac arrest care
- Search for and treat differential causes of arrest
- If cooling causes shivering: MIDAZOLAM 2-5 mg IV/IO; titrate to effect

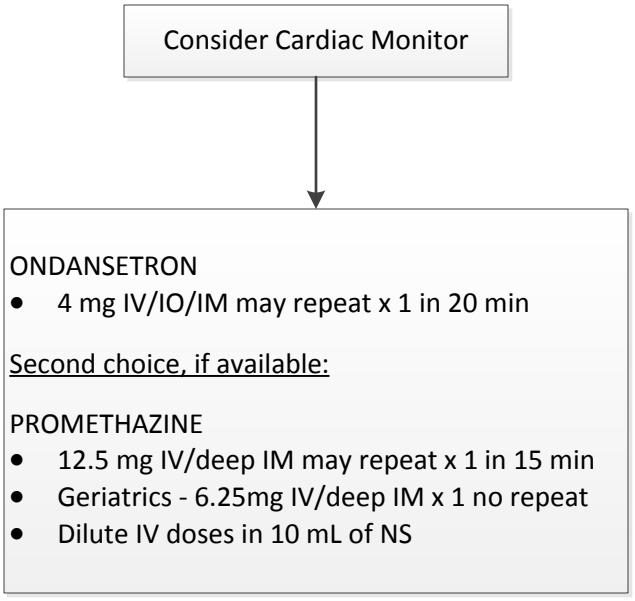
If ROSC in previously hypothermic patient (core temperature < 93°F/34°C) use *Hypothermia/Cold Emergency* protocol

Medication Assisted Intubation



Pearls:

- Pharmacological agents are used to assist the provider in performing intubation in patients with high intubation difficulty due to excessive gag reflex. In these instances, protecting the airway is a potentially life-saving maneuver. These patients may include: Isolated *Head Trauma*, *CVA/Stroke*, *Multisystem Trauma*, *Overdose*, Status Epilepticus, *Acute Pulmonary Edema*, *Respiratory Failure*, *Severe Burns*, or based on anticipated clinical course.
- Reserve ETOMIDATE for non-septic, non-pediatric patients, and/or for those with suspected head injury.



Pearls:

- Consider cardiac origin and perform a 12-Lead ECG.
- Use antiemetics with caution in patients with a known history of prolonged QT interval. In general, prolonged QT is defined as a QTc > 450 ms.

Overdose/Poisoning

Poison Control - (800) 222-1222 OR (775) 982-4129

- Determine cause of overdose/poisoning, treat as appropriate
- Cardiac Monitor

Carbon monoxide (CO)

- Place patient on CO monitor, do not rely on pulse oximeter readings
- If patient's SpCO is:
  - 0 – 5 % - Considered normal for non-smokers. When > 3% with symptoms, consider high flow oxygen and recommend transport. If asymptomatic, no further medical evaluation necessary of SpCO. Counsel patients on signs and symptoms to watch for, offer transport to ED, if refused, complete AMA.
  - 5 – 10 % - Considered normal for smokers, abnormal for non-smokers. If symptoms are present, consider high flow oxygen and recommend transport to ED.
  - 10 – 15 % - Abnormal in any patient. Assess for symptoms, consider high flow oxygen and recommend transport to ED.
  - > 15 % - Significantly abnormal in any patient. Administer high flow oxygen and recommend transport to ED.
  - > 30 % - Consider transport/referral to hyperbaric facility (consider referral to hyperbaric facility if > 25% for patients with ALOC or pregnant).
- If patient has altered LOC, neurological impairment, or > 25% SpCO, treat with 100% O_2 and transport to nearest appropriate facility
- Continue supportive therapies as needed

Opiates

- Titrate NALOXONE to restore adequate respirations
  - 0.5 - 2 mg IV/IO/IM/IN may repeat to max total dose of 10 mg

Tricyclic Anti-Depressants

For patients with any of the following:
- Dysrhythmias or QRS of $\geq$ 120 ms
- Hypotension
- Seizure
- Cardiac Arrest

- Administer SODIUM BICARBONATE 1.0 mEq/kg IV immediately call for orders for additional dose
- If patient is intubated, ventilate patient to maintain $EtCO_2$ level of 28-30 mmHg

Organophosphate Poisoning (Insecticide)

- ATROPINE 1-2 mg every 3-5 minutes until cessation of secretions

Agents:

- ACETAMINOPHEN: Initially normal or N/V. Tachypnea and AMS may occur later. Renal dysfunction, liver failure and/or cerebral edema may manifest.
- **Beta blocker overdose**: call for possible administration of GLUCAGON.
- **Calcium channel blocker**: call for possible administration of CALCIUM CHLORIDE and/or GLUCAGON.
- Depressants: Decreased HR, BP, temp and RR.
- Anticholinergic: Increased HR, increased temperature, dilated pupils and AMS changes.
- Insecticides: May include S/S of organophosphate poisoning.
- Solvents: N/V, cough, AMS.
- Stimulants: Increased HR, BP, temperature, dilated pupils, seizures, and possible violence.
- TCA: Decreased mental status, dysrhythmias, seizures, hypotension, coma, death.

Poison Control - (800) 222-1222 OR (775) 982-4129

Cyanide Exposure

For known cyanide poisoning in the absence of exposure to smoke, refer to the cyanide antidote parameters contained within the *Smoke Inhalation* protocol

Pearls:

- Powdered HYDROXOCOBALAMIN will be reconstituted with 200 cc 0.9% NS or lactated ringers. Repeatedly invert for 60 seconds PRIOR TO administration. Do Not Shake.
- CALCIUM CHLORIDE is contraindicated in patients with suspected digitalis toxicity.
- If patient is suspected to have narcotic overdose/hypoglycemia, administer NARCAN/GLUCOSE prior to BIAD device/ intubation.
- Consider a second line if possible for administration and avoidance of possible medication incompatibilities.
- For suspected ingestion, consider NG tube placement.
- Cyanide toxicity should be suspected for any patient being treated for Carbon Monoxide toxicity from smoke inhalation. Conscious patients with symptoms will require **Medical Control** contact prior to administration.
- Overdose or toxin patients with significant ingestion/exposure should be closely monitored and aggressively treated. Do not hesitate to contact **Medical Control** if needed.
- In the case of cyanide poisoning, altered mental status may be profound. Profound altered mental status can be defined as a deficit that includes disorientation, bewilderment and difficulty following commands.

Pain Management/Sedation

Assess and document patient's condition and vital signs before and after treatment (at minimum every 15 minutes). Pain should be assessed using a combination of physiologic indicators, including but not limited to, 1-10 pain scale and Bloomsbury Sedation Scale.

- Keep $SpO_2 \geq 94\%$
- Vascular Access
- Consider Cardiac Monitor

Comfort measures:
- Patient positioning
- Splinting
- Ice

Pain Management

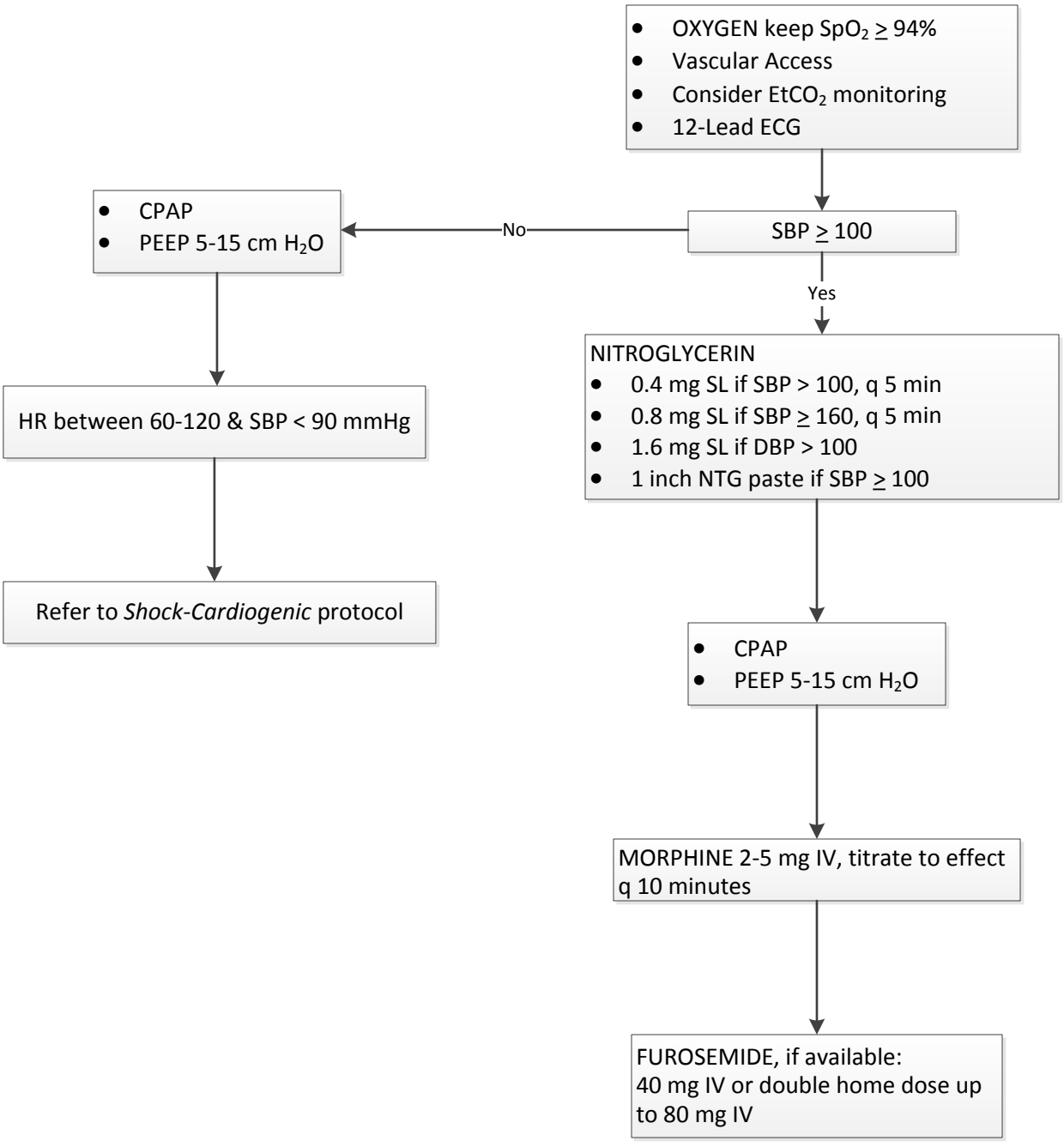
- NITROUS OXIDE as long as patient is able to follow directions, if available
- FENTANYL 1-3 mcg/kg IV/IO/IN may repeat q 5 min as needed, max single dose 100 mcg
- MORPHINE SULFATE 2-5 mg IV/IO may repeat q 10 as needed
- KETAMINE, if available
  - 0.5–1 mg/kg IV/IO/IM/IN may repeat q 5–10 min as needed

Sedation

- Cardiac Monitor
- MIDAZOLAM 0.5-5 mg IV/IO/IM/ IN may repeat as needed
- ETOMIDATE 0.15 mg/kg IV/IO may repeat once if inadequate sedation
- KETAMINE, if available
  - 1-2 mg/kg IV/IO may repeat q 5-10 min as needed
  - 4 mg/kg IM may repeat q 10 min as needed

Bloomsbury Sedation Scale:
3 = agitated/restless
2 = awake/comfortable
1 = awake/calm
0 = roused by voice, remains calm
-1 = roused by movement/stimulation
-2 = roused by painful stimulation
-3 = cannot arouse

Pearls:
- Opthalmic anesthetics may be used for ocular injuries, 1-2 drops, as needed.
- Consider prophylactic ONDANSETRON use when administering pain medication.
- Pain severity (1-10) is a vital sign to be recorded before and after medication administration and patient hand off.
- Monitor BP and respirations closely as sedative and pain control agents may cause hypotension and/or respiratory depression.
- Consider patient's age, weight, clinical condition, use of drugs/alcohol, exposure to opiates, when determining initial opiate dosing. Weight based dosing may provide a standard means of dosing calculation, but does not predict response.
- Exercise care when administering opiates and benzodiazepines; this combination results in deeper sedation with significant risk of respiratory compromise.
- Burn patients may require more aggressive dosing.



Pearls:

- Avoid administering NITROGLYCERIN to any patient who is currently using phosphodiesterase inhibitors.
- Consider NITROGLYCERIN PASTE for subsequent doses after placing CPAP mask (i.e. do not remove mask to administer SL doses).
- Allow patient to dangle legs, if possible.

Respiratory Distress

- Cardiac monitor
- Consider 12-lead ECG
- SpO_2 and $EtCO_2$ monitoring

Asthma/reactive airway disease

- ALBUTEROL 2.5 mg in 3.0 mL HHN; repeat until improvement
- DUONEB 2nd & 3rd HHN
  **additional HHNs use ALBUTEROL
- Consider CPAP

Impending Respiratory Failure:

If patient > 45 years or previous cardiac history, consider contacting **Medical Control** prior to:

EPINEPHRINE

- 0.3 – 0.5 mg (0.3 – 0.5 mL) IM 1:1,000
- 0.1 mg IV 1:10,000 repeat as needed, max 0.3 mg

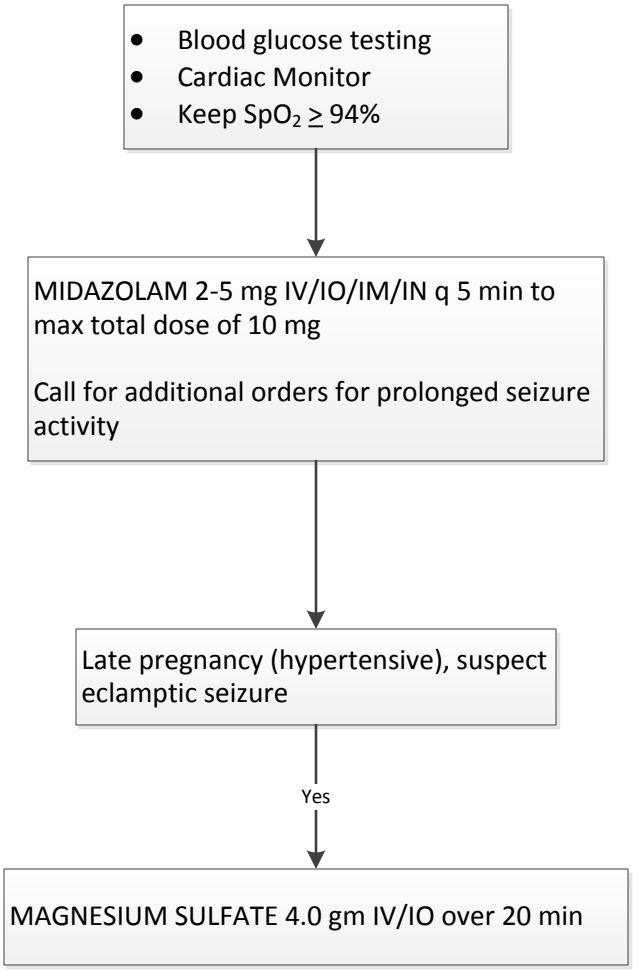
MAGNESIUM SULFATE 2 gm IV over 20 min

Chronic lung disease with deterioration

- ALBUTEROL 2.5 mg in 3.0 mL HHN; repeat until improvement
- DUONEB 2nd & 3rd HHN
  **additional HHNs use ALBUTEROL
- Consider CPAP

Pearls:

- Duoneb equivalent can be achieved by combining 0.5 mg IPRATROPRIUM in 2.5 mg ALBUTEROL.
- Signs of impending respiratory failure include: altered mental status, inability to maintain respiratory effort, cyanosis.



Pearls:

- **Eclamptic seizure/ob patients** showing signs of Magnesium Sulfate toxicity (respiratory depression, hypotension or bradycardia):
  - Consider administering 5 mL 10% Calcium Chloride slow IV/IO push over 5 minutes.
- Benzodiazepines are effective in terminating seizures; do not delay IM/IN administration while initiating an IV.
- Status epilepticus is defined as two or more seizures successively without an intervening lucid period, or a seizure lasting over five minutes.
- Consider $EtCO_2$ monitoring.

Suspect Sepsis if suspected infection and 2 or more of the following:

- Temperature > 100.4°F or < 96.8°F
- Respiratory rate > 20
- Heart rate > 90

Severe Sepsis if one of the following in addition to the above:

- Acute Hypoglycemia or Hyperglycemia
- Systolic BP < 90 mmHg or Mean Arterial Pressure (MAP) < 65 mmHg
- $EtCO_2$ < 25 mmHg

- Keep $SpO_2 \geq 94\%$
- Vascular access-Large bore IV preferred, obtain two if possible
- Cardiac Monitor
- Consider $EtCO_2$ monitoring
- Obtain Blood Glucose Level
- Follow Advanced Airway Management as indicated by patient's condition
- Place patient supine and elevate legs if possible
- Assess lung sounds
  - If clear, administer 30 cc/kg fluid bolus to max of 3000 mL; patient must receive 3000 mL before EPINEPHRINE infusion
  - Reassess lung sounds after each 500 mL given

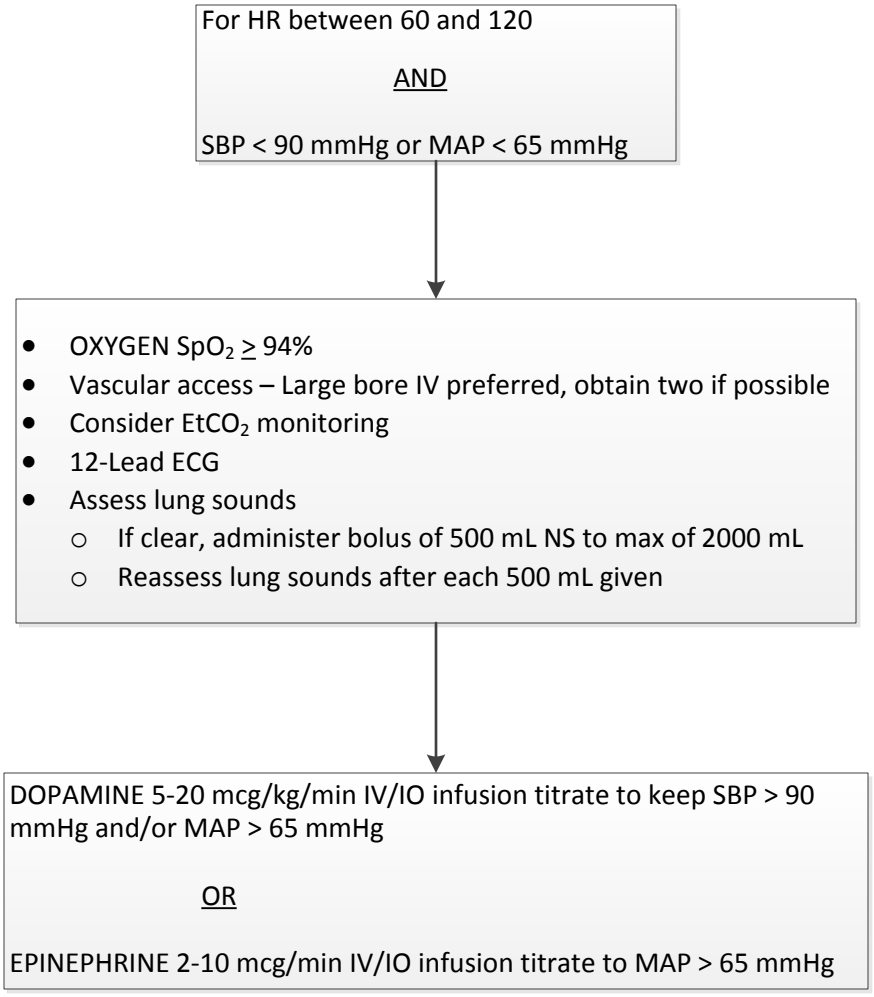
If unable to maintain SBP > 90 mmHg or MAP > 65 mmHg, following fluid administration:

EPINEPHRINE Infusion 2-10 mcg/min IV/IO infusion; titrate to keep SBP > 90 mmHg

- Blood pressure assessed every 5 min while titrating EPINEPHRINE infusion to maintain MAP > 65 mmHg or systolic blood pressure of > 90 mmHg
- Monitor ECG continuously

Pearls:

- Hypotension can be defined as a SBP of < 90 mmHg or MAP < 65 mmHg. This is not always reliable and should be interpreted in context and patient's typical BP, if known.
- Shock may be present with a normal BP initially.
- Mean Arterial Pressure (MAP): MAP = ((DBP x 2) + SBP)/3.



Pearls:

- Hypotension can be defined as a SBP of < 90 mmHg or MAP < 65 mmHg. This is not always reliable and should be interpreted in context and patient's typical BP, if known.
- Shock may present with a normal BP initially.
- Mean Arterial Pressure (MAP): MAP = ((DBP x 2) + SBP) / 3.

Smoke Inhalation

Individuals may present with soot around nose and mouth after exposure to smoke from a structure fire or other sources (vehicle fire, industrial gases, confined spaces, etc.)

- Keep $SpO_2 \geq 94\%$
- Ventilation management
- Cardiac monitor

↓

- Vascular Access
- NS bolus 500 mL up to max 2000 mL for hypoperfusion

↓

Other treatment protocols as indicated

If the patient presents with cardiac arrest, hypotension, altered mental status or other signs and symptoms consistent with Cyanide (CN) poisoning, administer:

HYDROXOCOBALAMIN 5.0 g IV over 15 min

* Depending on the severity of the poisoning and the patient's response, a second dose of 5.0 g may be administered by IV infusion up to a total dose of 10.0 g. The rate of infusion for a second dose may range from 15 min (for patients in extremis) to 2 hours, as clinically indicated.

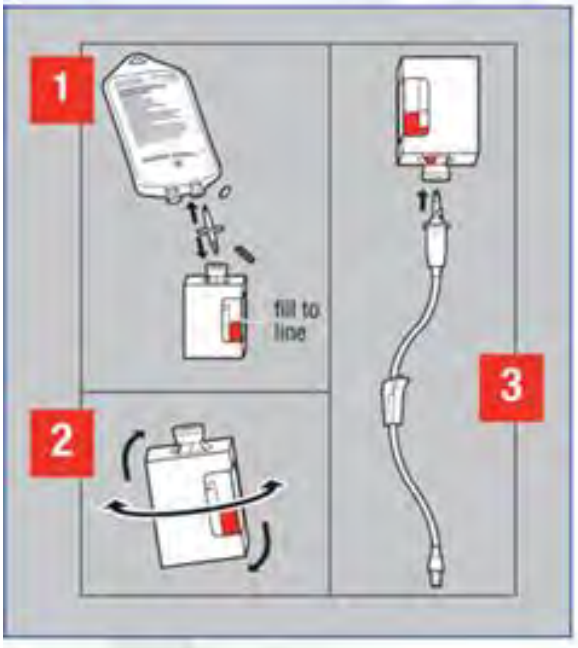
Complete Starting Dose: 5 g

1. **Reconstitute:** Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride injection* to the vial using the transfer spike. **Fill to the line.**

   *0.9% Sodium Chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringers injection and 5% Dextrose injection have also been found to be compatible with hydroxocobalamin and may be used if 0.9% Sodium Chloride is not readily available

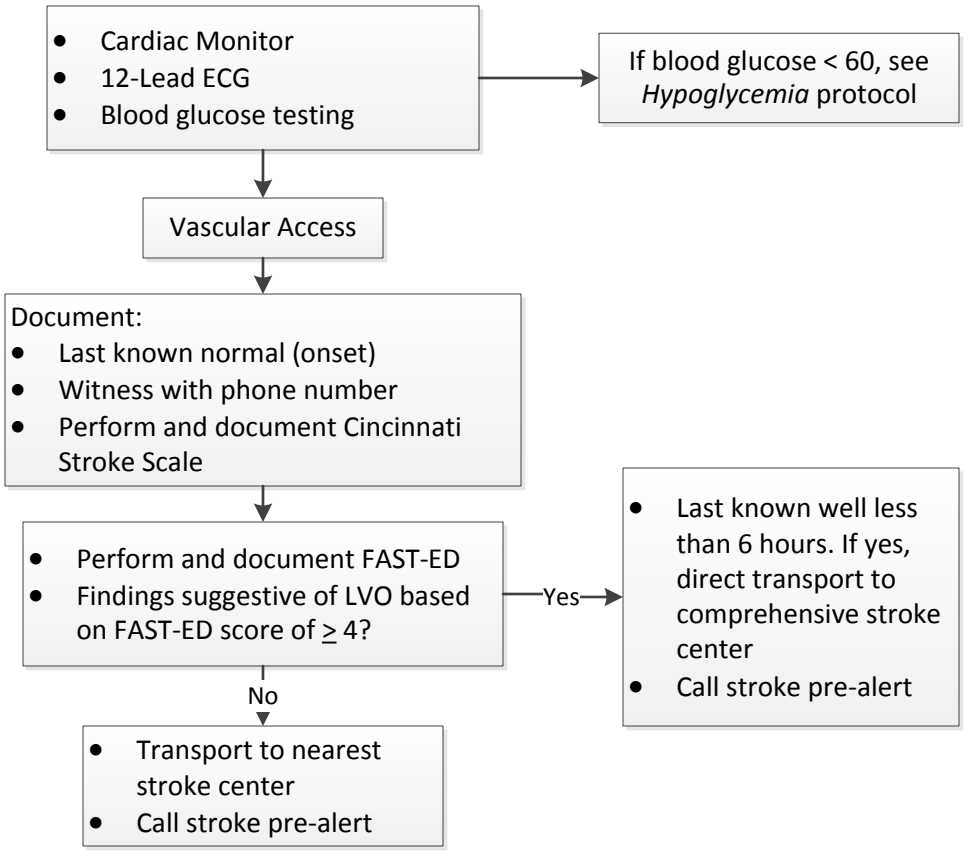
2. **Mix:** The vial should be repeatedly inverted or rocked, not shaken, for at least **60 seconds** prior to infusion.
   - CYANOKIT solutions should be visually inspected for particulate matter and color prior to administration
     - Discard solution if particulate matter is present or solution is not dark red

3. **Infuse Vial:** Use vented intravenous tubing, hang and infuse over **15 minutes.**



Pearls:

- Signs and symptoms consistent with Cyanide (CN) poisoning include:
  - Weakness, dizziness, headache, stupor, dilated pupils, dyspnea
  - Tachypnea, tachycardia, nausea, vomiting, tightness in the chest
  - Altered LOC, cardiovascular collapse, combativeness, confusion
  - Plasma Lactate concentration ≥ 8 mmol/L
  - Late signs: Cardiac arrest, apnea, bradypnea, hypotension, seizures
- Low $EtCO_2$ can be indicative of an elevated serum lactate level (less than 25).
- If the medication is not available on scene do not delay transport waiting for it.
- Decide early on if you want to intubate as burned airways swell, making intubation difficult.



FAST-ED Stroke Score

Item	FAST-ED Score	NIHSS Score Equivalence
Facial Palsy		
Normal or minor paralysis	0	0-1
Partial or complete paralysis	1	2-3
Arm Weakness		
No drift	0	0
Drift or some effort against gravity	1	1-2
No effort against gravity or no movement	2	3-4
Speech Changes		
Absent	0	0
Mild to moderate	1	1
Severe, global aphasia, or mute	2	2-3
Eye Deviation		
Absent	0	0
Partial	1	1
Forced deviation	2	2
Denial/Neglect		
Absent	0	0
Extinction to bilateral simultaneous stimulation in only 1 sensory modality	1	1
Does not recognize own hand or orients only to one side of the body	2	2

Stroke Pre-Alert Criteria

Indication	Contraindication
✓ Positive FAST-ED	✗ Stroke or head trauma in last 3 months
✓ ≥ 18 Years Old	✗ Recent intracranial or intraspinal surgery in last 3 months
✓ Within last 6 hours onset of "last seen well"	✗ Major surgery in past 2 weeks
	✗ Active bleeding

Pearls:

- Transporting agency should draw for destination hospital blood samples. The sequence should be blue, gold, green, lavender, filled completely. Label appropriately.

PEDIATRIC TREATMENT PROTOCOLS

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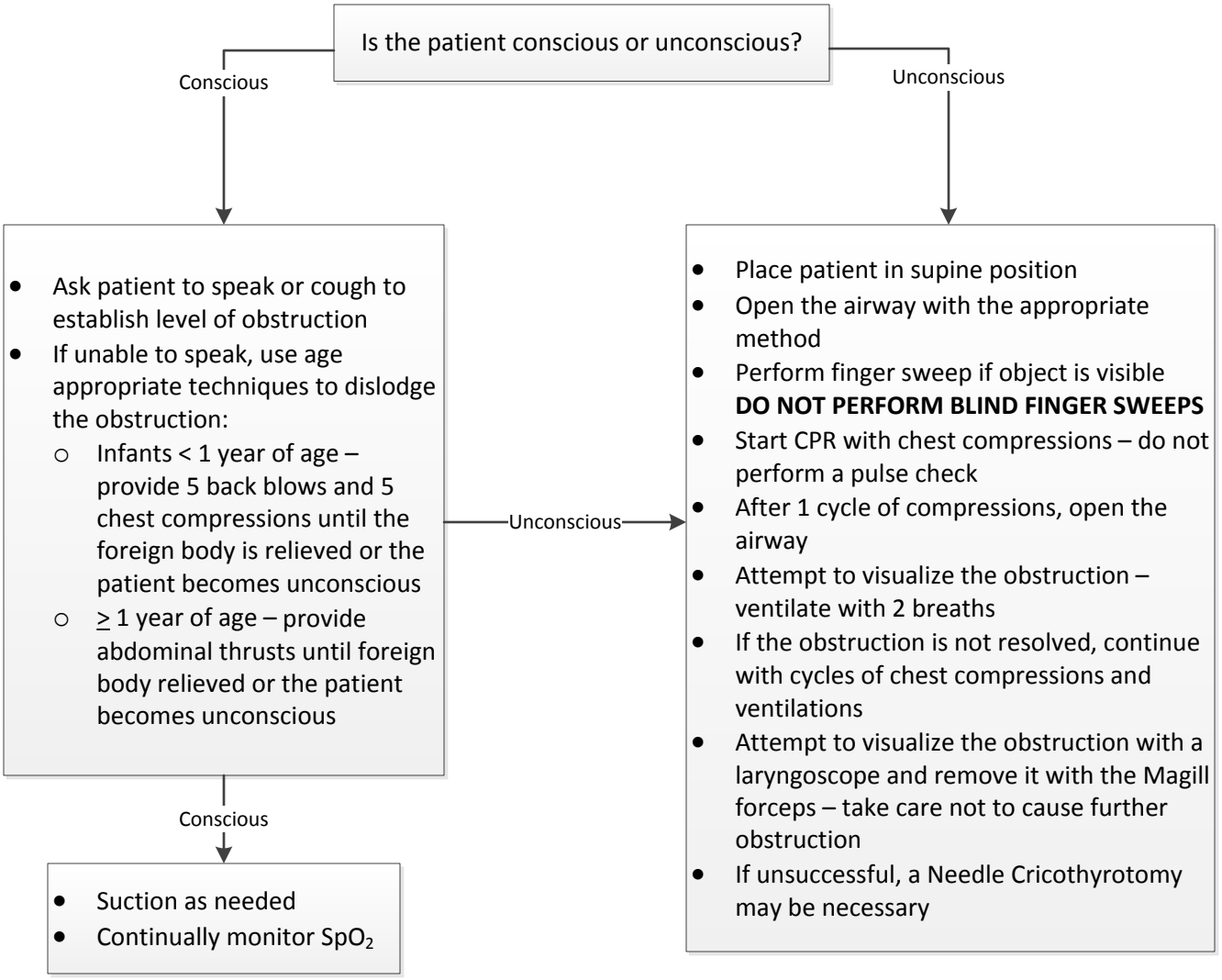
Pediatric Airway Obstruction

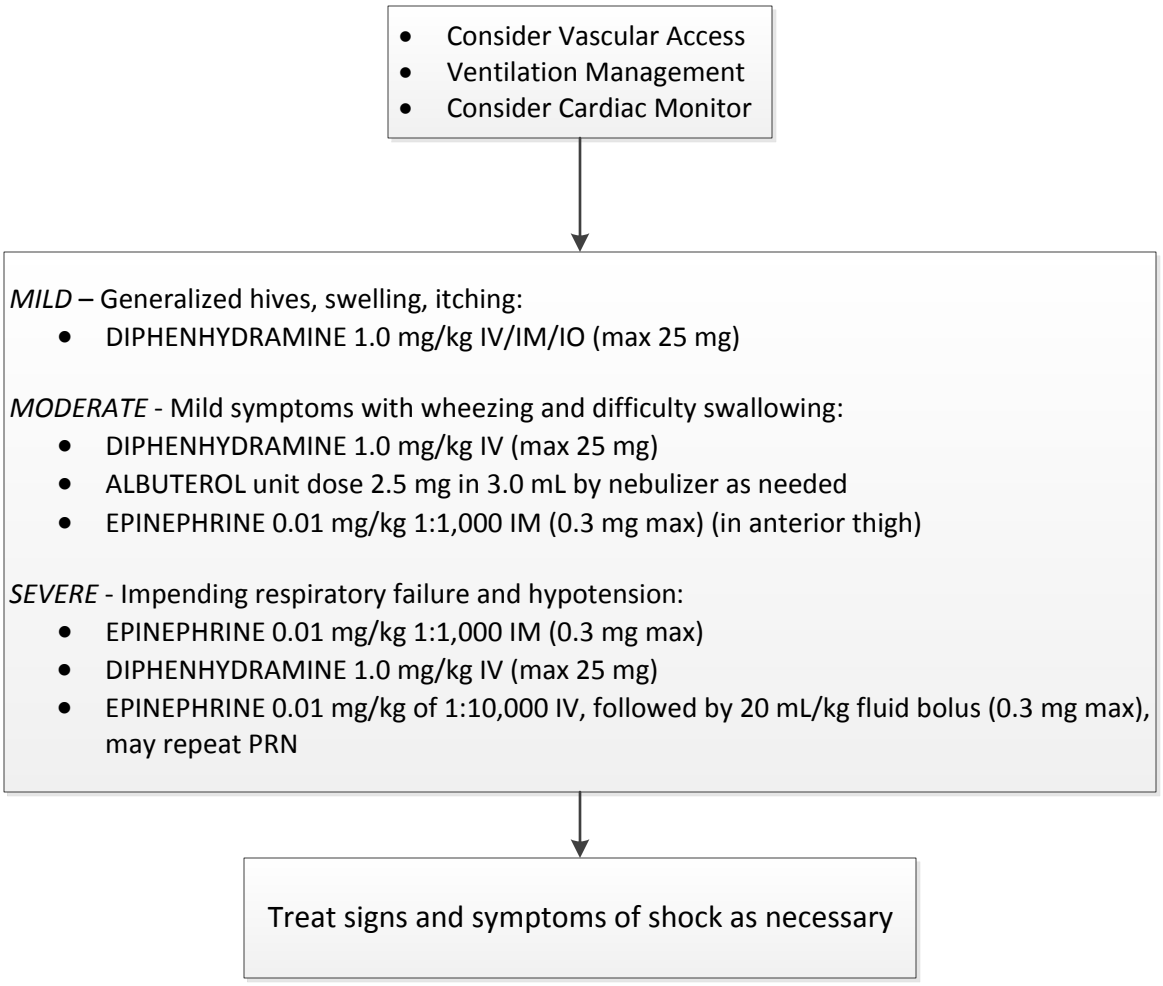


Pearls:

- If the patient presents with trismus and noisy respirations, insert a NPA and attempt to assist ventilations with a BVM.
- Avoid hyperventilation.
- Maintain $EtCO_2$ at 35-45.

Pediatric Allergy/Anaphylaxis

Anaphylaxis is defined as an acute onset of an illness (over minutes to several hours) involving the skin, mucosal tissue, or both (e.g., generalized hives, pruritus or flushing, swollen lips-tongue-uvula) and respiratory compromise (e.g., dyspnea, wheeze-bronchospasm, stridor, reduced peak expiratory flow, hypoxemia) and/or reduced blood pressure (BP) or associated symptoms of end-organ dysfunction (e.g., hypotonia [collapse] syncope, incontinence).



Patient restraint – when patient is a threat to themselves, bystanders or EMS personnel

- Patients may be restrained with soft restraints
- Restraining opposing muscle groups (swimmers position) is most effective; never restrain in prone/hog-tied position
- Assess distal CMS after restraint, every 10 minutes
- Maintain and monitor the oxygen saturation
- Obtain vascular access as needed
- Apply cardiac monitor as needed – **Required with chemical restraint**
- Document reasons for restraint
- Incarcerated person may be restrained at the discretion of Law Enforcement
  - For handcuffed patients, request Law Enforcement accompaniment

Consider *Pediatric Pain Management/ Sedation* protocol

Some patients may bypass the nearest trauma center and be directly transferred to a burn center based on the destination protocol.

Chemical Burns/Hazmat Contamination

- Protect rescuer from contamination
- Remove all clothing and solid chemical which might provide continuing contamination
- Decontaminate patient using running water for 15 minutes if patient is stable
- Assess and treat associated injuries and evaluate for systemic symptoms
- Wrap burned area in clean dry cloth
- Keep patient warm after decontamination
- Contact hospital as soon as possible with type of chemical contamination for consideration of additional decontamination prior to entry into ED

↓

Consider *Pediatric Pain Management/Sedation* protocol

Electrical Burn/Lightning

- Protect rescuers from live electric wires
- Separate victim from electrical source when safe for rescuers
- Initiate CPR as needed
  - For victims in cardiac arrest, treatment should be early, aggressive, and persistent
  - Victims with respiratory arrest may require only ventilation and oxygenation to avoid secondary hypoxic cardiac arrest
  - Resuscitation attempts may have high success rates and efforts may be effective even when the interval before the resuscitation attempt is prolonged
- Place patient on cardiac monitor
- Obtain vascular access
- Treat any thermal burns as outlined above
- Assess for other injuries

↓

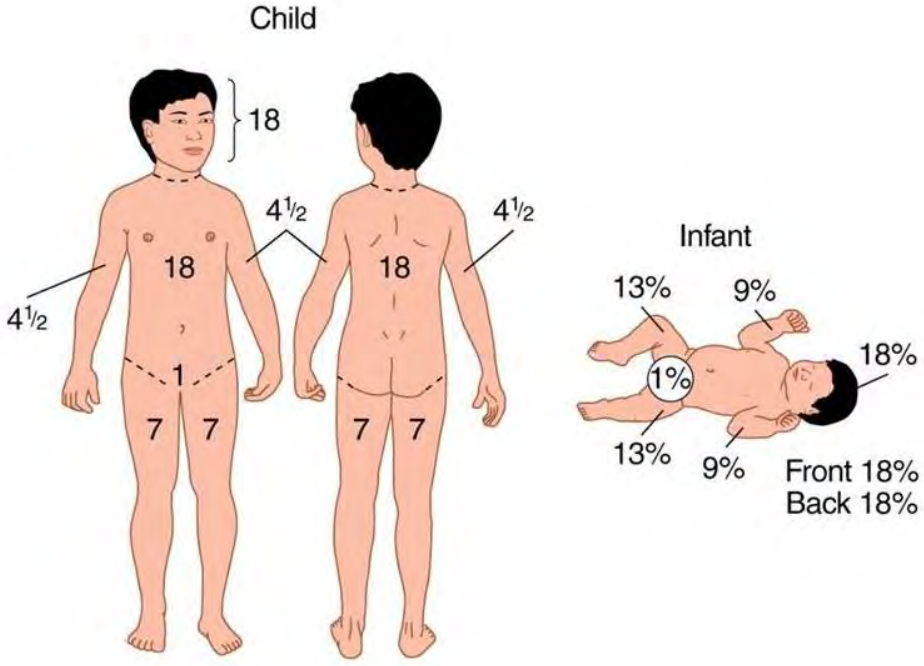
- Consider *Pediatric Pain Management/Sedation* protocol
- Treat dysrhythmias per protocol

Some patients may bypass the nearest trauma center and be directly transferred to a burn center based on the destination protocol.

Thermal Burns

- Remove clothing which is smoldering and non-adherent to the patient
- Assess oxygenation and administer OXYGEN as needed
- Assess and treat associated trauma
- Remove rings, bracelets and other constricting objects
- Determine burn body surface area (BSA)
  - If ≤ 10% body surface area burned, use moist saline dressing for patient comfort
  - If burn is moderate to severe (> 10% BSA), cover with clean, dry dressings
- Obtain vascular access
- Administer IV fluids as follows:
  - ≤ 5 years old – 125 mL per hour
  - 6-12 years old – 250 mL per hour

Consider *Pediatric Pain Management/Sedation* protocol



Pearls:

- Parkland Burn Formula – 4 mL NS x BSA (%) x body weight (kg)= total fluids
  - Administer 50% of total fluids in first 8 hours from time of injury
  - Administer 50% of total fluids over next 16 hours
- BSA is calculated for partial thickness and full thickness burns.

Pediatric Cardiac - Arrest

- Unconscious and unresponsive
- Pulseless
- Does not meet *Resuscitation/Prehospital Death Determination* protocol

↓

- Begin CPR - pulse check/rhythm interpretation every 2 minutes
  - Continue CPR following all pulse checks as indicated by Pt condition
- Place patient on cardiac monitor or AED
- Manage airway as indicated by Pt condition
- Consider reversible causes

VF, pVT, TdP

↓

- Defibrillate at 2 J/kg
- Obtain vascular access

EPINEPHINE 0.01 mg/kg 1:10,000 IV/IO or 0.1 mg/kg 1:1,000 ETT every 3- 5 minutes

- Consider BIAD or ETT

↓

Shockable rhythm

Yes

↓

- Defibrillate at 4 J/kg
- AMIODARONE 5 mg/kg IV/IO; may repeat x 2 if refractory VF/VT (max 15 mg/kg)

<u>OR</u>

- LIDOCAINE 1.0 mg/kg IV/IO (max 3 mg/kg)
- If no IV/IO access LIDOCAINE 2.5 mg/kg ETT, may repeat x 1. If IV/IO access is established after ETT dose, may repeat at 1 mg/kg IV/IO
- If the patient converts to a perfusing rhythm after administration of LIDOCAINE start LIDOCAINE infusion at 20-50 mcg/kg/min

Asystole/PEA

↓

Obtain vascular access

↓

- EPINEPHINE 0.01 mg/kg 1:10,000 IV/IO or 0.1 mg/kg 1:1,000 ETT every 3- 5 minutes
- Consider BIAD or ETT

↓

Shockable rhythm

Yes

↓

Use VF, pVT, TdP as indicated

- Check pulse if organized rhythm
- Use Asystole/PEA as indicated
- Consider consultation of **Medical Control** for termination of efforts
  - Minimum of 3 rounds of medication are required prior to contact

Pearls:

- Hypoxia is the leading cause of cardiac arrest in pediatric patients.
- Use caution when administering two or more ventricular antidysrhythmics, as it may have a proarrythmic effect.
- Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated.
- DO NOT HYPERVENTILATE.
- Reassess and document ETT placement using auscultation and $EtCO_2$ capnography.
- Adult paddles/pads may be used on children weighing greater than 15 kg.

- Ventilation Management (Primary cause of Bradycardia in pediatrics is hypoxia)
- Cardiac Monitor
- Establish vascular access

↓

HR < 60 bpm causing hypotension, altered mental status, poor perfusion, or shock

↓

- CPR
- EPINEPHRINE 0.01 mg/kg IV/IO 1:10,000 q 3-5 min; MAX single dose 1 mg
- ETT 0.1 mg/kg 1:1,000

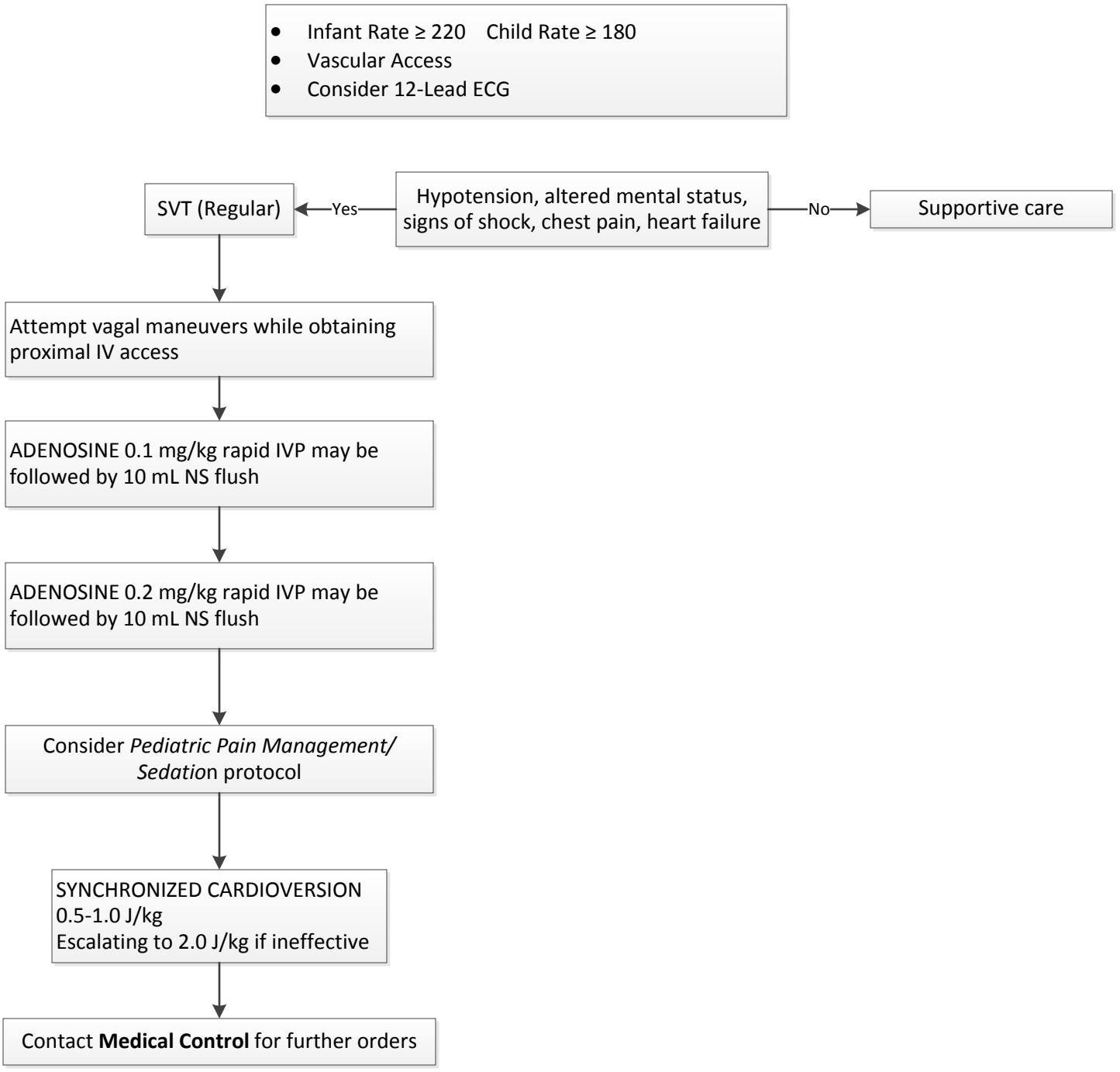
↓

If Refractory:

- ATROPINE for primary AV Block or increased vagal tone 0.02 mg/kg IV/IO q 5 min
  - Min single dose 0.1 mg – max single dose 0.5 mg
  - ETT: 0.04 mg/kg
- Consider transcutaneous pacing with sedation

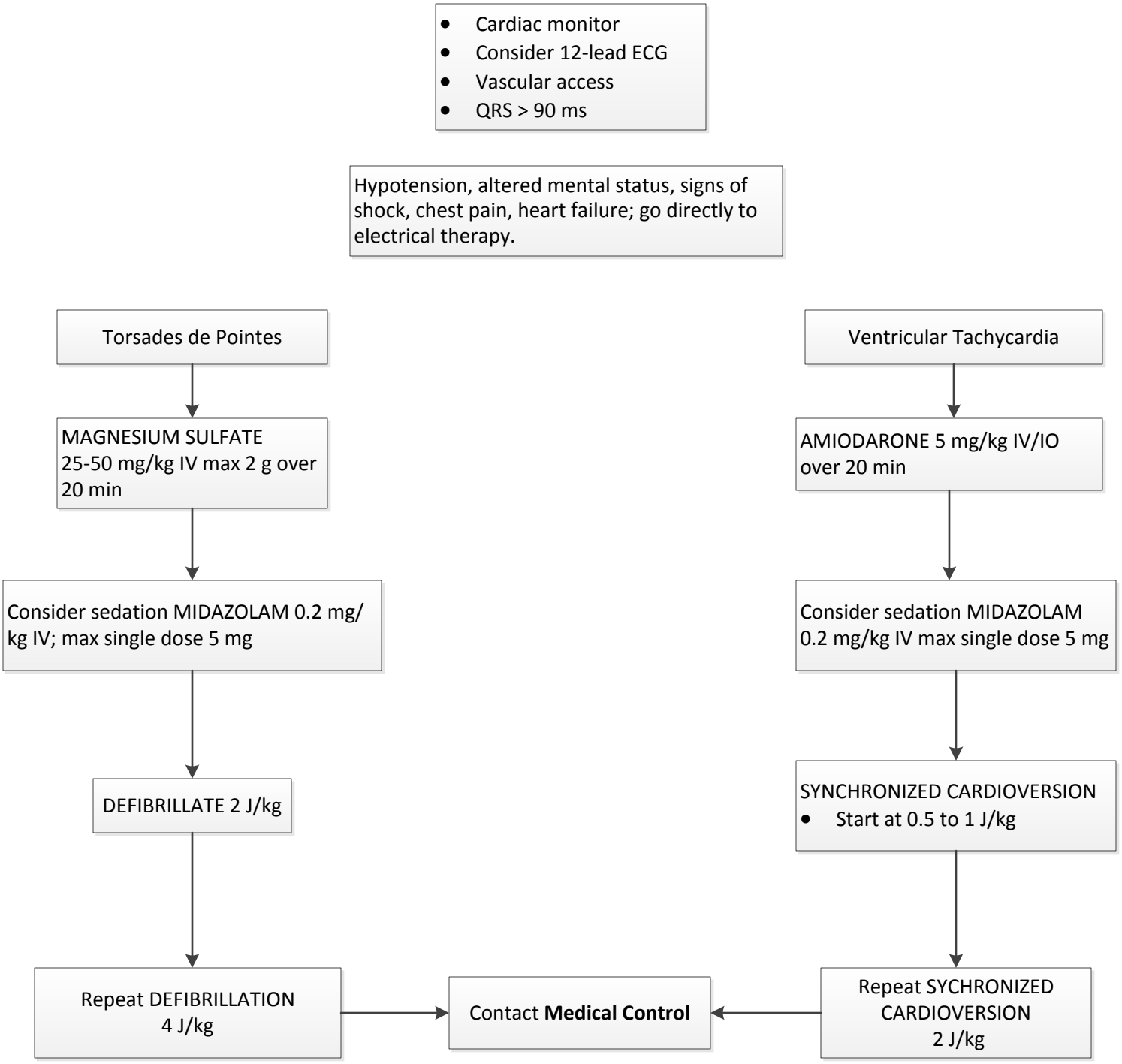
Pearls:

- Emergency TCP is indicated in bradycardia due to complete heart block or sinus node dysfunction unresponsive to ventilation, oxygenation, chest compressions, and medications, especially if it is associated with congenital or acquired heart disease.



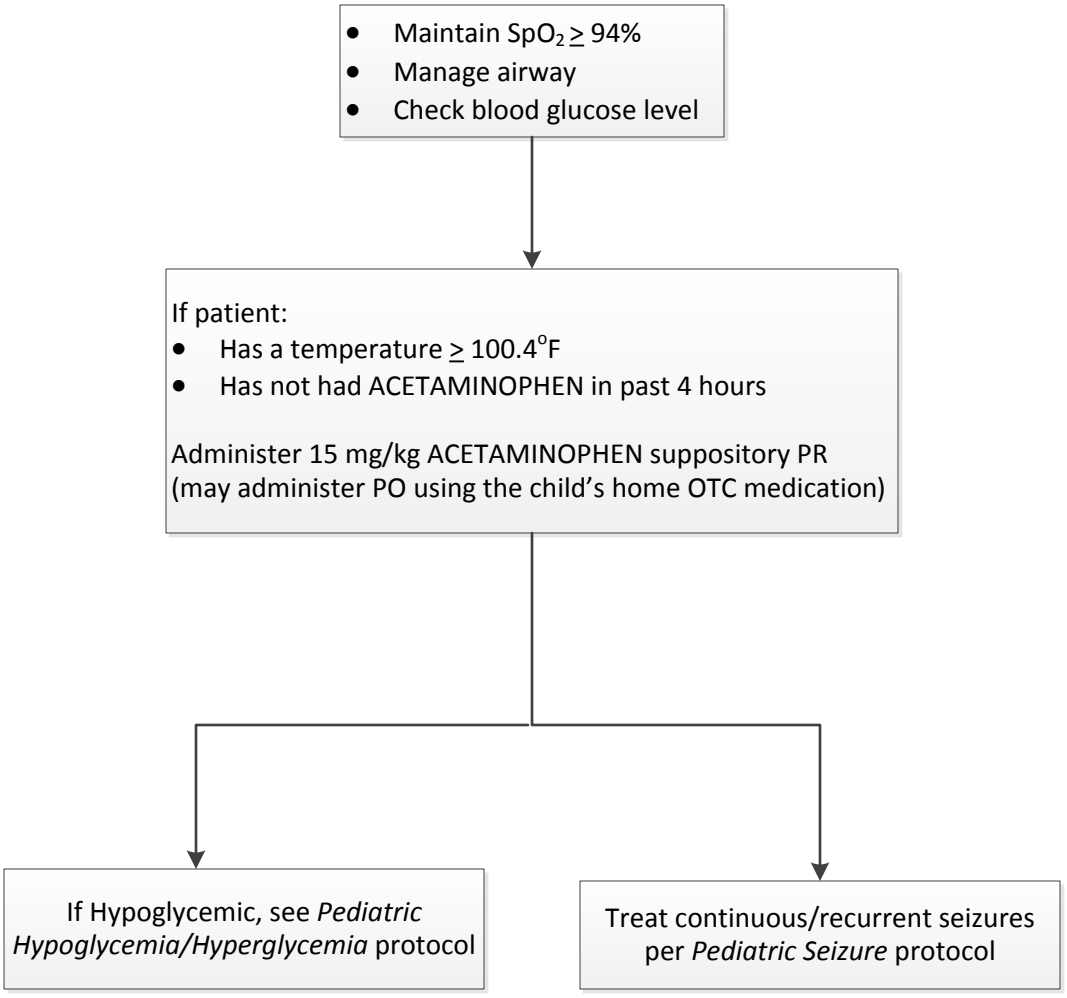
Pearls:

- QRS width > 90 ms is considered wide and possibly SVT with aberrancy and rarely VT.
- May go directly to Cardioversion at any time if severely symptomatic or patient deteriorating.
- Consider alternate causes such as fever, dehydration, caffeine/energy drink consumption, electrolyte imbalance, drug use.



Pearls:

- Consider most wide complex tachycardias in children as an aberrantly conducted SVT. Obtain 12 lead ECG if practical, but do not delay treatment.
- May go directly to defibrillation in Torsade de Pointes if severely symptomatic.



Pearls:

- Do not utilize cooling measures in a pediatric patient < 28 days of age.
- Excessive fluid boluses provided to febrile children may lead to complications – administration of IV fluid boluses should be undertaken with extreme caution.
- Consider a pediatric patient to have meningitis or sepsis until proven otherwise.
- Cocaine, amphetamines and salicylates may elevate body temperatures.
- Sweating generally disappears as body temperatures rise over 104°F.
- Intense shivering may occur as patient is cooled.
- Remove clothing and begin passive cooling. Do not use cold packs or ice to cool the patient.
- Dropping the temperature of a patient too quickly may cause seizures.

- Establish baseline level of consciousness
- Manage the airway and breathing as indicated by the patient's condition
- Consider possible reversible causes prior to placement of an advanced airway
- Consider Cardiac Monitor

- BGL < 60 mg/dl (< 40 mg/dl in Neonates)
- ORAL GLUCOSE if the patient is alert/ able to protect their own airway
  - ≤ 28 days D10, 2 mL/kg IV/IO/UV
  - ≥ 28 days D25, 2 mL/kg IV/IO
- Max single dose 25 gm
- If no IV Access, GLUCAGON:
  - 0.5 mg IM (< 20 kg)
  - 1.0 mg IM (> 20 kg)
- Reassess BGL after each intervention as necessary; titrate to effect

If BGL > 250 mg/dl NS bolus 10-20 mL/kg over 1 hour

Pearls:

- Neonate considerations for infants ≤ 28 days old (4 weeks).
- Heel stick for patients < 6 months old.
- Fluid management in DKA is complex and may contribute to risk of cerebral edema.

Pediatric Hyperthermia/Heat Emergency

Heat Exhaustion

- Body temperature up to 104°F/40°C
- Minor CNS changes, weakness, dizziness, fainting
- Nausea, headache, dilated pupils, no appetite
- Skin clammy, pale and moist
- Muscle cramps/pain
- NS bolus 20 mL/kg IV/IO; maintain age appropriate SBP ≥ 70 + (2 x age); max 60 mL/kg

Heat Stroke

- Body temperature 104°F/40°C or greater
- Altered mental status or loss of consciousness
- Convulsions, seizures
- Tachycardia, hypotension
- Skin (hot, red, dry)
- Severe vomiting or diarrhea
- NS bolus 20 mL/kg IV/IO; maintain age appropriate SBP ≥ 70 + (2 x age); max 60 mL/kg

- Consider Cardiac Monitor and attempt to obtain body temperature
- Remove patient from hot environment and remove clothing
- Begin active cooling of patient

Treat seizures per the *Pediatric Seizure* protocol

Pearls:

- **Heat exhaustion can rapidly progress to heat stroke if untreated.**
- Heat stroke requires very aggressive cooling.
- Active cooling includes application of cold packs (not directly on skin), fanning, air conditioner or air movement.
- Intense shivering may occur as patient is cooled, discontinue aggressive cooling methods.
- Sweating generally disappears as body temperatures rise over 104°F/40°C.
- Wet sheets without good airflow may increase body temperature.
- Neonate ≤ 28 days fluid bolus 10 mL/kg IV/IO.

Pediatric Hypothermia/Cold Emergency

- Remove wet clothing and protect from environment
- Monitor temperature

Localized cold injury

- General wound care
- DO NOT rub skin to warm
- DO NOT allow refreezing

Systemic hypothermia

- Active warming measures
- Vascular access
- Cardiac Monitor
- Consider warm NS bolus 20 mL/kg IV/IO; maintain age appropriate SBP $\geq$ 70 + (2 x age), max 60 mL/kg

Transport all severely hypothermic patients regardless of response to treatments. Follow appropriate protocols for other treatment/transport decisions.

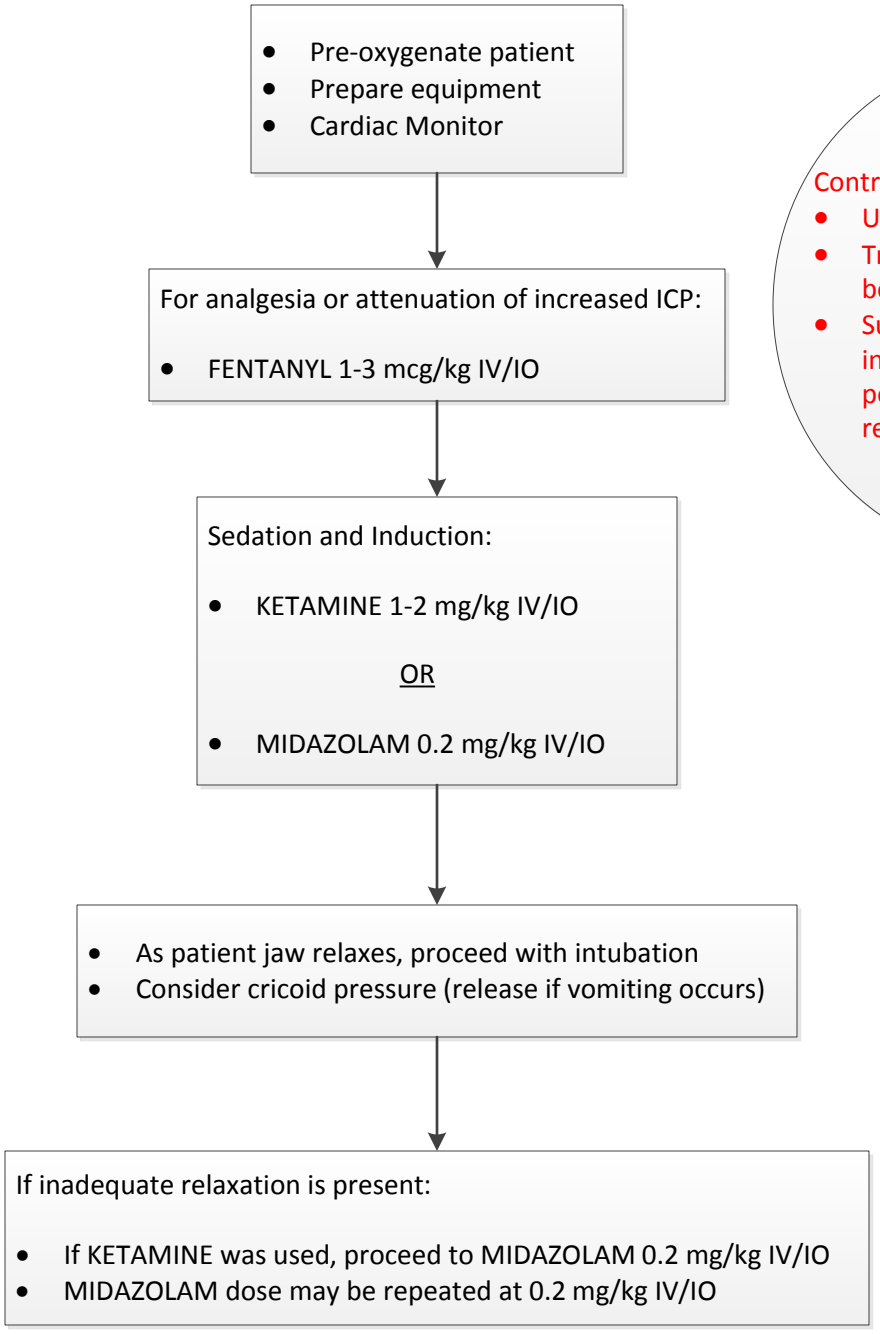
Patient with pulse	
Core Temperature	Treatment
93.2^{O}F – 96.8^{O}F	Passive re-warming and active external re-warming
86^{O}F – 93.2^{O}F	Passive re-warming and active external re-warming to trunk areas only

Patient without a pulse	
Start CPR, defibrillate once if indicated	
Core Temperature	Treatment
< 86^{O}F	CPR, withhold IV medications, limit to one shock for VF/VT/Torsades
> 86^{O}F	CPR, give IV medications at longer intervals, repeat defibrillation for VF/VT/Torsades, passive re-warming and active external re-warming to trunk areas only

Pearls:

- Extremes of age are more prone to cold emergencies.
- If temperature is unknown, treat the patient based on suspected temperature.
- For the severely hypothermic patient, perform procedures gently and monitor cardiac rhythm closely.
- Active warming includes hot packs that can be used on the armpit and groin; care should be taken not to place the packs directly on the skin.
- If available, core temperature is preferred.

Pediatric Medication Assisted Intubation

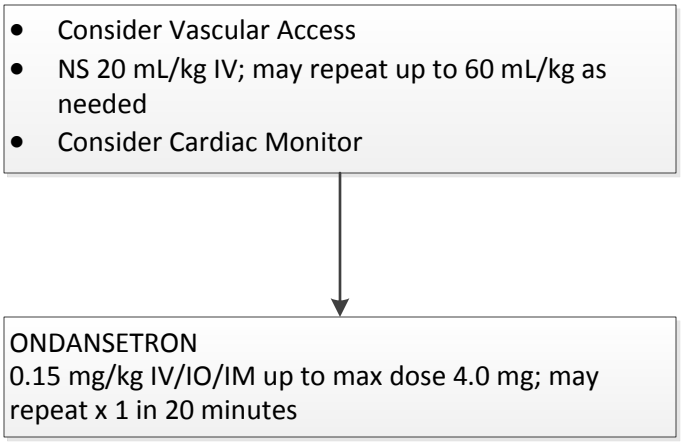


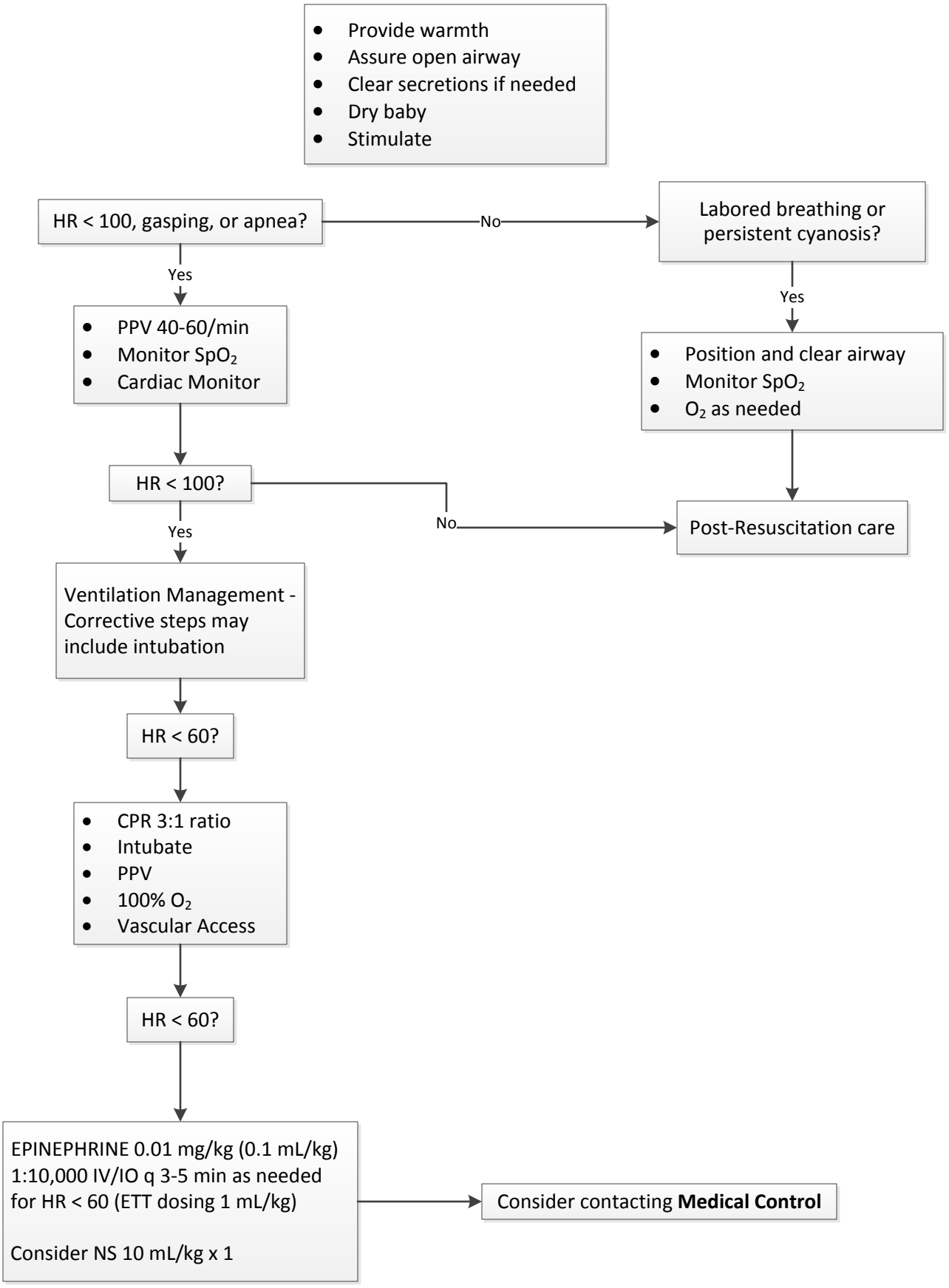
Contraindications:

- Upper *Airway Obstruction*
- Tracheal obstruction (foreign body, tumor)
- Suspected pharyngeal infection (epiglottitis, peritonsilar or retropharyngeal abscess)

Pearls:

- Pharmacological agents are used to assist the provider in performing intubation in patients with high intubation difficulty due to excessive gag reflux. In these instances, protecting the airway is a potentially life-saving maneuver. These patients may include: Isolated *Head Trauma*, *Multisystem Trauma*, *Overdose*, Status Epilepticus, *Respiratory Failure*, *Severe Burns*, or based on anticipated clinical course.
- Most pediatric airways can be effectively managed with BLS interventions.


Consider Vascular Access
NS 20 mL/kg IV; may repeat up to 60 mL/kg as needed
Consider Cardiac Monitor
ONDANSETRON
0.15 mg/kg IV/IO/IM up to max dose 4.0 mg; may repeat x 1 in 20 minutes


Provide warmth
Assure open airway
Clear secretions if needed
Dry baby
Stimulate
HR < 100, gasping, or apnea?
No
Labored breathing or persistent cyanosis?
Yes
Yes
PPV 40-60/min
Monitor SpO2
Cardiac Monitor
Position and clear airway
Monitor SpO2
O2 as needed
HR < 100?
No
Post-Resuscitation care
Yes
Ventilation Management - Corrective steps may include intubation
HR < 60?
CPR 3:1 ratio
Intubate
PPV
100% O2
Vascular Access
HR < 60?
EPINEPHRINE 0.01 mg/kg (0.1 mL/kg) 1:10,000 IV/IO q 3-5 min as needed for HR < 60 (ETT dosing 1 mL/kg)
Consider NS 10 mL/kg x 1
Consider contacting Medical Control

Pediatric Neonatal Resuscitation

APGAR	Score=0	Score=1	Score=2
Activity/Muscle Tone	Absent	Arms/legs flexed	Active Movement
Pulse	Absent	Below 100	Above 100
Grimace/Reflex Irritability	No response	Grimace	Sneeze, cough, pulls away
Appearance/Skin Color	Blue-Grey, pale all over	Normal, except extremities	Normal over entire body
Respiration	Absent	Slow, irregular	Good, crying

Targeted pre-ductal SpO_2 after birth

1 minute	60% - 65%
2 minute	65% - 70%
3 minute	70% - 75%
4 minute	75% - 80%
5 minute	80% - 85%
10 minute	85% - 95%

Pearls:

- Neonate considerations for infants ≤ 28 days (4 weeks).
- Deep suctioning is no longer recommended.
- Most newborns requiring resuscitation will respond to BVM, compressions and Epi. For those that do not, consider hypovolemia, pneumothorax, and/or hypoglycemia (BG < 40).
- Document all times (delivery, contraction, duration, frequency).
- Record APGAR at one and five minutes after birth.
- Ideal placement of pulse oximetry is on the right hand for pre-ductal SpO_2. See attached chart for target ranges.
- Pre-term newborns are susceptible to oxygen toxicity.
- Transport mother and infant together whenever possible.
- Maintaining temperature of newborn is essential.

Pediatric Overdose/Poisoning

Poison Control - (800) 222-1222 OR (775) 982-4129

- Determine cause of poisoning/overdose, treat as appropriate
- Cardiac Monitor

Carbon monoxide (CO)

- Place patient on CO monitor, do not rely on pulse oximeter readings
- If patient's SpCO is:
  - 0 – 5 % - Considered normal for non-smokers. When > 3% with symptoms, consider high flow oxygen and recommend transport. If asymptomatic, no further medical evaluation necessary of SpCO. Counsel patients on signs and symptoms to watch, offer transport to ED, if refused complete AMA.
  - 5 – 10 % - Considered normal for smokers, abnormal for non-smokers. If symptoms are present, consider high flow oxygen and recommend transport to ED.
  - 10 – 15 % - Abnormal in any patient. Assess for symptoms, consider high flow oxygen and recommend transport to ED.
  - > 15 % - Significantly abnormal in any patient. Administer high flow oxygen and recommend transport to ED.
  - > 30 % - Consider transport/referral to hyperbaric facility (consider referral to hyperbaric facility if > 25% for patients with ALOC or pregnant).
- If patient has altered LOC, neurological impairment, or > 25% SpCO, treat with 100% O_2 and transport to nearest appropriate facility
- Continue supportive therapies as needed

Opiates

NALOXONE 0.1 mg/kg IV/IO/IM/IN, max single dose 0.5 mg; may repeat to a max dose of 10 mg

Tricyclic Anti-Depressants

- For patients with any of the following:
  - Dysrhythymias, or QRS of ≥ 120 ms
  - Hypotension
  - Seizure
  - Cardiac Arrest
- Administer SODIUM BICARBONATE 1.0 mEq/kg IV
- If patient is intubated, ventilate patient to maintain $EtCO_2$ level of 28-30 mmHg

Organophosphate Poisoning (Insecticide)

ATROPINE 0.02 mg/kg IV/IO q 3-5 minutes as needed to decrease secretions and ventilator resistance; min single dose 0.1 mg

Agents:

- Acetaminophen: Initially normal or N/V. Tachypnea and AMS may occur later. Renal dysfunction, liver failure and/or cerebral edema may manifest.
- Depressants: Decreased HR, BP, temp and RR.
- Anticholinergic: Increased HR, increased temperature, dilated pupils and AMS changes.
- Insecticides: May include S/S of organophosphate poisoning.
- Solvents: N/V, cough, AMS.
- Stimulants: Increased HR, BP, temperature, dilated pupils, seizures, and possible violence.
- TCA: Decreased mental status, dysrhythmias, seizures, hypotension, coma, death.
- **Beta Blocker Overdose**: call for possible administration of GLUCAGON.
- **Calcium channel blocker**: call for possible administration of CALCIUM CHLORIDE and/or GLUCAGON.

Pediatric Overdose/Poisoning

Poison Control - (800) 222-1222 OR (775) 982-4129

Cyanide Exposure

For known cyanide poisoning in the absence of exposure to smoke, refer to the cyanide antidote parameters contained within the *Pediatric Smoke Inhalation* protocol

Pearls:

- Powdered HYDROXOCOBALAMIN will be reconstituted with 200 cc 0.9% normal saline or lactated ringers. Then repeatedly invert for 60 seconds PRIOR TO administration. DO NOT SHAKE.
- If patient is suspected to have narcotic overdose/hypoglycemia, administer NARCAN/GLUCOSE prior to BIAD device/ intubation.
- CALCIUM CHLORIDE is contraindicated in patients with suspected digitalis toxicity.
- Cyanide toxicity should be suspected for any patient being treated for Carbon Monoxide toxicity from smoke inhalation. Conscious patients with symptoms will require **Medical Control** prior to administration.
- Consider a second line if possible for administration and avoidance of possible medication incompatibilities.
- For suspected ingestion, consider NG tube placement.
- Overdose or toxin patients with significant ingestion/exposure should be closely monitored and aggressively treated. Do not hesitate to contact **Medical Control** if needed.
- In the case of cyanide poisoning, altered mental status may be profound. Profound altered mental status can be defined as a deficit that includes disorientation, bewilderment and difficulty following commands.

Pediatric Pain Management/Sedation

Assess and document patient's condition and vital signs before and after treatment (at minimum every 15 minutes). Pain should be assessed using a combination of physiologic indicators, including but not limited to, 1-10 pain scale, and Bloomsbury Sedation Scale.

- Keep $SpO_2 \geq 94\%$
- Vascular Access
- Consider Cardiac Monitor

Comfort measures:
- Patient positioning
- Splinting
- Ice

Pain Management

- NITROUS OXIDE as long as the patient is able to follow directions, if available
- FENTANYL 1.0 mcg/kg IN/IM/ Slow IV/IO may repeat q 5 as needed
- MORPHINE SULFATE 0.1 mg/kg IV/IO/IM max single dose 5 mg may repeat q 10 as needed
- KETAMINE 0.5 mg/kg IV/IO/IM repeat q 15 min

Contact **Medical Control** for additional doses

Sedation

MIDAZOLAM 0.2 mg/kg IV may repeat as needed

Bloomsbury Sedation Scale

3= agitated/restless
2= awake/comfortable
1= awake/calm
0= roused by voice, remains calm
-1= roused by movement/stimulation
-2= roused by painful stimulation
-3= cannot arouse

Pearls:
- Ophthalmic anesthetics may be used for ocular injuries, 1-2 drops, as needed.
- Consider prophylactic ONDANSETRON use when administering pain medication.
- Give pain management cautiously to patients who are bradycardic.
- Pain severity (1-10) is a vital sign to be recorded before and after medication administration and patient hand off.
- Monitor BP and respirations closely as sedative and pain control agents may cause hypotension and/or respiratory depression.
- Consider patient's age, weight, clinical condition, use of drugs/alcohol, exposure to opiates, when determining initial opiate dosing. Weight based dosing may provide a standard means of dosing calculation, but does not predict response.
- Exercise caution when administering opiates and benzodiazepines; this combination results in deeper sedation with significant risk of respiratory compromise.

- Cardiac monitor
- SpO_2 and $EtCO_2$ monitoring

Bronchospasm/Asthma/Reactive Airway Disease

ALBUTEROL 2.5 mg in 3.0 mL via HHN until symptoms improve

Duoneb 2nd & 3rd HHN ** additional HHNs use ALBUTEROL

If patient's condition deteriorates, consider:
EPINEPHRINE 0.01 mg/kg 1:1,000 IM anterior thigh q 15 mins; MAX 0.3 mg

Impending Respiratory Failure:
EPINEPHRINE 0.01 mg/kg of 1:10,000 q 3-5 mins IV/IO; MAX 1 mg

- ETT: 0.1 mg/kg 1:1,000 EPINEPHRINE q 3-5 mins

Status Asthmaticus
MAGNESIUM SULFATE 25-50 mg/kg mixed in 100 mL NS IV infusion over 20 mins MAX 2 gm

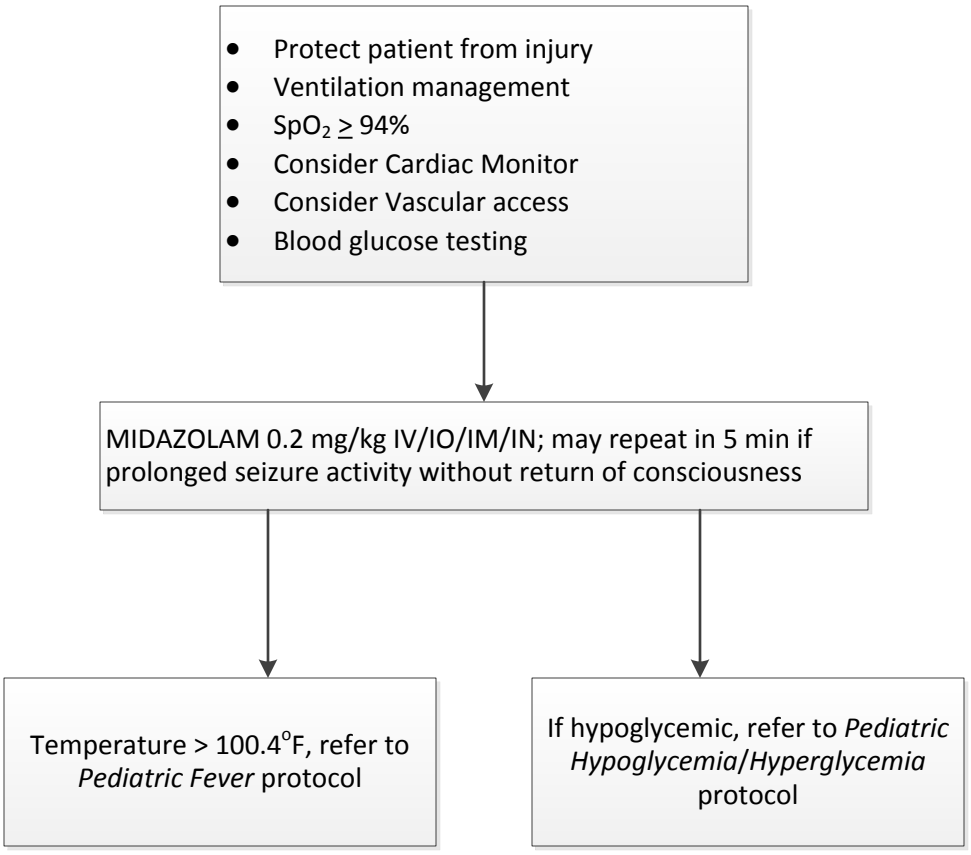
Suspected Croup

< 6 months 0.25 mL 2.25% RACEMIC EPINEPHRINE in 3 cc NS via HHN
OR
< 6 months 0.25 mg of EPINEPHRINE in 3 cc NS via HHN (may repeat x 1 in 20 minutes)

> 6 months 0.5 mL 2.25% RACEMIC EPINEPHRINE in 3 cc via HHN
OR
> 6 months 0.5 mg of EPINEPHRINE in 3 cc via HHN (may repeat x 1 in 20 minutes)

Pearls:

- Duoneb equivalent can be achieved by combining 0.5 mg IPRATROPRIUM in 2.5 mg ALBUTEROL.
- Be prepared to assist ventilations as needed.
- Pulse oximetry and end tidal continuous waveform capnography must be monitored.
- Allow the patient to assume a position of comfort.
- Respiratory distress secondary to drowning may require PEEP and/or nebulizer treatment.
- Croup may respond positively to cold environment and nebulized saline.



Pearls:

- Benzodiazepines are well tolerated in pediatrics; do not delay IM/IN administration while initiating an IV.
- Status epilepticus is defined as two or more seizures successively without an intervening lucid period, or a seizure lasting over five minutes.
- Grand mal seizures (generalized) are associated with loss of consciousness, incontinence and or trauma.
- Focal seizures affect only part of the body and are not usually associated with a loss of consciousness.
- Be prepared to address airway issues and support ventilations as needed.

Pediatric Smoke Inhalation

Individuals may present with soot around nose and mouth after exposure to smoke from a structure fire or other sources (vehicle fire, industrial gases, confined spaces, etc.)

- Keep $SpO_2 \geq 94\%$
- Ventilation management
- Cardiac Monitor

↓

- Vascular Access
- NS bolus 20 mL/kg up to 60 mL/kg for hypoperfusion

↓

Other treatment protocols as indicated

If the patient presents with cardiac arrest, hypotension, altered mental status or other signs and symptoms consistent with Cyanide (CN) poisoning, administer:

HYDROXOCOBALAMIN 70 mg/kg IV over 15 minutes

Complete Starting Dose: 5 g

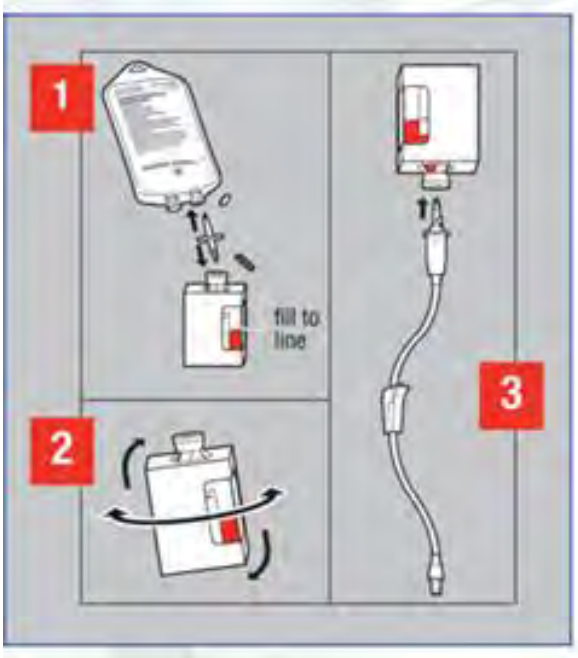
1 **Reconstitute:** Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride injection* to the vial using the transfer spike. **Fill to the line.**

*0.9% Sodium Chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringers injection and 5% Dextrose injection have also been found to be compatible with hydroxocobalamin and may be used if 0.9% Sodium Chloride is not readily available

2 **Mix:** The vial should be repeatedly inverted or rocked, not shaken, for at least **60 seconds** prior to infusion.

- CYANOKIT solutions should be visually inspected for particulate matter and color prior to administration
  - Discard solution if particulate matter is present or solution is not dark red

3 **Infuse Vial:** Use vented intravenous tubing, hang and infuse over **15 minutes.**



Pearls:

- Signs and symptoms consistent with Cyanide (CN) poisoning include:
  - Weakness, dizziness, headache, stupor, dilated pupils, dyspnea
  - Tachypnea, tachycardia, nausea, vomiting, tightness in the chest
  - Altered LOC, cardiovascular collapse, combativeness, confusion
  - Plasma Lactate concentration ≥ 8 mmol/L
  - Late signs: Cardiac arrest, apnea, bradypnea, hypotension, seizures
- Low $EtCO_2$ can be indicative of an elevated serum lactate level (less than 25).
- If the medication is not available on scene do not delay transport waiting for it.
- Decide early on if you want to intubate as burned airways swell, making intubation difficult.

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OPERATIONAL PROTOCOLS

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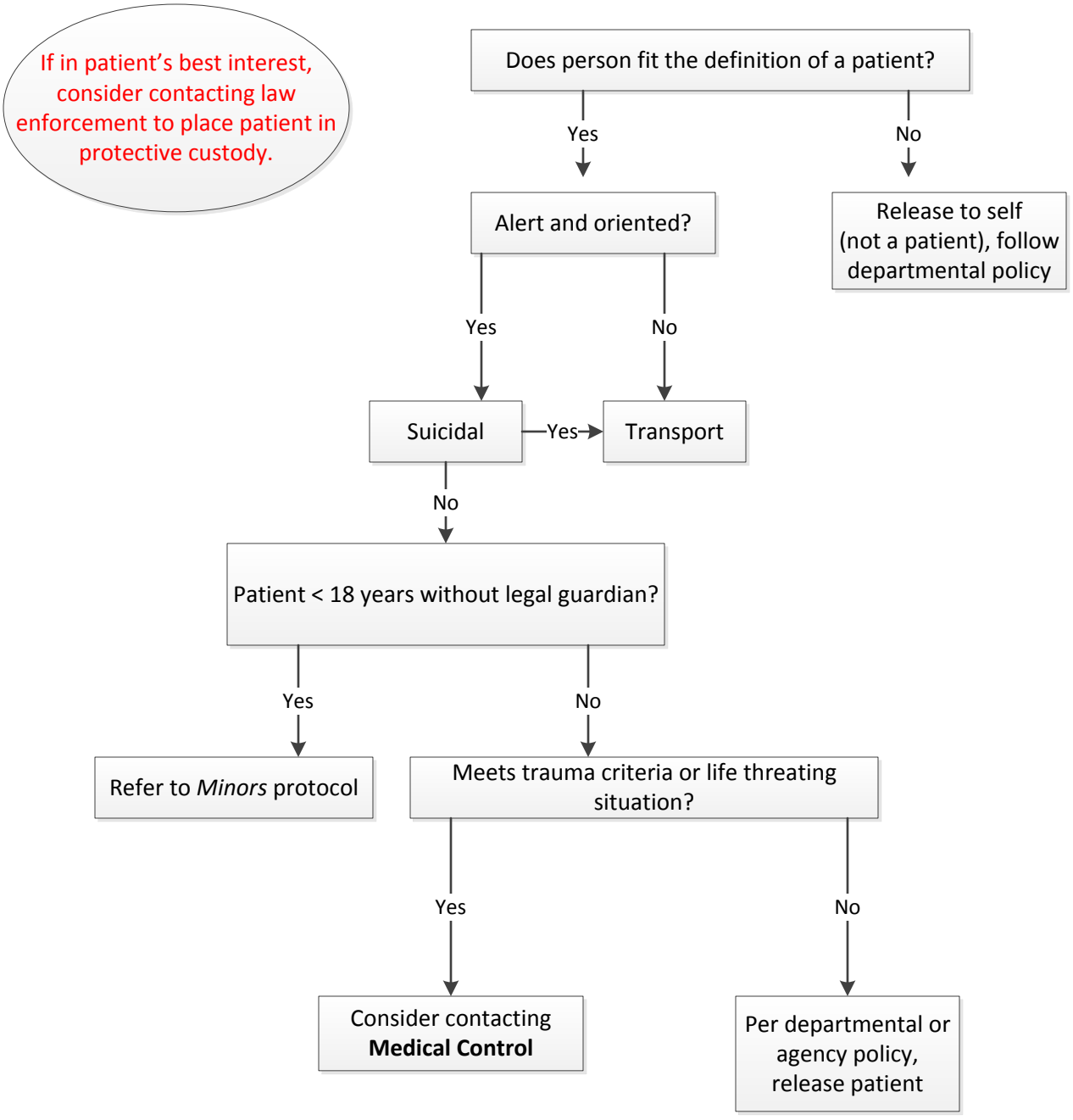
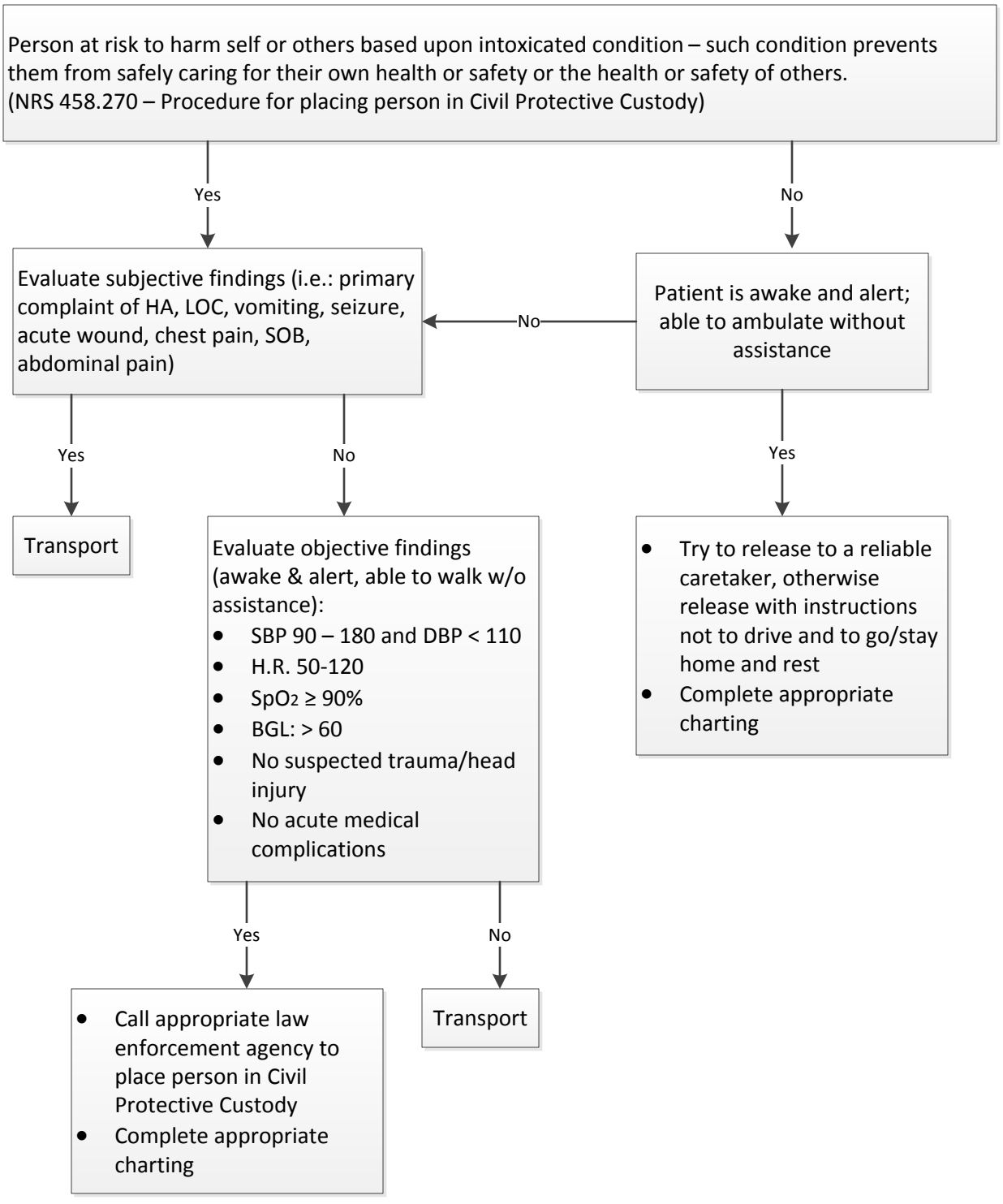
AMA Decision Tree

This applies only to the patient who has capacity and is competent: Patient is stable and able to understand and reiterate to you the problem, risks, and consequences of refusal of care.




Person at risk to harm self or others based upon intoxicated condition – such condition prevents them from safely caring for their own health or safety or the health or safety of others.
(NRS 458.270 – Procedure for placing person in Civil Protective Custody)
Yes
No
Evaluate subjective findings (i.e.: primary complaint of HA, LOC, vomiting, seizure, acute wound, chest pain, SOB, abdominal pain)
No
Patient is awake and alert; able to ambulate without assistance
Yes
No
Yes
Transport
Evaluate objective findings (awake & alert, able to walk w/o assistance):
SBP 90 – 180 and DBP < 110
H.R. 50-120
SpO2 ≥ 90%
BGL: > 60
No suspected trauma/head injury
No acute medical complications
Try to release to a reliable caretaker, otherwise release with instructions not to drive and to go/stay home and rest
Complete appropriate charting
Yes
No
Call appropriate law enforcement agency to place person in Civil Protective Custody
Complete appropriate charting
Transport

Contact Medical Control When:

- EMS judgment suggests consultation with Medical Control Physician necessary
- EMS provider needs assistance in termination of resuscitation or requesting deviation from protocols
- Protocol requires base physicians contact for medication administration or other procedures
- Patient condition not addressed in protocols

Communication Failure:

- Protocol becomes standing order if:
  - Medical Control cannot be contacted (radio/phone failure)
  - Medical Control physician does not answer after reasonable time
- In the event Medical Control cannot be contacted, care will be delivered in the best interest of the patient.
- Medical crew will follow agency specific guidelines for reporting and review

Document:

- Report in accordance with agency policy
- Treatment requests/approved physician orders
- Time of contact and Medical Control physician's name

Destination

The final destination hospital has profound clinical, personal and financial implications for our patients. Hospitals in the Reno/ Sparks area offer different specialty services and patients may be better served at specific facilities.

Base Hospitals

- **Renown Regional Medical Center (RRMC)**
- **Saint Mary's Regional Medical Center (SMRMC)**
- **Northern Nevada Medical Center (NNMC)**
- **Renown South Meadows Medical Center (RSMMC)**
- **Reno Veteran's Administration (VA)** hospital is not a base hospital, but is an acceptable destination for patients who request it and are accepted prior to transport. Provide the RVA with patient's initials and last four ss#. Hospital will provide notification of acceptance or diversion.
- **Incline Village Community Hospital (IVCH)** is not a base hospital, but is an acceptable destination for patients who request it and are accepted prior to transport.
- Other out-of-area hospitals are acceptable destinations with certain restrictions (i.e. closest hospital to the scene, other appropriate facilities are not bypassed or the patient does not meet trauma criteria).

Catchment Zone

Patients who do not have a hospital preference and originate in one of the defined catchment zones will be transported to the appropriate hospital within that zone. Exceptions include clinical findings, hospital diverts and MCIs. The catchment destinations apply to both ground and air units.

PATIENT DESTINATION TABLE

	RRMC	SMRMC	NNMC	RSMMC	TFH	CTH	IVCH	BMH
Acute Coronary Syndrome (Non STEMI)	X	X	X	X	X	X		
STEMI	X	X	X			X		
Possible Stroke	X	X	X					
Pediatric Airway	X							
Obstetric Emergency	X	X			X	X		X
Neonate	X	X						
State Trauma Criteria	X							
Sexual Assault	X	X	X	X	X	X	X	X

BURN CENTER

- Second and/or third degree burns > 20% body surface area (BSA).
- Second and/or third degree burns > 10% BSA in patients under 10 or over 50 years of age.
- Significant burns that involve the face, hands, feet, genitalia, perineum or major joints.
- Electrical burns, including lightning injury.
- Chemical burns.
- Circumferential burns.
- Inhalation injury.

If the patient meets the criteria AND the burns are not complicated by major trauma, initiate air ambulance response.

TRANSPORT REQUIREMENTS

NAC 450B.774 Procedure when patient refuses transportation to center for treatment of trauma.

1. If a patient at the scene of an injury refuses to be transported to a center for the treatment of trauma after a determination has been made that the patient's physical condition meets the triage criteria requiring transport to the center, the person providing emergency medical care shall evaluate the mental condition of the patient. If the person determines that the patient is competent, the patient must be advised of the risks of not receiving further treatment at the center.

2. If the patient continues to refuse to be transported to the center for the treatment of trauma, the person providing emergency medical care shall request the patient to sign a statement indicating that the patient has been advised of the risks of not receiving further treatment at the center and continues to refuse to be transported to the center.

3. The person providing emergency medical care shall inform a physician at the location to which the person intends to transport the patient of the patient's refusal to be transported before the person leaves the scene of the injury.

Hospital Diversion – Occasionally, facilities may declare divert status for select patients. (Any facility accredited to care for STEMI or Stroke patients, cannot divert those patients, except in the case of an internal disaster.) Document the reason for the diversion and take the patient to the patient's second choice or the closest base hospital. Diversion decisions are typically made without medical control contact.

- **Closed** – The hospital has not capacity/resources to accept any ambulance patient.
- **Critical Care** – The hospital has not capacity/resources to accept ambulance patients who have a high probability of requiring ICU admission; ambulance patients who present in the field as high risk for potential or actual life-threatening health problems. Typically, this refers to patients who demonstrate signs and symptoms of Hemodynamic instability; acute respiratory failure; acute MI or severe CP; complete loss of consciousness or other presentations indicative of the need for critical care nursing or ICU admission. Paramedics/RNs are encouraged to contact the ED Base Station physician directly to clarify questions about any potential transport.
- **ED Capacity** – The ED is over-capacity with long treatment delays in triage that could potentially jeopardize the appropriate placement of incoming ambulance patients. Treat the same as a closed divert.
- **Transport Bypass** – The ED is unable to accept ambulance patients in a timely manner. Treat the same as a closed divert.
- **Internal Hospital Disaster** – The hospital has an in-house emergency such as a fire, electrical outage, hazmat or a major malfunction of critical equipment that may preclude the prevision of save effective care in the emergency department.

Patient/Family Choice – Patient/family choice should dictate hospital destination unless the patient is excluded due to clinical conditions defined below, or hospital choice is on divert status.

Trauma (Special Resources) – Patients who meet State Trauma Criteria shall be transported to the closest Level 1 or 2 trauma center. In most cases, this is RRMC. If the patient (who is deemed competent) meets trauma criteria, but requests another hospital, the provider should appropriately explain the rationale for transport to the trauma center. If the patient still requests another destination, contact medical control at the closest trauma center and obtain physician approval for diversion. By air, patients less than 14 years of age who meet trauma criteria will be transported, when appropriate, to RRMC or U.C. Davis (whichever is closest).

Nearest facility – If a patient and/or family has no hospital preference, the transport shall be to the designated hospital in the catchment area. If outside the catchment zone, the closest hospital by time.

OB (Special Resources) – Within Washoe County, only RRMC and SMRMC have obstetrical services. Obstetrical patients greater than 20 weeks gestation with complaints related to their pregnancy should not be transported to NNMC or RSMMC.

Neurological Disease/Possible Stroke (Special Resources) – Patients with stroke symptoms, with duration of symptoms less than eight hours will be transported to a Primary Stroke Center. With the exception of divert status for an internal hospital disaster; patients that meet stroke criteria cannot be diverted. Outside the Reno/Sparks area, the patient will be transported to the closest hospital. If the patient, family, or patient's physician request another hospital, the patient will be taken to the requested hospital.

Pediatrics (Special Resources) – Pediatric patients 12 years of age or younger are to be taken to Renown Regional Medical Center if they present with a need for intubation, assisted ventilation, or critical care. (Respiratory arrest goes to closest emergency department).

Neonatal (Special Resources) – Any patient 28 days of age or younger that presents with a need for intubation or bag-valve-mask ventilation will be taken to a hospital with a neonatal intensive care unit. Any patient born in the field will be taken to a hospital with a labor and delivery department. In both cases, these facilities are RRMC or SMRMC.

Other – Other acceptable reasons for destination selection are physician/facility request during an inter-facility transfer, transporting with/for another agency, such as fixed wing transfers, etc.

Sexual Assault – Victims of sexual assault who do not meet trauma triage guidelines will be transported to the closest hospital or the hospital of their choice if a medical assessment for injuries is requested. The police will be notified by the hospital for subsequent transport to the SART center upon completion of the medical evaluation and treatment.

Exceptions (Nearest facility) – Patients in cardiac arrest or who are in impending arrest, have an airway obstruction, uncontrolled hemorrhage, imminent delivery, or any condition that may be jeopardized by a longer transport are to be taken to the closest emergency department.

Acute Coronary Syndrome (Special Resources) – Any patient who meets the following criteria is taken to a hospital with interventional cardiology capabilities (RRMC, SMRMC, NNMC):

- 12 lead ECG shows evidence of an active STEMI AND/OR
- History of angioplasty, stent placement, or coronary artery bypass graft AND symptoms suggesting acute coronary syndrome. With the exception of divert status for an internal hospital disaster; patients that meet STEMI criteria cannot be diverted.
- Patients with chest pain and non-STEMI symptoms of acute coronary syndrome may be transported to any facility.

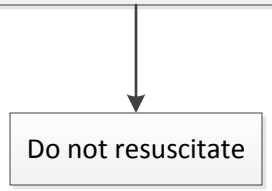
MCI – All hospital destinations during a declared MCI are coordinated and assigned by Medical Dispatch Facility.

Notes:

- Divert status (except for internal hospital disaster) does not apply in cases of airway obstruction, severe shock, cardiac arrest, uncontrolled hemorrhage, imminent delivery or any patient that may be jeopardized by the diversion.
- It also does not apply to patients meeting pediatric and trauma criteria or in the case of an MCI.
- If patient is en route to a facility and the facility goes on divert, make an appropriate attempt to reroute the patient to the closest ED that is not experiencing diversion. Should that not be possible, due to the patient's condition or other circumstance, the patient in transport will not be rerouted and will proceed to the specific ED that was originally identified.
- If a patient demands transport to a hospital on diversion, or if the patient is refusing transport if they will not be taken to their hospital of choice because of the diversion, the patient will be taken to their hospital of choice. Make every effort to inform the patient of the need to go to a hospital not on divert and document the conversation.

Valid POLST indicating DNR or State issued DNR:

- Official document with both patient/legal representative and physician signature on site
- Faxed, copied or electronic version legal and valid
- Verify patient identification
- Verbal instructions from family or friends DO NOT qualify as valid DNR/POLST



Do not resuscitate

Pearls:

- DNR/POLST is **INVALID** if patient indicates they wish to receive life-resuscitating treatment. Document presence of order and how they indicated it was to be revoked. Relay information to future medical providers.
- Family, cannot revoke DNR/POLST unless they hold DPOA/legal guardianship.
- Document presence of a DNR/POLST form with patient's name, physician name and license number if documented.
- POLST provides instruction of degree of resuscitation.
- Nevada providers can accept DNR/POLST of other states.
- If there is concern about the validity of the DNR/POLST begin BLS and contact **Medical Control**.

A Patient Care Record (PCR) will be completed for each incident/patient encounter, in accordance with current agency Policy.

Per the Nevada Administrative Code 450B.180 "Patient" means:
Any person who is sick, injured, wounded, or otherwise incapacitated or helpless and who is carried in an ambulance or air ambulance or is cared for by an emergency medical dispatcher, emergency medical responder, emergency medical technician, advanced emergency medical technician, paramedic or registered nurse.

When providing patient care activities prior to the arrival of the transporting agency, upon the transporting agencies arrival and when prepared to transfer patient care, EMS providers shall provide a verbal report. The verbal report should reflect the patient's status, the treatments that have been accomplished and the potential treatment plan, if necessary. This transfer of care shall be documented in the Patient Care Report (PCR).

NRS 432B.220 Persons required to make report; when and to whom reports are required; any person may make report; report and written findings if reasonable cause to believe death of child caused by abuse or neglect; certain persons and entities required to inform reporters of duty to report.

NRS 200.5093 Report of abuse, neglect, exploitation, isolation or abandonment of older person; voluntary and mandatory reports; investigation; penalty.

Child Report (under 18)

- Contact appropriate Law Enforcement agency if immediate patient protection is needed
- Washoe County Child Protective Services: 775-785-8600
- Complete appropriate agency reporting form

Elder Report (over 59)

- Contact appropriate Law Enforcement agency if immediate patient protection is needed
- Nevada Health and Human Services Aging and Disability Services: (888) 729-0571
- Complete appropriate agency reporting form

For persons over the age of 17 whose present socioeconomic conditions could benefit from additional resources, but do not require mandatory reporting, refer to regional resources guide.

Pearl:

- If there is a high index of suspicion, report to the appropriate agency and allow them to do the investigation.

- Ambulance attendants should be aware that whenever a patient is to be transferred from one medical facility to another by EMS, the transferring physician is responsible for notifying, in advance, the receiving physician of the following:
  - Reason for transfer
  - Patient condition
  - Estimated time of arrival
- Attendant should expect that the transferring physician will provide to them the name of the receiving facility and receiving physician, a copy of any available diagnostic tests, x-rays and patient medical records prior to releasing the patient.
- Ambulance attendants should only transfer a patient whose therapy required during the transfer lies within the ambulance attendant's scope, or that the appropriate personnel (registered nurse, respiratory therapist, etc.) accompanies the patient.
- Ambulance attendants are authorized to administer or monitor all medications listed on the approved medication list as appropriate for their level of licensure and as per protocol.
- ILS and ALS ambulance attendants are authorized to administer or monitor any crystalloid IV solution during the transport.
- Arterial lines should be discontinued prior to transport unless appropriate personnel from the initiating facility accompany the patient.
- Heparin lock/implantable catheters with/without reservoirs may be closed off and left in place. If they are to be used during transport, then an IV infusion should be established.
- Orogastric or nasogastric tubes may be left in place and should either be closed off or left to suction per order of transferring physician.
- Orthopedic devices may be left in place at the ambulance attendant's discretion as to ability to properly transport the patient with existing devices(s) in place.
- Trained personnel authorized operate the apparatus should accompany any patient requiring mechanical ventilation during transport. If the patient will require manual ventilatory assistance, at least two persons shall be available to attend to the patient.
- Transport of patient with IV antibiotic:
  - Obtain and document name of antibiotic
  - Obtain and document dose and rate of administration
  - If unfamiliar with antibiotic, ask about any specific side effects
  - Monitor medication to ensure proper administration rate during transport
  - Monitor patient for signs and symptoms of any side effect and/or allergic reactions such as nausea/vomiting, diarrhea, changes in LOC, rashes, swelling, SOB, or changes in BP. If any changes noticed; discontinue IV, initiate appropriate treatment, document changes, and inform staff at receiving facility.

Except for circumstances specifically prescribed by law, a minor is not legally competent to consent to (or refuse) medical care. A "minor" is any person under the age of 18.

An "emancipated minor" is an minor who is at least 16 years of age, who is married or living apart from his or her parents or legal guardian, and who is a resident of the county (NRS 129.080) that petitioned the juvenile court of that county for a decree of emancipation.

Life-Threatening Situation

Immediate treatment and/or transport to a medical facility should be initiated

Non-Life-Threatening Situation

If a minor has any illness or injury, EMS personnel should make a reasonable attempt to contact a parent or other legally qualified representative before initiating treatment or transport. If this is not possible, EMS personnel should transport the patient to the closest hospital with "implied consent." Parental consent is not needed for care in non- life-threatening situations when:

- Minor is emancipated
- Parent has given written authorization to procure medical care to any adult (18 or over) taking care of the minor
- Minor is an alleged victim of sexual assault
- Minor seeks prevention or treatment of pregnancy or sexually transmitted infection

Minors who Refuse Care

If a non-emancipated minor refuses any indicated treatment or transport, EMS field personnel should:

- Attempt to contact parents or other legally qualified representative for permission to treat and transport the minor
- Contact appropriate law enforcement agency and request that the patient be taken into temporary custody in order that treatment or transport can be instituted
- Contact base hospital and apprise them of the situation

Once a physician has identified him/herself as such on scene, than them for their offer of assistance. Then advise him/her that you are operating under the authority of the State of Nevada and under protocols approved by the State of Nevada, which does not allow you to take an order for care from any physician other than an on-duty base station physician or your Medical Director. You are also delivering care under the authority of a Medical Director and standing medical orders.

To avoid confusion and expedite patient care, no individual should intervene in the care of the patient unless the individual is:

- Requested by the attending EMS provider
- Is authorized by the base station physician
- Is capable of delivering more extensive emergency medical care at the scene

If the on-scene physician assumes patient management, he/she accepts responsibility for patient care until the transfer of care is made to the receiving hospital's physician. This requires the physician to accompany the patient to the emergency department.

If the physician assumes this responsibility, he/she must document this by handwriting their note on a hospital chart form upon arrival at the Ed and sign accordingly. The completion of the physician's note will become part of the patient's hospital record, and the medic should document the completion of this note in the patient's ePCR along with the physician's name and medical license number, if possible. The narrative of the ePCR should reflect what care was performed by the physician upon assuming care.

A physician who has initiated care of a patient before arrival of EMS personnel has accepted responsibility for the management of the patient. EMS personnel should offer all appropriate assistance and support within their scope of practice. Consultation with the base physician should be made to manage conflicts in patient management.

If a physician other than the EMS Medical Director assumes case of the patient, use agency specific procedures for reporting.

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MEDICATIONS

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Adult Medications

The following are the authorized medications used by EMS providers in Washoe County. Licensed EMS providers working under the agency permit are authorized, within their level of certification and training, to administer medications as directed by the written treatment protocols.

It is important to note that some dosages and processes vary on an agency basis. It is imperative that each EMS provider is aware of their agency's internal procedures.

Medication	Indication/Protocol	Dose/Route
Adenosine	**A)** Cardiac - Narrow Complex Tachycardia	**A) 6 mg rapid IVP followed by 20 mL flush, repeat 12 mg x 2 PRN**
Albuterol	**A)** Respiratory Distress /Asthma/COPD/Reactive Airway Disease **B)** Allergic Reaction/Anaphylaxis **C)** Hyperkalemia	**A) 2.5 mg/3 cc Nebulized repeat PRN** **B) 2.5 mg/3 cc Nebulized repeat PRN** **C) 2.5 mg/3 cc Nebulized repeat PRN**
Amiodarone	**A)** Cardiac – Arrest (pVT, VF) **B)** Cardiac - Wide Complex Tachycardia	**A) 300 mg IV/IO, may repeat 150 mg for sustained VT/VF in 3-5 min** **B) 150 mg IV/IO over 10 min**
Aspirin	**A)** Acute Coronary Syndrome (Suspected)	**A) 324 mg PO**
Atropine Sulfate	**A)** Cardiac - Bradycardia **B)** Overdose/Poisoning (Organophosphate Poisoning)	**A) 0.5 mg IVP, may repeat q 3-5 min to max 3 mg** **B) 1-2 mg q 3-5 mins until secretions cease**
Calcium Chloride	**A)** Hyperkalemia **B)** Overdose/Poisoning (Calcium Channel Blocker OD **Call for order**)	**A) 5-10 mL 10% slow IV/IO over 5 min** **B) 250-500 mg slow IV/IO**
Dextrose	**A)** Hypoglycemia	**A) 12.5-25 gm D50% IV/IO, reassess/repeat PRN** **AND/OR** **100 mL D10% IV/IO, reassess/repeat PRN**
Diltiazem	**A)** Cardiac - Narrow Complex Tachycardia **Call for order**	**A) 15-20 mg IV/IO over 5 min; after 15 min, if not resolved, 20-25 mg over 5 min** **Maintenance infusion 5-15 mg/hr titrated to heart rate**
Diphenhydramine	**A)** Allergic Reaction/ Anaphylaxis/Dystonia	**A) 25-50 mg IV/IM**
Dopamine Hydrochloride	**A)** Shock - Cardiogenic **B)** Cardiac - Bradycardia **C)** Cardiac - Post Arrest Care	**A) 5-20 mcg/kg/min IV/IO infusion** **B) 2-10 mcg/kg/min IV** **C) 5-10 mcg/kg/min IV, max dose 20 mcg/kg/min**
Duoneb	**A)** Respiratory Distress	**A) 0.5 mg IPRATROPRIUM in 2.5 mg ALBUTEROL 2nd and 3rd HHN**

Medication	Indication/Protocol	Dose/Route
Epinephrine	**A)** Cardiac - Arrest (VF, pVT, TdP, Asystole)	**A) 1 mg 1:10,000 IV/IO q 3-5 mins; ETT 2.5 mg 1:1,000**
	B) Allergic Reaction/ Anaphylaxis	**B) <u>Moderate Allergic Reaction</u>: 0.3 mg 1:1,000 IM <u>Severe Allergic Reaction:</u> 0.1 mg 1:10,000 IV repeat x 3 followed by 100 mL NS.**
	C) Respiratory Distress	**C) 0.3-0.5 mg 1:1,000 IM; 0.1 mg IV 1:10,000 repeat as needed, max 0.3 mg**
Epinephrine Infusion	**A)** Cardiac - Bradycardia **B)** Cardiac - Post Arrest Care **C)** Sepsis **D)** Shock - Cardiogenic	**A) 2-10 mcg/min IV/IO infusion** **B) 2-10 mcg/min IV/IO infusion** **C) 2-10 mcg/min IV/IO infusion** **D) 2-10 mcg/min IV/IO infusion**
Etomidate	**A)** Sedation	**A) 0.15 mg/kg IV/IO may repeat once if inadequate sedation**
	B) Medication Assisted Intubation	**B) 0.3 mg/kg IV/IO may repeat once if inadequate relaxation**
Fentanyl	**A)** Pain Management	**A) 1-3 mcg/kg IV/IO/IN, may repeat q 5 min**
	B) Medication Assisted Intubation	**B) 1-3 mcg/kg IV/IO**
Furosemide	**A)** Pulmonary Edema	**A) 40 mg IV or double home dose up to 80 mg IV**
Glucagon	**A)** Hypoglycemia **B)** Overdose/Poisoning (Beta Blocker Overdose **Call for order**)	**A) 1 mg IM** **B) 3-5 mg IV/IO**
Haloperidol	**A)** Behavioral Emergency	**A) 5-10 mg IV/IM q 5-10 mins, max 15 mg**
Hydrocortisone Sodium Succinate	**A)** Acute Adrenal Crisis	**A) 100 mg IV/IO/IM**
Hydroxocobalamin (Cyanokit)	**A)** Smoke Inhalation (Suspected Cyanide Poisoning)	**A) 5 gm IV over 15 minutes**
Ipratropium Bromide	**A)** Respiratory Distress	**A) 0.5 mg/2.5 mL 2nd and 3rd HHN**
Ketamine	**A)** Behavioral Emergency **B)** Sedation	**A) 4 mg/kg IM or 1-2 mg/kg IV** **B) 1-2 mg/kg IV/IO may repeat q 5-10 min as needed 4 mg/kg IM may repeat q 10 min as needed**
	C) Pain Management	**C) 0.5-1 mg/kg IV/IO/IM/IN may repeat q 5-10 min as needed**
	D) Medication Assisted Intubation	**D) 1-2 mg/kg IV/IO**

Medication	Indication/Protocol	Dose/Route
Lidocaine	**A)** Cardiac – Arrest (pVT, VF) ***Routine use of Lidocaine not recommended***	**A) 1-1.5 mg/kg IV/IO, followed by 0.5-0.75 mg/kg IV/IO q 5 min to 3 mg/kg max** **If patient converts, Lidocaine Infusion 2-4 mg/min IV/IO; ETT 3 mg/kg, repeat once.**
	B) Cardiac – Wide Complex Tachycardia	**B) 1-1.5 mg/kg IV/IO slow push; maintenance infusion 2-4 mg/min**
Magnesium Sulfate	**A)** Cardiac - Torsades de Pointes **B)** Respiratory Distress **C)** Seizure (Suspected Eclamptic Seizure)	**A) 2 gm IV/IO over 5 mins** **B) 2 gm IV over 20 mins** **C) 4 gm IV/IO over 20 mins**
Methylprednisolone	**A)** Acute Adrenal Crisis	**A) 125 mg IV/IO/IM**
Metoprolol	**A)** Acute Coronary Syndrome (STEMI patient with SBP> 140 & HR >100 **Call for order**)	**A) 5 mg slow IV push**
Midazolam (Versed)	**A)** Behavioral Emergency	**A) 2-5 mg slow IV/IO/IM/IN q 5 minutes, titrated to effect, max dose 10 mg**
	B) Sedation (Cardioversion, Pacing, Post-Intubation, Anxiety)	**B) 0.5 mg-5 mg IV/IO/IM/IN**
	C) Seizures	**C) 2-5 mg IV/IO/IM/IN q 5 min, max total dose 10 mg**
	D) Medication Assisted Intubation	**D) 2-5 mg IV/IO may repeat with 2-5mg IV/IO if inadequate relaxation**
	E) Hypothermia Post ROSC	**E) 2-5 mg IV/IO; titrate to effect**
Morphine Sulfate	**A)** Pain Management **B)** Pulmonary Edema	**A) 2-5 mg IV/IO q 10 mins** **B) 2-5 mg IV q 10 minutes**
Naloxone (Narcan)	**A)** Poisoning/Overdose	**A) 0.5 mg-2 mg IV/IO/IM/IN may repeat to max total dose of 10 mg**
Nitroglycerin	**A)** Acute Coronary Syndrome	**A) If SBP > 100: 0.4 mg SL, may repeat q 5 min until pain free, consider 1 inch NTG paste if transport time > 15 mins**
	B) Pulmonary Edema	**B) If systolic BP:** **> 100, 0.4 mg SL q 5 min** **≥ 160, 0.8 mg SL q 5 min** **If diastolic BP > 100: 1.6 mg SL** **1 inch NTG paste if SBP ≥ 100**
Ondansetron (Zofran)	**A)** Nausea/Vomiting	**A) 4 mg IV/IO/IM , may repeat once**
Oxytocin	**A)** Childbirth - Uncontrolled Postpartum Hemorrhage	**A) 20 units in 1000 mL NS, give 10 units (500 mL) over 10-20 minutes, then 2.5 units (125 mL) per hour**

Medication	Indication/Protocol	Dose/Route
Promethazine (Phenergan)	**A)** Nausea/Vomiting	**A) 12.5 mg IV/deep IM, may repeat x 1 in 15 mins** **Geriatrics:** **6.25 mg IV/deep IM x 1, no repeat** **Dilute IV doses in 10 mL NS**
Sodium Bicarbonate	**A)** Crush Injury (Rhabdomyolysis Prevention) **B)** Hyperkalemia (Suspected) **C)** Overdose/Poisoning (Tricyclic Antidepressant Overdose)	**A) 1 mEq/kg in 1000 mL NS wide open** **B) 1 mEq/kg infusion over 5 mins** **C) 1 mEq/kg slow IV push**
Tetracaine	**A)** Ocular Injury	**A) 1-2 drops per eye, repeat PRN**
Thiamine	**A)** Hypoglycemia with chronic alcoholism/malnutrition	**A) 100 mg slow IV/IM**

Pediatric Medications

The following are the authorized medications used for pediatric patients by EMS providers in Washoe County. Licensed EMS providers working under the agency permit are authorized, within their level of certification and training, to administer medications as directed by the written treatment protocols.

It is important to note that some dosages and processes vary on an agency basis. It is imperative that each EMS provider is aware of their agency's internal procedures.

Medication	Indication/Protocol	Dose/Route
Acetaminophen	**A)** Pediatric Fever	**A) 15 mg/kg PR/PO**
Adenosine	**A)** Cardiac - Narrow Complex Tachycardia	**A) 0.1 mg/kg rapid IVP followed by 10 cc flush, repeat 0.2 mg/kg x 2 PRN**
Albuterol	**A)** Allergy/Anaphylaxis **B)** Respiratory Distress/Asthma	**A) 2.5 mg in 3 cc Nebulized repeat PRN** **B) 2.5 mg in 3 cc Nebulized repeat PRN**
Amiodarone	**A)** Cardiac – Arrest (pVT, VF) **B)** Cardiac - Wide Complex Tachycardia	**A) 5 mg/kg IV/IO, repeat twice for sustained VT/VF; max 15 mg/kg** **B) 5 mg/kg IV/IO over 20 mins**
Atropine Sulfate	**A)** Cardiac - Bradycardia **B)** Overdose/Poisoning (Organophosphate Poisoning)	**A) 0.02 mg/kg IV/IO q 5 mins, min single dose 0.1 mg, max single dose 0.5 mg, ETT 0.04 mg/kg** **B) 0.02 mg/kg IV/IO q 3-5 mins until cessation of secretions**
Calcium Chloride	**A)** Overdose/Poisoning (Calcium Channel Blocker OD **Call for order**)	**A) 20 mg/kg slow IV/IO**
Dextrose	**A)** Hypoglycemia	**A) < 28 days: D10 2 mL/kg IV/IO/UV** **≥ 1 month: D25 2 mL/kg IV/IO** **Max single dose 25 gm**
Diphenhydramine	**A)** Allergy/Anaphylaxis	**A) 1 mg/kg IV/IO/IM max 25 mg**
Duoneb	**A)** Respiratory Distress	**A) 0.5 mg IPRATROPRIUM in 2.5 mg ALBUTEROL 2nd and 3rd HHN**

Medication	Indication/Protocol	Dose/Route
Epinephrine	**A)** Cardiac - Bradycardia	**A) 0.01 mg/kg IV/IO q 3-5 mins, max 1 mg** **ETT 1:1000 0.1 mg/kg**
	B) Cardiac - Arrest (VF, pVT, TdP, Asystole)	**B) 0.01 mg/kg IV/IO, 0.1mg/kg ETT q 3-5 mins**
	C) Allergy/Anaphylaxis	**C) <u>Moderate Allergic Reaction</u>:** **0.01 mg/kg 1:1,000 IM, max 0.3 mg** **<u>Severe Allergic Reaction</u>:** **0.01 mg/kg 1:10,000 IV/IO followed by 20 mL/kg NS, repeat PRN**
	D) Respiratory Distress/Asthma	**D) <u>Moderate</u>:** **0.01 mg/kg 1:1,000 IM q 15 mins, max 0.3 mg** **<u>Impending Respiratory Failure:</u>** **0.01 mg/kg 1:10,000 IV/IO, 1 mg max** **<u>Suspected Croup:</u>** **< 6 months 0.25 mg in 3 cc NS via HHN** **> 6 months 0.5 mg in 3 cc via HHN**
	E) Neonatal Resuscitation	**E) 0.01 mg/kg 1:10,000 IV/IO q 3-5 min as needed**
Fentanyl	**A)** Pain Management	**A) 1 mcg/kg IV/IO/IM/IN, may repeat q 5-10 mins**
	B) Medication Assisted Intubation	**B) 1-3 mcg/kg IV/IO**
Glucagon	**A)** Hypoglycemia	**A) < 20 kg: 0.5 mg IM** **> 20 kg: 1 mg IM**
Hydrocortisone Sodium Succinate	**A)** Acute Adrenal Crisis	**A) 1-2 mg/kg IV/IO**
Hydroxocobalamin (Cyanokit)	**A)** Smoke Inhalation (Suspected Cyanide Poisoning)	**A) 70 mg/kg IV over 15 mins**
Ketamine	**A)** Medication Assisted Intubation	**A) 1-2 mg/kg IV/IO**
	B) Pediatric Pain Management	**B) 0.5 mg/kg IV/IO/IM q 15 min**
Lidocaine	**A)** Cardiac – Arrest (pVT, VF) ***Routine use of Lidocaine not recommended***	**A) 1.0 mg/kg IV/IO (max 3 mg/kg); 2.5 mg/kg ETT, may repeat x 1. If patient converts after administration, infusion 20-50 mcg/kg/min**
Magnesium Sulfate	**A)** Cardiac – Wide Complex Tachycardia (Torsades de Pointes)	**A) 25-50 mg/kg IV max 2 g over 20 minutes**
	B) Respiratory Distress	**B) 25-50 mg/kg in 100 mL NS IV infusion over 20 minutes, max 2 gm**
Methylprednisolone	**A)** Acute Adrenal Crisis	**A) 0.5-1 mg/kg IV/IO**
Midazolam (Versed)	**A)** Sedation	**A) 0.2 mg/kg IV, may repeat as needed**
	B) Seizure	**B) 0.2 mg/kg IV/IO/IN/IM, may repeat in 5 mins**
	C) Medication Assisted Intubation	**C) 0.2 mg/kg IV/IO; may repeat if inadequate relaxation**
	D) Cardiac - Wide Complex Tachycardia	**D) 0.2 mg/kg IV; max single dose 5 mg**

Medication	Indication/Protocol	Dose/Route
Morphine Sulfate	**A)** Pain Management	**A) 0.1 mg/kg IV/IO/IM max single dose 5 mg, may repeat q 10 as needed**
Naloxone (Narcan)	**A)** Poisoning/Overdose	**A) 0.1 mg/kg IV/IO/IM/IN, max single dose 0.5 mg, may repeat to max dose of 10 mg**
Ondansetron (Zofran)	**A)** Nausea/Vomiting	**A) 0.15 mg/kg IV/IO/IM up to max dose 4 mg, may repeat x 1 in 20 mins**
Tetracaine	**A)** Ocular Injury	**A) 1-2 drops per eye, repeat PRN**
Racemic Epinephrine	**A)** Respiratory Distress (Suspected Croup/Epiglottitis)	**A) < 6 months 0.25 mL/3 mL NS HHN > 6 months 0.5 mL/3 mL NS HHN**
Sodium Bicarbonate	**A)** Overdose/Poisoning (Tricyclic Antidepressant Overdose)	**A) 1 mEq/kg IV**

ACETAMINOPHEN (TYLENOL)

Pharmacology and Actions

Exact actions unknown. Thought to produce analgesia by blocking generation of pain impulses, probably by inhibiting prostaglandin synthesis in the CNS or the synthesis or action of other substances that sensitize pain receptors to mechanical or chemical stimulation. It is thought to relieve fever by central action in the hypothalamic heat-regulating center.

Indications

Fever

Contraindications and Precautions

Contraindicated in patients with hypersensitivity to acetaminophen.
Avoid concomitant use with ethanol as this increases the risk of hepatic damage.

Side Effects and Special Notes

1. Use cautiously in patients with suspected pre-existing liver disease, chronic alcohol use, or chronic hepatitis/jaundice because hepatotoxicity has occurred after therapeutic doses.
2. Many OTC products contain acetaminophen, be aware of this when calculating dosages.
3. Acetaminophen may produce false positive decreases in blood glucose levels in home monitoring systems.

ADENOSINE (ADENOCARD)

Pharmacology and actions

1. Naturally-occurring amino acid
2. Slows conduction through the AV node
3. Has no effect on accessory tracks such as found in WPW or LGL syndromes
4. Extremely short duration of action (< 10 seconds)
5. May cause brief period of asystole which spontaneously reverts
6. Almost all patients will report varying degrees of chest pressure or pain after administration of this drug
7. Many patients will revert to the previous rhythm even after conversion to normal sinus rhythm

Indications

Stable Narrow Complex SVT

Contraindications and precautions

1. Second or third degree heart block, poison or drug induced tachycardia
2. Atrial fibrillation, atrial flutter, or Ventricular Tachycardia will not be converted by adenosine
3. Reduce initial dose to 3 mg if given through a central line
4. Larger doses may be required in patients taking theophylline or caffeine

ALBUTEROL
(PROVENTIL, VENTOLIN)

Pharmacology and Actions

Albuterol relaxes bronchial smooth muscle by stimulating Beta 2 adrenergic receptors.

Indications

Albuterol is primarily used to treat bronchial asthma, COPD and reversible bronchospasm.

Contraindications and Precautions

Causes decrease in serum potassium and should be used with caution in patients with profound hypokalemia.

Side Effects and Special Notes

Adverse effects of albuterol include tremor, nervousness, tachycardia, palpitations and occasionally hypertension. Most patients will have a decrease in heart rate and blood pressure with relief of bronchospasm. Therefore, do not withhold therapy in patients with hypertension and/or tachycardia.

AMIODARONE

(Cordarone)

Pharmacology and Actions

Considered a Class III antiarrhythmic. Complex drug with effects on Sodium, Potassium, and Calcium channels as well as alpha and beta adrenergic blocking properties. Thought to prolong the refractory period and action potential duration. Amiodarone has an extremely long half-life (up to 40 days)

Indications

1. Indicated for the treatment of shock, CPR, and Vasopressor refractory VF/pulseless VT
2. Indicated in other life threatening arrhythmias like recurrent and/or hemodynamically unstable VT

Contraindications

1. None in VF/Pulseless VT
2. Endotracheal administration is contraindicated

Precautions

May produce vasodilatation and hypotension. May also have negative inotropic effects. May produce prolonged QT interval. Use with caution in the presence of renal failure.

ASPIRIN

Pharmacology and Actions

Inhibits platelet aggregation and arterial constriction by blocking formation of thromboxane A_2. This reduces overall ACS mortality, reinfarction, and CVA.

Indications

Indicated in all patients with ACS
Indicated in any person with symptoms suggestive of ischemic pain

Contraindications and precautions

1. Relatively contraindicated in patients with active ulcer disease
2. Contraindicated in patients with known hypersensitivity to aspirin

ATROPINE

Pharmacology and Actions

Atropine is an anticholinergic, inhibits acetylcholine at the parasympathetic neuroeffector junction, blocking vagal effects on the SA node; thus enhancing conduction to the AV node and increasing the heart rate.

Indications

Atropine is indicated for symptomatic bradycardia and bradyarrhythmias (junctional or escape rhythm). It is also indicated in cases of organophosphate poisoning. It can be administered prior to endotracheal intubation to diminish secretions and block cardiac vagal reflexes. Excellent for vagally induced bradycardia in pediatric patient being intubated.

Contraindications and precautions

1. The action of atropine cause mydriasis (dilated pupils).
2. Use with caution in presence of myocardial ischemia
3. Routine use during PEA or Asystole is unlikely to have therapeutic benefit
4. Unlikely to be effective for hypoxic bradycardia, Type II AV Block, and Third Degree with wide QRS complexes

CALCIUM CHLORIDE

Pharmacology and actions

Positive inotrope which increases contractility (the strength of the contraction). Stabilizes myocardial muscle membrane in the setting of hyperkalemia.

Indications

1. Known or Suspected Hyperkalemia
2. Hypocalcemia
3. As an antidote for toxic effects from calcium channel blocker and beta blocker overdose
4. $MgSO_4$ overdose

Contraindications

1. Hyperkalemia due to digitalis toxicity
2. Do not mix with Sodium Bicarbonate

DEXTROSE

Pharmacology and Actions

Dextrose is a sugar called glucose or grape sugar containing six carbon atoms. Dextrose is important because it is the primary energy source for the brain.

Indications

Dextrose is indicated for the treatment of known hypoglycemia.

Contraindications and Precautions

Contraindicated in intracranial or intraspinal hemorrhage.

Side Effects and Special Notes

1. Dextrose is extremely hypertonic. It should be administered into a rapid-running IV established in a large vein. Inadvertent extravasation will lead to tissue sloughing and necrosis.

DILTIAZEM
(CARDIZEM®)

Pharmacologic properties:

Diltiazem is a calcium channel blocking agent that inhibits the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle. Its action is to slow AV nodal conduction and increase the AV nodal refractory period. Diltiazem slows the ventricular rate in patients with a rapid ventricular response during atrial fibrillation or atrial flutter, potentially converts SVT to normal sinus rhythm, and decreases total peripheral resistance in both systolic and diastolic blood pressure.

Indications:

1. Narrow complex atrial fib/flutter with rapid ventricular rate (>150 bpm)
2. SVT refractory to adenosine. Use after adenosine for refractory reentry SVT with narrow QRS and adequate blood pressure

Contraindications:

1. Patients with impaired left ventricular function or heart failure
2. Complete heart block
3. Recently (within past 1 hour) received IV ß-blocker
4. Patients with WPW and Afib
5. Sick sinus syndrome
6. Vtach, wide complex tachycardia, drug/poison induced tachycardia

Precautions:

1. Cautious use in patients with CHF, monitor for signs of pulmonary edema
2. Cautious use in patients who are already taking antihypertensive medications, monitor for hypotension

Adverse Reactions:

1. Hypotension
2. Bradycardia
3. Heart block

DIPHENHYDRAMINE HYDROCHLORIDE
(BENADRYL)

Pharmacology and Actions

Diphenhydramine competes with histamine for H1 receptor sites on effector cells. Prevents but does not reverse histamine-mediated responses, particularly histamine's effects on the smooth muscle of bronchial tubes, gastrointestinal tract, uterus and blood vessels.

Indications

Diphenhydramine is one of the most widely used antihistamines for the treatment of anaphylaxis and severe allergic reactions. It has also been used to treat motion sickness and extrapyramidal symptoms.

Contraindications and Precautions

Diphenhydramine is contraindicated in acute asthmatic attack. It should be used cautiously in glaucoma and in asthmatic, hypertensive or cardiac patients.

Side Effects and Special Notes

1. Adverse reactions include drowsiness, occasional nausea and dry mouth.
2. Used with epinephrine in severe anaphylaxis (if not contraindicated).

DOPAMINE HYDROCHLORIDE
(INTROPIN)

Pharmacology and Actions

Dopamine is the endogenous catecholamine precursor of norepinephrine. It releases norepinephrine and displays direct and indirect alpha and beta 1 effects. It increases cardiac output and usually elevates heart rate and systolic pressure - systemic vascular resistance is not increased except at higher dosages. It dilates renal and splenic vascular beds by activation of dopaminergic receptors. The alpha effects predominate at higher doses (usually greater than 10mcg/kg per minute, marked individual variation exists and dose must be guided by clinical response).

Indications

Dopamine is indicated for augmentation of cardiac performance and/or renal blood flow in shock and hypoperfusion syndromes due to septicemia, cardiac failure, cardiac surgery, renal failure, trauma and acute myocardial infarction.

Contraindications and Precautions

Dopamine is contraindicated in patients with uncorrected tachyarrhythmias, ventricular fibrillation or known hypersensitivity. It should be used cautiously in patients with peripheral vascular disease. Any underlying hypovolemia must be corrected, if possible, prior to use.

Side Effects and Special Notes

1. The principal adverse effects include headache, anxiety, tachycardia, chest pain, hypotension, nausea and vomiting.
2. Carefully monitor blood pressure, ECG and urine output throughout the infusion.
3. Extravasation requires discontinuation of the drug.

DOPAMINE INFUSION CHART

Use this chart if you are using a Dopamine concentration of 1600 mcg/ml. Match the weight with the dose and set your dial a flow or pump.

Example: A patient who weighs 50 kg needs dopamine at 5 mcg/kg/min. You need to administer 9 ml/hr or 9 gtts/min using 60 gtts/ml set.

	Dopamine dosage in mcg/kg/min					
Weight (kg)	**5**	**6**	**7**	**8**	**9**	**10**
50	9	11	13	15	17	19
55	10	12	14	16	19	21
60	11	13	16	18	20	22
65	12	15	17	19	22	24
70	13	16	18	21	24	26
75	14	17	20	22	25	28
80	15	18	21	24	27	30
85	16	19	22	25	29	32
90	17	20	24	27	30	34
95	18	21	25	28	32	36
100	19	22	26	30	34	37
105	20	24	28	31	35	39
110	21	25	29	33	37	41
115	22	26	30	34	39	43
120	22	27	31	36	40	45
125	23	28	33	37	42	47
130	24	29	34	39	44	49

EPINEPHRINE

Pharmacology and Actions

Epinephrine is an endogenous catecholamine with both alpha and beta adrenergic activity. Epinephrine increases heart rate, myocardial contractility, pulse pressure, cardiac output, systolic and diastolic blood pressure, automaticity, systemic vascular resistance and myocardial work and oxygen consumption. Epinephrine also lowers the threshold for defibrillation and causes bronchodilation.

Indications

Epinephrine is indicated in cardiac arrest, post cardiac arrest, sepsis, bradycardia, distributive shock, bronchial asthma, croup, anaphylaxis and hypotension.

Contraindications and Precautions

1. Age > 45, or previous cardiac history (in some settings consult medical control).
2. Epinephrine will lower the threshold for ventricular fibrillation. Epinephrine's positive inotropic and chronotropic effects can precipitate or exacerbate cardiac ischemia.

Side Effects and Special Notes

1. Epinephrine should not be mixed in the same infusion bag with alkaline solutions or be given concurrently with sodium bicarbonate.
2. May be given via an endotracheal tube if IV access is not available.
3. Higher doses may be required to treat poison or drug induced shock.

EPINEPHRINE INFUSION CHART

Amount to infuse ml/hr		
Dose Ordered (mcg/min)	1mg/100 mL or 10 mg/1000 mL (10 mcg/mL)	2 mg/250 mL or 4 mg/500 mL (8 mcg/mL)
2	12	15
3	18	23
4	24	30
5	30	38
6	36	45
7	42	53
8	48	60
9	54	68
10	60	75

ETOMIDATE
(AMIDATE)

Pharmacology and Actions

Etomidate is an imidazole derivative that is primarily a hypnotic. It is the most hemodynamically stable of the currently available induction agents. At induction doses of 0.3 mg/kg it has minimal respiratory or myocardial depression. Etomidate attenuates the rise in intracranial pressure that is associated with laryngoscopy and intubation. It does this by decreasing cerebral blood flow and cerebral metabolic oxygen demand without adversely affecting cerebral perfusion pressure. In healthy, hemodynamically stable patients, the recommended induction dose of 0.3 mg/kg should be used. The onset is 20-30 seconds with full recovery in 7-14 minutes.

Indications

1. Medication assisted intubation
2. Sedation

Contraindications and Precautions

Know hypersensitivity to the drug.

ETOMIDATE
(AMIDATE) CONTINUED

Side Effects and Special Notes

1. Etomidate does not release histamine, but it can cause nausea and vomiting, pain on injection, myoclonic movement, and hiccups.
2. A small number of patients will experience pain on injection of etomidate. This is due to the diluent (propylene glycol) and can be lessened considerably if administered in a large vein, and in conjunction with a rapid intravenous fluid rate.
3. The myoclonic activity following etomidate injection is secondary to brain stem stimulation and can be mistaken for grand mal seizures.
4. Hiccups are usually not a concern during RSI but should be recognized as a side effect of etomidate administration.
5. The best known and most concerning side effect of etomidate is its reversible blockade of 11 beta-hydroxylase which decreases both serum cortisol and aldosterone levels. This side effect is much more common with continuous infusions of etomidate in the intensive care unit setting rather than with a single dose injection utilized for RSI.

FENTANYL

Pharmacology and Actions

Binds with opiate receptors in the CNS, altering both perception of and emotional response to pain through an unknown mechanism.

Indications

Fentanyl is indicated for the relief of severe acute and severe chronic pain.

Contraindications and Precautions

1. Contraindicated in patients with known intolerance to the drug.
2. Additive effects when given with CNS depressants, general anesthetics, hypnotics, MAO inhibitors, other narcotic analgesics, sedatives, and tricyclic antidepressants.

Side Effects and Special Notes

1. For better analgesic effect administer drug before patient has intense pain.
2. Monitor respiratory status carefully, drug may cause respiratory depression. Naloxone may be used to reverse fentanyl.
3. Rapid administration may cause chest wall rigidity.

FUROSEMIDE
(LASIX)

Pharmacology and Actions

Furosemide is a diuretic that works in the loop of henle. The onset of diuresis following IV administration is within five minutes, with the peak effect occurring within the first half hour.

Indications

Furosemide is the indicated therapy in acute pulmonary edema.

Contraindications and Precautions

Furosemide is contraindicated in anuria and in patients with a known hypersensitivity to the drug. Excessive diuresis may result in dehydration and reduction in blood volume with circulatory collapse. Patients should be observed for signs of fluid and electrolyte imbalances; namely hyponatremia, hypochloremic alkalosis and hypokalemia.

Side Effects and Special Notes

Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity.

GLUCAGON

Pharmacology and Actions

Raises blood glucose level by promoting catalytic depolymerization of hepatic glycogen to glucose.

Indications

Hypoglycemia
Beta blocker and Calcium channel blocker Overdose / Poisoning

Contraindications and Precautions

Known hypersensitivity to the drug

Side Effects and Special Notes

1. Use only the diluent supplied by the manufacturer.
2. Unstable hypoglycemic diabetic patients may not respond to glucagon, and will require IV dextrose.
3. As soon as patient is alert enough to swallow, follow up with a meal, orange juice, D50, etc.

HALOPERIDOL
(HALDOL)

Pharmacology and Actions

The precise mechanism of action has not been clearly established. A butyrophenone that probably exerts its antipsychotic effects by blocking postsynaptic dopamine receptors in the brain

Indications

Management of psychotic disorders

Contraindications

1. Known hypersensitivity to medication
2. Coma or CNS Depression

Adverse Reactions

Extrapyramidal reactions, tardive dyskinesia, sedation, tachycardia, hypotension, and dry mouth

HEPARIN

Pharmacology and Actions

Prevents conversion of fibrinogen to fibrin and prothrombin to thrombin by enhancing the inhibitory effects of antithrombin III.

Indications

Deep vein thrombosis, pulmonary emboli, myocardial infarction, open heart surgery, disseminated intra vascular clotting syndrome (DIC), atrial fibrillation with embolization, prevention of DVT/P.E.

Contraindications

Hypersensitivity, hemophilia, leukemia with bleeding, peptic ulcer disease, severe hepatic disease and severe HTN.

Side Effects and Special Notes

1. Monitor for side effects of: bleeding gums, petechiae, ecchymosis, black tarry stools, hematuria, epistaxis and a decrease in blood pressure. The antidote for heparin overdose is Protamine.
2. Heparin may increase the action of diazepam.
3. Digitalis, tetracyclines and antihistamines; decrease the action of heparin.
4. Oral anticoagulants, salicylates, dextran, steroids and nonsteroidal anti-inflammatory: increase the action of heparin.

HEPARIN WEIGHT ADJUSTED PROTOCOL

The following chart gives the heparin infusion rate in both units/hr and ml/hr with a heparin concentration of **50 units/ml** (i.e., 25,000 units in 500ml).

Units/Hr	ML/Hr
600	12
700	14
800	16
900	18
1000	20
1100	22
1200	24
1300	26
1400	28
1500	30
1600	32
1700	34
1800	36
1900	38
2000	40
2100	42
2200	44
2300	46
2400	48
2500	50
2600	52
2700	54
2800	56
2900	58
3000	60

HYDROCORTISONE SODIUM SUCCINATE
(SOLU-CORTEF)

Pharmacology and Actions

Is a systemic corticosteroid that inhibits multiple inflammatory processes. Solu-Cortef produces multiple glucocorticoid and mineralocorticoid effects. It has a half-life of 8-12 hours and is metabolized by the liver.

Indications

1. Adrenal Insufficiency (Congenital Adrenal Hyperplasia)
2. Corticosteroid responsive conditions

Contraindications

1. Systemic fungal infections
2. Premature infants and Neonates
3. Idiopathic thrombocytopenic purpura

Precautions

1. Hyperglycemia
2. Hypersensitivity
3. Decreases immune function
4. Contains benzyl alcohol

Adverse Reactions/Side Effects

1. Sodium Retention, CHF, edema,
2. Hyperglycemia
3. Hypertension
4. Hyperkalemia
5. N/V
6. Headache
7. Anaphylaxis

HYDROXOCOBALAMIN

CYANOKIT®

Pharmacology and Actions

Hydroxocobalamin, the active ingredient in CYANOKIT®, forms a strong bond with cyanide, forming nontoxic cyanocobalamin, and another form of vitamin B12, which is then safely excreted in the urine.

Indications

Exposure to fire or smoke in an enclosed area indicated by the presence of soot around the mouth, nose, or oropharynx; also indicated in suspected Cyanide poisoning

Contraindications

1. Cyanokit® has proven to be incompatible with other drugs; therefore, it should not be administered simultaneously in the same line as other medications, consider initiating two IV lines.
2. Possible allergic/anaphylactic reaction.
3. Substantial increases in blood pressure may occur following Cyanokit therapy.

IPRATROPIUM BROMIDE
(ATROVENT)

Pharmacology and Actions

Anticholinergic bronchodilator

Indications

For relief of acute bronchospasm (reversible airway obstruction)

Contraindications

1. Allergy or known hypersensitivity to Atrovent
2. Hypersensitivity to atropine (chemically related)
3. Those with a history of hypersensitivity to soya lecithin or related food products, such as soy beans and peanuts.

Precautions

1. Use with caution in patients with heart disease, hypertension, glaucoma and the elderly.
2. Ipratropium may worsen the condition of glaucoma if it gets into the eyes. Having the patient close their eyes during nebulization may prevent this.

Adverse Reactions/Side Effects

1. More common: cough, dry mouth or unpleasant taste
2. Less common or rare: vision changes, eye burning or pain, dizziness, headache, nausea, nervousness, palpitations, sweating, trembling, increased wheezing or dyspnea, chest tightness, rash, hives or facial swelling

KETAMINE

Pharmacology and Actions

Dissociative Anesthetic Agent. It has amnestic and sedative effects but it also provides analgesia. It has a rapid onset of 45-60 seconds when given IV. Its duration of action is 5-10 minutes IV, or 12-25 minutes IM. Ketamine preserves respiratory drive and is unlikely to cause hypotension. The patient may exhibit behavior consistent with an awake state (eyes open, responds to pain) after receiving Ketamine but is dissociated from the noxious event, making Ketamine a suitable choice for short-term sedation and analgesia.

Indications

1. Short-term management of pain and anxiety related to noxious events such as pain related injury, immobilization, movement of patient, or manipulation of injured extremities.
2. Indicated for sedation, behavioral emergencies, and medication assisted intubation.

Side Effects and Special Notes

1. Patients may have a re-emergence reaction when recovering from Ketamine that manifests as hallucinations or dreams that may be unpleasant. In general, this is reduced by concomitant use of benzodiazepines.
2. May cause hypersecretions.
3. Avoid rapid administration of Ketamine IV which can cause HTN or respiratory depression.

LIDOCAINE
(XYLOCAINE)

Pharmacology and Actions

Lidocaine attenuates phase four diastolic depolarization and decreases automaticity. Raises the ventricular fibrillation threshold.

Indications

Indicated for the acute management of ventricular arrhythmias. Prophylactic use in the acute myocardial infarction remains a subject of debate. Prevents the increased intracranial pressure associated with rapid sequence intubation.

Contraindications and Precautions

Lidocaine should be used with caution in patients with severe heart block (may block the only pacemaker present).

Side Effects and Special Notes

1. Overdose of lidocaine usually results in signs of central nervous system or cardiovascular toxicity. Airway maintenance should be ensured in the event of seizures or signs of respiratory depression. Seizures may be treated with benzodiazepines. Should circulatory depression occur, vasopressors may be used. Clinical signs of CNS toxicity may include light-headedness, nervousness, apprehension, euphoria, confusion, dizziness, drowsiness, tinnitus, blurred or double vision, vomiting, sensations of heat, cold or numbness, twitching, tremors, convulsions, unconsciousness, respiratory depression and arrest.
2. Cardiovascular reactions are usually depressant in nature and are characterized by bradycardia, hypotension and cardiovascular collapse.

MAGNESIUM SULFATE

Pharmacology and Actions

Magnesium sulfate acts as a smooth muscle relaxant, especially for uterine smooth muscle and a mild bronchodilator. Also acts as an antiarrhythmic agent which may be effective in decreasing arrhythmias related to acute myocardial infarction. Acts as a central nervous system depressant and may cause respiratory depression or apnea.

Indications

1. Magnesium sulfate is indicated in pregnancy induced hypertensive disorders (preeclampsia or eclampsia) to prevent convulsions. It may transiently lower blood pressure at therapeutic levels. Magnesium sulfate can also be used as a tocolytic in pre-term labor.
2. Magnesium sulfate may be used in irretractable ventricular tachycardia/fibrillation especially in torsade's de pointes.
3. Indicated in ventricular arrhythmias associated with Digitalis toxicity.
4. May be used for respiratory distress secondary to asthma refractory to other medications.

Contraindications and Precautions

Use cautiously in patients with renal failure.

Special Notes and Side Effects

1. Monitor respiratory rate every 5 minutes. For respiratory depression, discontinue magnesium infusion and maintain airway/ventilation as needed.
2. Monitor blood pressure every 15 minutes.
3. Monitor reflexes every 30 minutes; if absent or hyper-reactive, after standard regimen, call physician.
4. 1-2 grams of calcium gluconate or calcium chloride is the physiologic antidote for magnesium sulfate toxicity.

METHYLPREDNISOLONE
(SOLU-MEDROL)

Pharmacology and Actions

Methylprednisolone is a synthetic corticosteroid and anti-inflammatory with potent anti-inflammatory properties. It is related to the natural hormones secreted in the adrenal cortex. The pharmacological effects of steroids are vast and complex. Effective as anti-inflammatory agents, they are used in the management of allergic reactions, asthma, and anaphylaxis. Methylprednisolone is considered an intermediate-acting steroid with a plasma half-life of 3 to 4 hours.

Indications

1. Severe anaphylaxis, asthma, or COPD
2. Urticaria
3. Spinal cord injury.

Contraindications

There are no major contraindications in the use of Methylprednisolone in the emergency setting.

Precautions

A single dose is all that should be given in the prehospital setting. Long-term steroid therapy can cause gastrointestinal bleeding, prolonged wound healing, and suppression of adrenocortical steroids.

Side Effects

Fluid retention, congestive heart failure, hypertension, abdominal distention, vertigo, headache, nausea, malaise, and hiccups.

METOPROLOL

Pharmacology and Actions

Selectively antagonizes beta1-adrenergic receptors. Half-life 3-7 hours.

Indications

AMI

Contraindications

1. hypersensitivity to drug/class/component.
2. sinus bradycardia
3. HR <45 bpm (MI, acute)
4. AV block, 2nd or 3rd degree
5. AV block, PR interval >0.24sec (MI, acute)
6. heart failure, uncompensated
7. heart failure, mod-severe (MI, acute)
8. SBP <100 mmHg (MI, acute)
9. cardiogenic shock
10. sick sinus syndrome w/o pacemaker

Side Effects/Serious Reactions

1. CHF
2. heart block
3. bradycardia, severe
4. Raynaud's phenomenon
5. bronchospasm
6. hypersensitivity reaction
7. hepatitis (rare)

MIDAZOLAM
(VERSED)

Pharmacology and Actions

Versed is a short acting benzodiazepine with CNS depressant and antiseizure actions.

Indications

Agent for short periods of sedation and to reduce agitation
Indicated for Seizures

Contraindications and Precautions

Use with caution in patients with respiratory compromise/distress or decreased mental status. Versed should not be used on patients with known hypersensitivity to benzodiazepine or patients with narrow angle glaucoma.

Side Effects and Special Notes

Constant monitoring of cardiopulmonary status of patient is required. This drug is for short term sedation and is not the drug of choice when long term sedation is required.

MORPHINE SULFATE

Pharmacology and Actions

Morphine sulfate acts as a narcotic analgesic and produces central nervous system depression. It also manifests mild hemodynamic effects. It increases venous capacitance and systemic vascular resistance, relieving pulmonary congestion.

Indications

Morphine is indicated for the relief of severe acute and severe chronic pain. Morphine may be used for ischemic pain in ACS unrelieved by nitrates. Morphine is indicated in acute cardiogenic pulmonary edema.

Contraindications and Precautions

Use caution in the patient with RV Infarction

Side Effects and Special Notes

1. The most common side effects are respiratory depression and orthostatic hypotension (which can be corrected with IV fluids).
2. Monitor for respiratory depression, continuous pulse oximetry may aid in assessing respiratory depression.
3. Naloxone should be readily available for administration in the event of severe respiratory depression.

NALOXONE
(NARCAN)

Pharmacology and Actions

Displaces previously administered opioid narcotic analgesics from their receptors (competitive antagonism).

Indications

Naloxone is indicated for known or suspected opioid induced respiratory depression.

Contraindications and Precautions

May cause withdrawal symptoms in addicted individuals.

Side Effects and Special Notes

1. Administer slowly in an amount sufficient to reverse respiratory depression only. Given rapidly, a patient may awake suddenly and become extremely combative.
2. The duration of the narcotic may exceed that of naloxone. Re-administration may be necessary.

NITROGLYCERINE
(NITROSTAT, TRIDIL)

Pharmacology and Actions

Relaxation of vascular smooth muscle is the principal action of nitroglycerin. Nitroglycerin produces, in a dose related manner, dilation of both the arterial and venous beds. Venous dilation promotes peripheral pooling of blood and decreases venous return to the heart, reducing left ventricular end-diastolic pressure (preload). Arteriolar relaxation reduces systemic vascular resistance and arterial pressure (afterload). Myocardial oxygen consumption is decreased. Elevated central venous and pulmonary capillary wedge pressures, pulmonary vascular resistance and systemic vascular resistance are also reduced.

Indications

1. Myocardial ischemia
2. Malignant hypertension
3. Congestive heart failure.

Contraindications and Precautions

1. Nitroglycerin is contraindicated in patients with known hypersensitivity, hypotension, uncorrected hypovolemia, increased intracranial pressure, inadequate cerebral circulation, and pericardial tamponade. Nitroglycerin is contraindicated with phosphodiesterase inhibitors (tadalafil within 48 hours, and sildenafil / vardenafil within 24 hours).
2. Nitroglycerin is contraindicated in patients with RV Infarction
3. Maintain systolic and limit blood pressure drop to 30% of pre-treatment blood pressure.

NITROGLYCERINE DRIP CHART

Amount to infuse in ml/hr		
Dose Ordered (mcg/min)	50 mg/250 ml 100 mg/500ml (200 mcg/ml)	100 mg/250 ml 200 mg/500 ml (400 mcg/ml)
10	3	1.5
20	6	3
30	9	4.5
40	12	6
50	15	7.5
60	18	9
70	21	10.5
80	24	12
90	27	13.5
100	30	15
110	33	16.5
120	36	18
130	39	19.5
140	42	21
150	45	22.5
160	48	24
170	51	25.5
180	54	27
190	57	28.5
200	60	30

Side Effects and Special Notes

1. Headache is the most frequent adverse reaction.
2. If severe hypotension and reflex tachycardia occurs, decrease the nitroglycerin or temporarily discontinue it and place the patient in a supine position with legs elevated.
3. Sublingual nitroglycerin can be beneficial in the clinical diagnosis of cardiac disease. Sublingual nitroglycerin is the initial drug of choice in the patient with classic cardiac pain.
4. Intravenous nitroglycerin should be administered by an infusion pump.
5. Blood pressure should be taken and recorded every five minutes while titrating nitroglycerin, and then every 15 minutes while infusion continues. Monitor the ECG continuously.

NITROUS OXIDE

A patient's self-administration of a nitrous oxide-oxygen mixture can provide relief of acute pain, provided there are no contraindications to its use.

Indications
Broad, first-line for rapid pain relief

Side-effects
Euphoria, disassociation

Contraindications

1. Head injury with altered level of consciousness
2. Recent ingestion of alcohol or illicit drugs
3. Major facial injuries or trauma
4. Thoracic trauma
5. Known or suspected bowel obstruction
6. Known or suspected cardiac ischemic chest pain
7. Patient developing cyanosis or respiratory distress with use of nitrous oxide–oxygen
8. Inability to comply with instructions regarding use of nitrous oxide – oxygen
9. Pulse oximeter reading indicating oxygen saturation is less than 90% prior to nitrous oxide-oxygen mixture use

ONDANSETRON
(ZOFRAN)

Pharmacology and Actions

A selective antagonist of a specific type of serotonin receptor located in the CNS at the area postrema (chemoreceptor trigger zone) and in the peripheral nervous system on nerve terminals of the vagus nerve. The drug's blocking action may occur at both sites.

Indications

Prevention of nausea and vomiting.

Contraindications and Precautions

Known hypersensitivity to the medication.

Side Effects and Special Notes

Use cautiously in patients with liver failure.

OXYMETAZOLINE HYDROCHLORIDE

(AFRIN)

Pharmacology and Actions

Unknown. Thought to cause local vasoconstriction of dilated arterioles, reducing blood flow and nasal congestion.

Indications

Nasal congestion. Prior to nasal intubation to lessen the chance of causing an epistaxis.

Contraindications and Precautions

Known hypersensitivity to the drug. Use cautiously in patient with hyperthyroidism, cardiac disease, hypertension, or diabetes mellitus.

Side Effects and Special Notes

Bottle is single patient use only and needs to be replaced after each use.

OXYTOCIN
(PITOCIN)

Pharmacology and Actions

Selectively stimulates the smooth musculature of the uterus resulting in increased uterine muscle tone, increased frequency of contractions and increased strength of contractions.

Indications

1. Normal postpartum - to produce uterine contractions.
2. Postpartum hemorrhage - to control excessive uterine bleeding when related to recent childbirth

Contraindications and Precautions

Contraindicated with known hypersensitivity to the drug and with retained placenta.

Side Effects and Special Notes

1. Side effects include: Cardiac dysrhythmia, pelvic hematoma, hypertonicity of the uterus, uterine rupture, nausea, vomiting, and fluid retention
2. Monitor vaginal drainage and uterine tonicity during administration

PROMETHAZINE
(PHENERGAN)

Pharmacology and Actions

Promethazine is a phenothiazine and acts as an antiemetic.

Indications

Promethazine is indicated for the prophylaxis and treatment of nausea and vomiting.

Contraindications and Precautions

Contraindicated in patients with central nervous system depression.

Side Effects and Special Notes

1. Most common adverse effects are sedation, drowsiness and dry mouth.
2. May cause dystonia and extrapyramidal reactions. Treat both with 25-50mg diphenhydramine IV.
3. Before administering IV, dilute in 10cc of NS to prevent phlebitis.

POTASSIUM CHLORIDE

Pharmacology and Actions

Potassium is a mineral that the human body requires for proper functioning of neuromuscular tissues.

Indications

Potassium chloride is used for the treatment of hypokalemia.

Contraindications and Precautions

Potassium chloride is contraindicated in severe renal impairment with oliguria and anuria. It is also contraindicated in hyperkalemia.

Side Effects and Special Notes

1. Adverse reactions to potassium chloride administration include peripheral vascular collapse with hypotension, cardiac arrhythmias, heart block, possible cardiac arrest, EKG changes (prolonged P-R interval, wide QRS, ST segment depression, tall tinted T waves), nausea, vomiting, abdominal pain and pain at the infusion site.
2. Potassium chloride should be administered via an infusion pump.
3. 1-3cc of 1% lidocaine may be added directly to the potassium chloride solution to decrease pain at the infusion site.
4. Patients receiving potassium chloride at rates greater than 20meq per hour should have continuous ECG monitoring.
5. Treat hyperkalemia: 1gm calcium chloride + 5 units regular insulin + 50gm glucose

RACEMIC EPINEPHRINE
(VAPONEPHRIN)

Pharmacology and Actions

Effects are those of epinephrine. Inhalation causes local effects on the upper airway as well as systemic effects from absorption. Vasoconstriction may reduce swelling in the upper airway, and beta effects on bronchial muscle may relieve bronchospasm.

Indications

Racemic epinephrine is indicated for treatment of life-threatening airway obstruction in croup and epiglottis.

Contraindications and Precautions

Should be used with caution in patients with cardiovascular disorders including coronary insufficiency and hypertension.

Side Effects and Special Notes

1. Adverse effects of racemic epinephrine include tremor, nervousness, tachycardia, palpitations and occasionally hypertension. Since these are also symptoms of hypoxia, be sure to monitor the patient closely.
2. Racemic epinephrine is heat and light sensitive. If the solution is discolored it should be discarded.
3. Clinical improvement in croup can be dramatic after administration of racemic epinephrine. Rebound worsening of airway obstruction can occur, however in one - four hours. Many patients require admission after administration.

TETRACAINE

Indications

Provides anesthesia prior to ophthalmic procedures, such as irrigation.

Contraindications and Precautions

Known hypersensitivity.

Side Effects and Special Notes

1. Use cautiously in patients with cardiac disease and hyperthyroidism.
2. Not for long term use.
3. Warn patient not to rub or touch eye while it is anesthetized. This may cause corneal abrasion and greater pain when anesthesia wears off.
4. Do not use discolored solution.

SODIUM BICARBONATE

Pharmacology and Actions

Sodium bicarbonate reacts with hydrogen ions to form water and carbon dioxide to buffer metabolic acidosis.

Indications

Sodium bicarbonate is indicated for the acidosis that accompanies shock and cardiac arrest. It is also indicated in the treatment of tricyclic antidepressant overdose and preexisting or life threatening hyperkalemia. It is indicated in crush injuries to prevent Rhabdomyolysis.

Contraindications and Precautions

There are no contraindications to the use of sodium bicarbonate in life threatening emergencies.

Side Effects and Special Notes

Sodium bicarbonate can inactivate the catecholamines norepinephrine, dopamine and epinephrine. Do not mix with IV solutions of these agents.

THIAMINE
(VITAMIN B1)

Pharmacology and Actions

Combines with adenosine triphosphate to form a coenzyme necessary for carbohydrate metabolism.

Indications

Administered concurrently with D50 in intoxicated or malnourished patients to prevent Wernicke's encephalopathy.

Contraindications and Precautions

Known hypersensitivity to the drug.

Side Effects and Special Notes

1. IV use: dilute before giving. Administer cautiously, give patient a skin test before therapy if he has a history of hypersensitivity reactions.
2. Thiamine malabsorption is most likely in alcoholism, cirrhosis, or GI disease.

WASHOE COUNTY
HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

STAFF REPORT
EMS ADVISORY BOARD MEETING DATE: October 5, 2017

TO: EMS Advisory Board Members

FROM: Christina Conti, EMS Oversight Program Manager

775-326-6042, cconti@washoecounty.us

SUBJECT: **Presentation and possible acceptance of an update on the Washoe County EMS 5-Year Strategic Plan, a requirement of the Interlocal Agreement for Emergency Medical Services Oversight.**

SUMMARY

The purpose of this agenda item is to discuss the progress on the implementation of the five-year emergency medical services strategic plan, as required in the Inter Local Agreement for Emergency Medical Services Oversight.

PREVIOUS ACTION

During the EMS Advisory Board on October 6, 2016, the Board approved the presentation and recommended staff present the five-year strategic plan to the District Board of Health.

During the District Board of Health meeting on October 27, 2016, the Board moved to accept the presentation and the five-year Strategic Plan to the District Board of Health.

BACKGROUND

The EMS Oversight Program was created through an Inter Local Agreement (ILA) signed by the City of Reno (RENO), City of Sparks (SPARKS), Washoe County (WASHOE), Truckee Meadows Fire Protection District (FIRE), and the Washoe County Health District. Within the ILA there are eight duties specifically outlined for the EMS Oversight Program. One of the items explicitly tasked the EMS Oversight Program to "Maintain a Five-Year Strategic Plan to ensure the continuous improvement of Emergency Medical Services in the area of standardized equipment, procedures, technology training, and capital investments to ensure that proper future operations continue to perform including Dispatching Systems, Automated Vehicle Locations Systems, Records Management Systems, Statistical Analysis, Regional Medical Supply and Equipment, and other matters related to strategic and ongoing Emergency Medical Services and approved by RENO, SPARKS, WASHOE and FIRE."

Beginning in August 2015, the EMS Program Manager worked with regional partners to develop a five-year regional strategic plan. The stakeholders participating in the developing of plan included representatives from each jurisdiction and REMSA from dispatch and operations, as well as a regional communications representative. Over the course of 11 months the workgroup identified the components that would be included in the strategic plan.

The first meetings were used to review the SWOT analysis and to identify goals for the region. Subsequent meetings reviewed the individual goals and the objectives within. To ensure the process was efficient, each meeting had an identified objective to accomplish. All items drafted by the EMS Oversight Program remained in red and turned to black once the group has discussed and reached consensus on the draft.

The final document of the strategic plan shows the efforts of the region in creating a path forward to improve the EMS system within Washoe County. The EMS Oversight Program, as part of the strategic plan Objective 6.1, will provide quarterly reports to the EMS Advisory Board on the progress of the various projects outlined within the plan.

Year 1 (2017) has twelve identified objectives or strategies to be completed.
Year 2 (2018) adds several more objectives or strategies to be completed in conjunction with the ongoing items from Year 1.

As the work on the strategic planning items continues, several completion dates affiliated with the objectives need to be revised. During the August EMS Advisory Board quarterly meeting, the Board approved the process for approving revised completion dates. Subsequently, the EMS Oversight Program Manager met with Manager Driscoll on August 21, 2017 to discuss the process for analyzing the strategic plan. The EMS Oversight Program staff has begun a line-by-line review of the strategic plan to evaluate if the goals/objectives are still appropriate and if the timelines need to be adjusted.

Attached is objective 1.2, 2.2 and 5.1 with new information and revised completion dates associated with the objectives and/or strategies.

<u>Completed Objectives:</u>

- **Establish ambulance franchisee response map review methodology**. (Objective 2.2, Strategy 2.2.2)
- **Determine data elements required for process verification of Omega Protocols**. (Objective 1.1, Strategy 1.1.4)
- **Coordinate and report on strategic planning objectives quarterly.** (Objective 6.1)
- **Promote the EMS Oversight Program through regional education of the strategic plan's goals and initiative.** (Objective 6.2)
- **Create a Gantt chart for the regional partners with the details of the goals.** (Objective 6.1, Strategy 6.1.2)
- **Increase depth of resources able to respond to EMS calls for service in Washoe County.** (Objective 2.3 – annual item) The mutual aid agreements for regional partners will be reviewed annually, with any revisions done by December annually. This item was completed for 2017 in January)
- **Analyze and report franchise map reviews annually including any recommended modifications to the EMS Advisory Board.** (Objective 2.2, Strategy 2.2.4 – Annual item)
- **Coordinate with PMAC to develop regional protocols based on national standards and recent clinical studies.** (Objective 5.1, Strategy 5.1.2)

In process objectives:

- **Implement appropriate protocols to determine service level through EMD process to low acuity Priority 3 calls.** (Objective 1.2) As identified in the attached document, the new completion date for this objective is December 31, 2018. Representatives from REMSA, RFD, SFD, TMFPD, and WCHD have begun meeting monthly to work on this initiative. To date the workgroup has identified the types of calls to review and reviewed/approved 37 new Omega determinants with an additional 3 being considered. The next meeting is scheduled for October 12th.
- **Jurisdictional fire response measurement identified and review defined jurisdictional measurement with EMS Oversight Program.** (Objective 2.4, Strategies 2.4.1 & 2.4.2) The EMS Oversight Program still has not received identified measurements for Reno Fire Department or Gerlach Volunteer Fire Department.
- **Develop a regional set of protocols for the delivery of prehospital patient care.** (Objective 5.1).
- **Obtain clarification from District Board of Health regarding Amended and Restated Franchise section 5.1.** (Objective 3.1, Strategy 3.1.2) EMS Oversight Program has been tasked with this item from District Health Officer.
- **Establish a CAD-to-CAD interface between the primary PSAP and REMSA dispatch center.** (Objective 3.2)
- **Establish a two-way interface to provide visualization of AVL for all EMS vehicles for the primary PSAP and REMSA dispatch center.** (Objective 3.3) This item was associated with the CAD-to-CAD project. Strategy 3.3.1 will be conducted, which is an assessment of the existing AVL capabilities. The EMS Oversight Program surveyed regional response agencies on existing AVL capabilities. When all agencies have responded, the EMS Oversight Program will create a matrix with the provided information.
- **Evaluate how to transfer information between ePCR from the fire response unit to the REMSA unit.** (Objective 4.1, Strategy 4.1.2) The EMS Oversight Program will begin working with partners on this strategy once ePCR units are operating without error.
- **Pilot the annual report with hospital outcome data with one regional hospital.** (Objective 4.2, Strategy 4.2.2) The EMS Oversight Program continues to work with Northern Nevada Medical Center to pilot how the data could be matched and utilized.
- **Establish a regional process that continuously examines performance of the EMS system.** (Objective 5.2) The EMS Oversight Program will begin working with regional partners on this objective during Fall 2017.

FISCAL IMPACT

There is no fiscal impact to the Board on this agenda item.

RECOMMENDATION

Staff recommends the Board to approve the update on the five-year Strategic Plan, a requirement of the Interlocal Agreement for Emergency Medical Services Oversight.

POSSIBLE MOTION

Should the Board agree with staff's recommendation a possible motion would be:

"Move to approve the update on the five-year Strategic Plan, a requirement of the Interlocal Agreement for Emergency Medical Services Oversight."

Goal #1 – Enhance utilization of EMS resources by matching the appropriate services, as defined by the call for service, through alternative protocols, service options and transportation options by October 7, 2021.	
Objective 1.2. Implement appropriate protocols to determine service level through EMD process to low acuity Priority 3 calls by ~~February 5, 2017~~ December 31, 2018.	**Strategy 1.2.1.** Resolve regional concerns (operational, legal, and patient care) relating to protocols to determine service level through EMD process to low acuity Priority 3 calls by June 30, 2016. **Strategy 1.2.2.** Develop Standard Operating Procedures to determine service level through EMD process to low acuity Priority 3 calls by ~~October 28, 2016~~ February 28, 2018. **Strategy 1.2.3.** Determine data elements required for process verification by ~~December 16, 2016~~March 31, 2018. **Strategy 1.2.4.** Pilot the developed SOP and identified data elements during the CAD-to-CAD pilot process by June 13, 2018. **Strategy 1.2.5.** Review by the EMS Advisory Board of the protocols that determine service levels through EMD process to low acuity Priority 3 calls ~~by January 5, 2017~~December 31, 2018.

- Goal #5 -	
Design an enhanced EMS response system through effective regional protocols and quality assurance by December 31, 2018.	
Objective 5.1. Develop a regional set of protocols for the delivery of prehospital patient care by ~~July 2017~~April 1, 2018.	**Strategy 5.1.1.** Review current protocols for each regional agency to determine differences and opportunities for improvement by October 31, 2016. **Strategy 5.1.2.** Coordinate with PMAC[1] to develop regional protocols based on national standards and recent clinical studies, by ~~June~~ September 30, 2017, amend as needed with a minimum annual review. **Strategy 5.1.3.** Presentation to the EMS Advisory Board of the regional protocols and conflict resolution procedure for prehospital care by ~~July 2017~~October 2017. **Strategy 5.1.4.** Create and conduct training on regional protocols for prehospital care by ~~December 31, 2017~~February 28,2018.

[1] PMAC is the Prehospital Medical Advisory Committee for Washoe County

Objective 2.2. Establish ambulance franchise response map review methodology by September 30, 2016.	**Strategy 2.2.1.** Develop standardized methodology for the annual review of the ambulance franchise response map by June 30, 2016. **Strategy 2.2.2.** Develop standardized methodology for the five and ten year review for the ambulance franchise response map by September 30, 2016. **Strategy 2.2.3.** Approval by the EMS Advisory Board of the standardized methodology for the annual, five and ten year reviews by October 6, 2016. **Strategy 2.2.4** Analyze and report franchise map reviews annually including any recommended modifications to the EMS Advisory Board, beginning ~~July~~ October 6, 2017.

The attached was presented to the **Emergency Medical Services Advisory Board** during the meeting held on August 3, 2017 by REMSA for Agenda Item No. 6.

Attachment A

REMSA
COMMUNITY HEALTH PROGRAMS

REMSA's Nurse Health Line

EMS Advisory Board

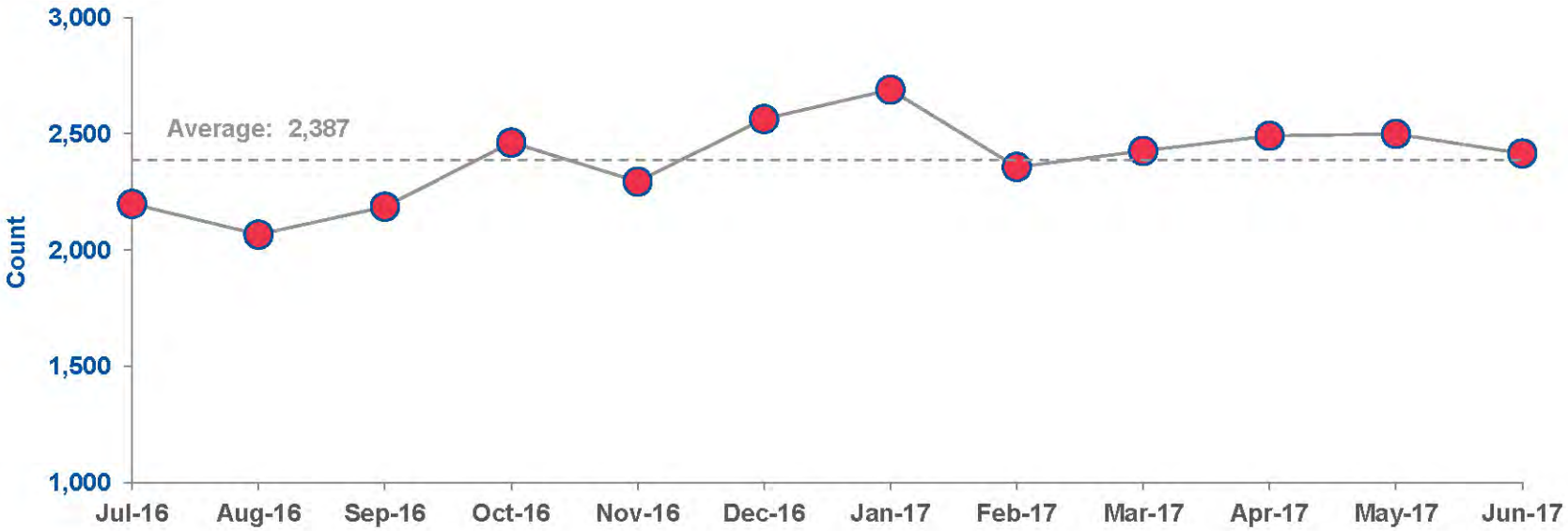
August 3, 2017

REMSA NHL Call Volume

- July 2016 through June 2017
- 28,646 Incoming Calls

Source: Low Code

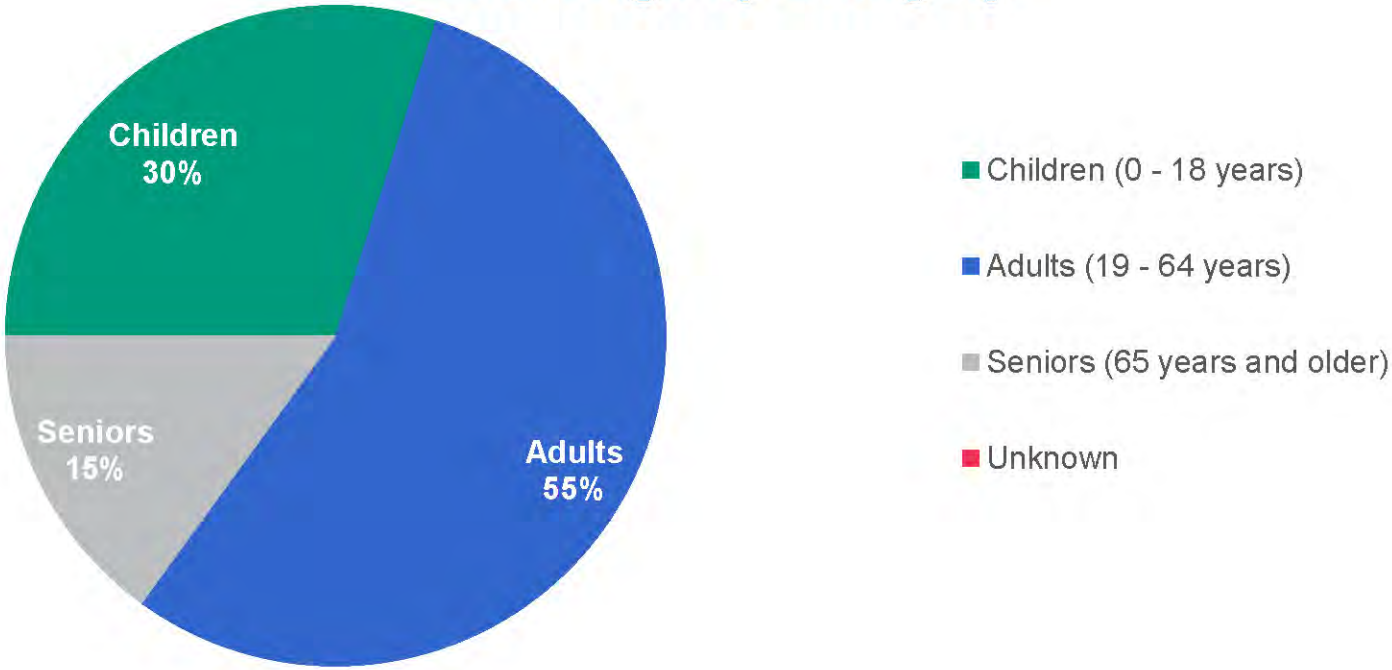
Incoming Call Volume

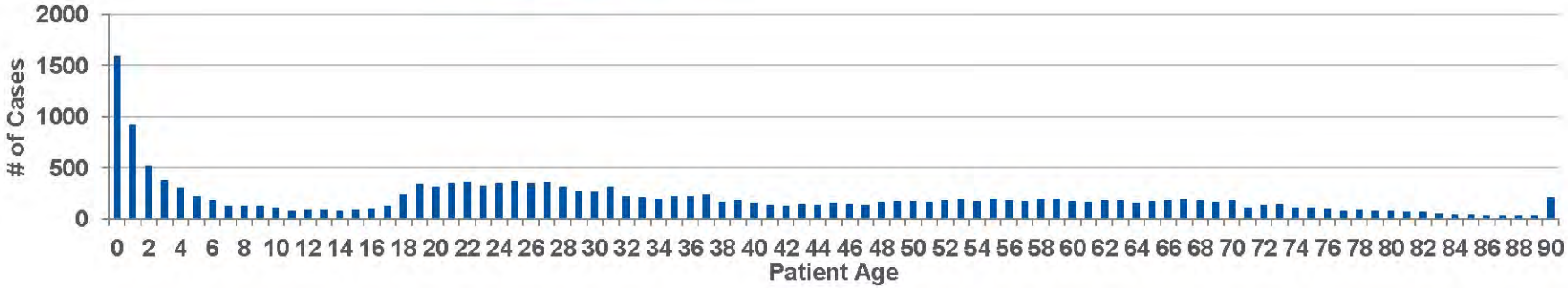


REMSA NHL Patient Age

- July 2016 through June 2017
- 28,646 Incoming Calls
- Median Age of Patients is 28.0

Patient Age by Category

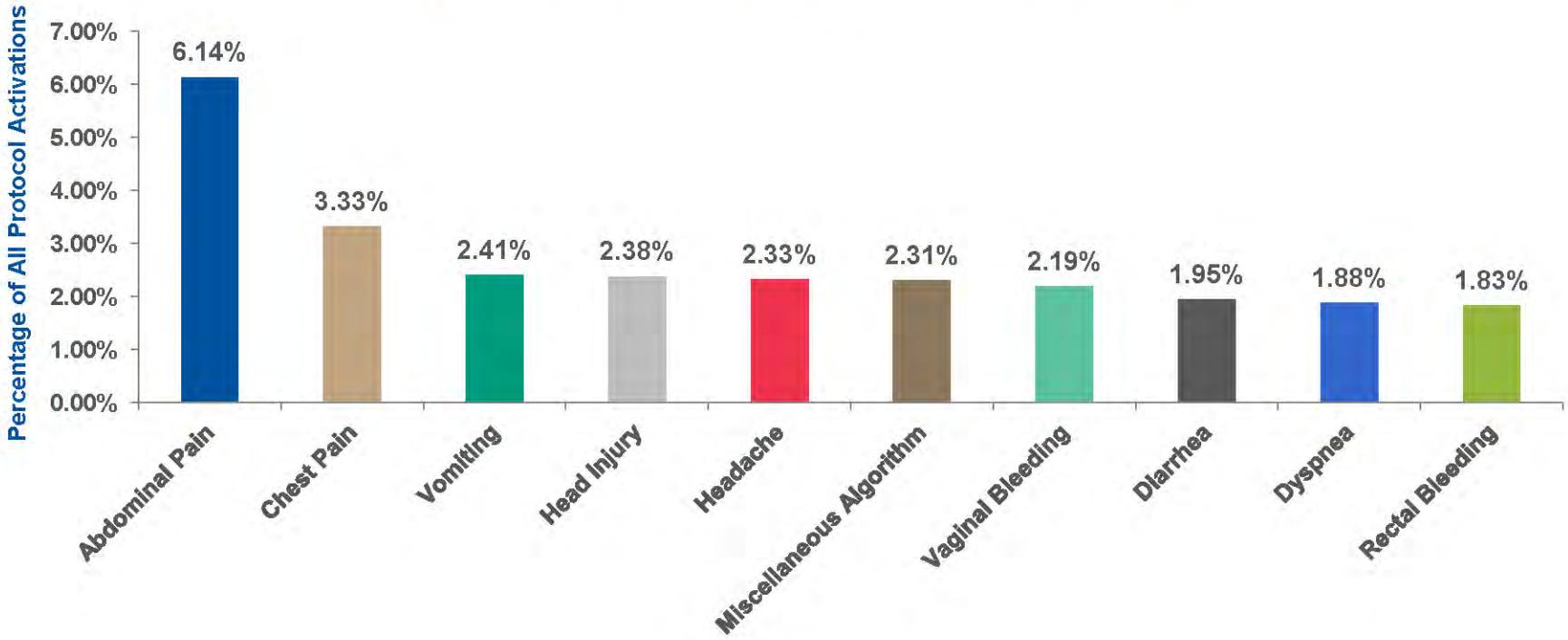




REMSA NHL Protocols Used

- July 2016 through June 2017
- 28,646 Incoming Calls

Top 10 Most Frequently Used Protocols



REMSA NHL Community Contributions

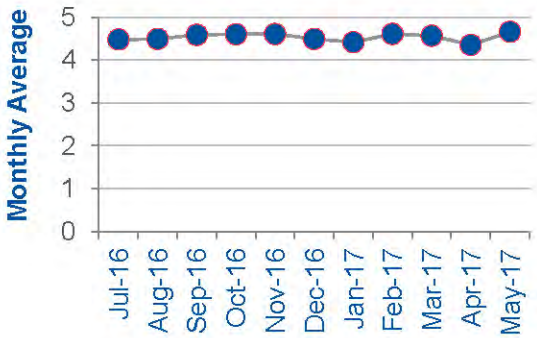
- July 2016 through June 2017

1. Recommend the appropriate care level for the caller.
2. 911 responses avoided: **135**
3. ED visits avoided: **359**
4. Barriers to avoiding ED visits
   - Hours of operation for Urgent Care Clinics and MD offices
   - No co-pay due at time of ED visit
   - Medicaid not accepted at most Urgent Care Clinics
   - Insurance barriers
5. 2 hospitals and 1 health plan have contracted with us
   - We still service our community utilizing the public line.

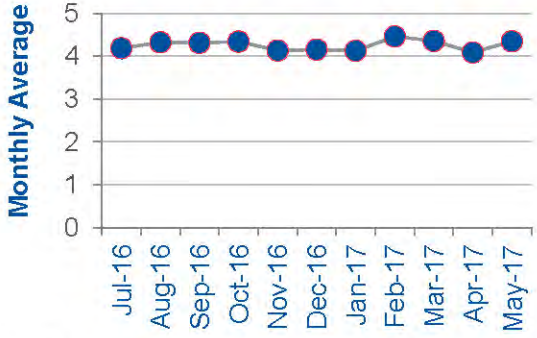
REMSA NHL Patient Satisfaction Survey Results

- 62 surveys returned for calls made in March 2017
- 58 surveys returned for calls made in April 2017
- 64 surveys returned for calls made in May 2017

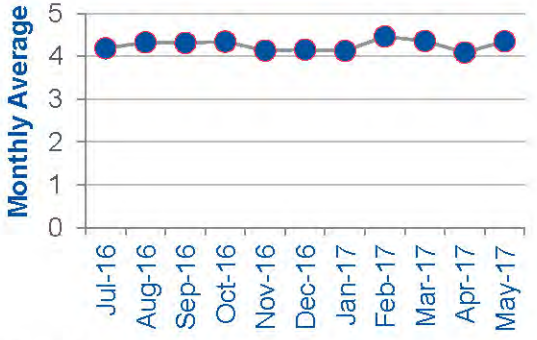
Was our nurse helpful and polite?



How well did our nurse explain your best care options?

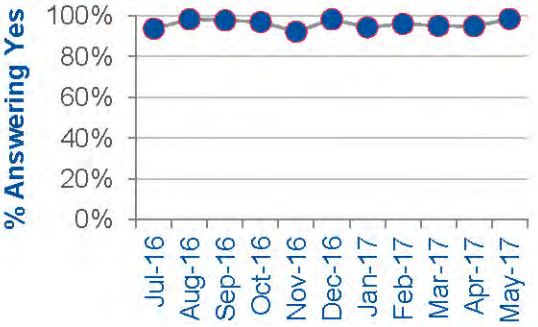


How would you rate your overall experience with the N.H.L.?

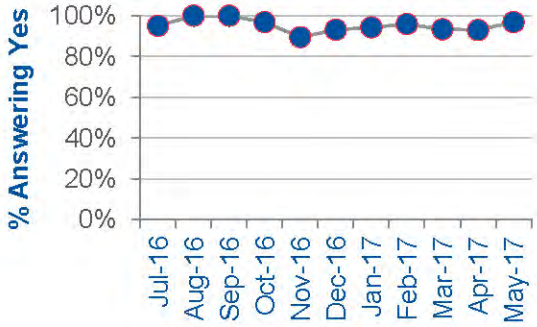


5 = Excellent 4 = Very Good 3 = Good 2 = Fair 1 = Poor 0 = Very Poor

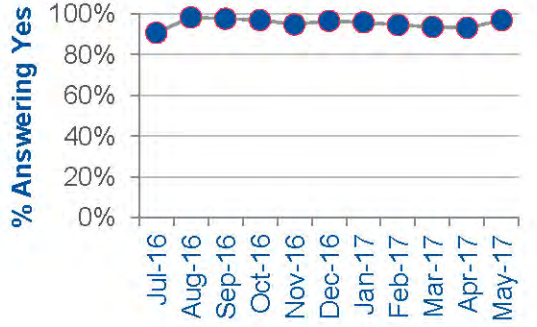
Did our nurse give adequate information regarding your call?

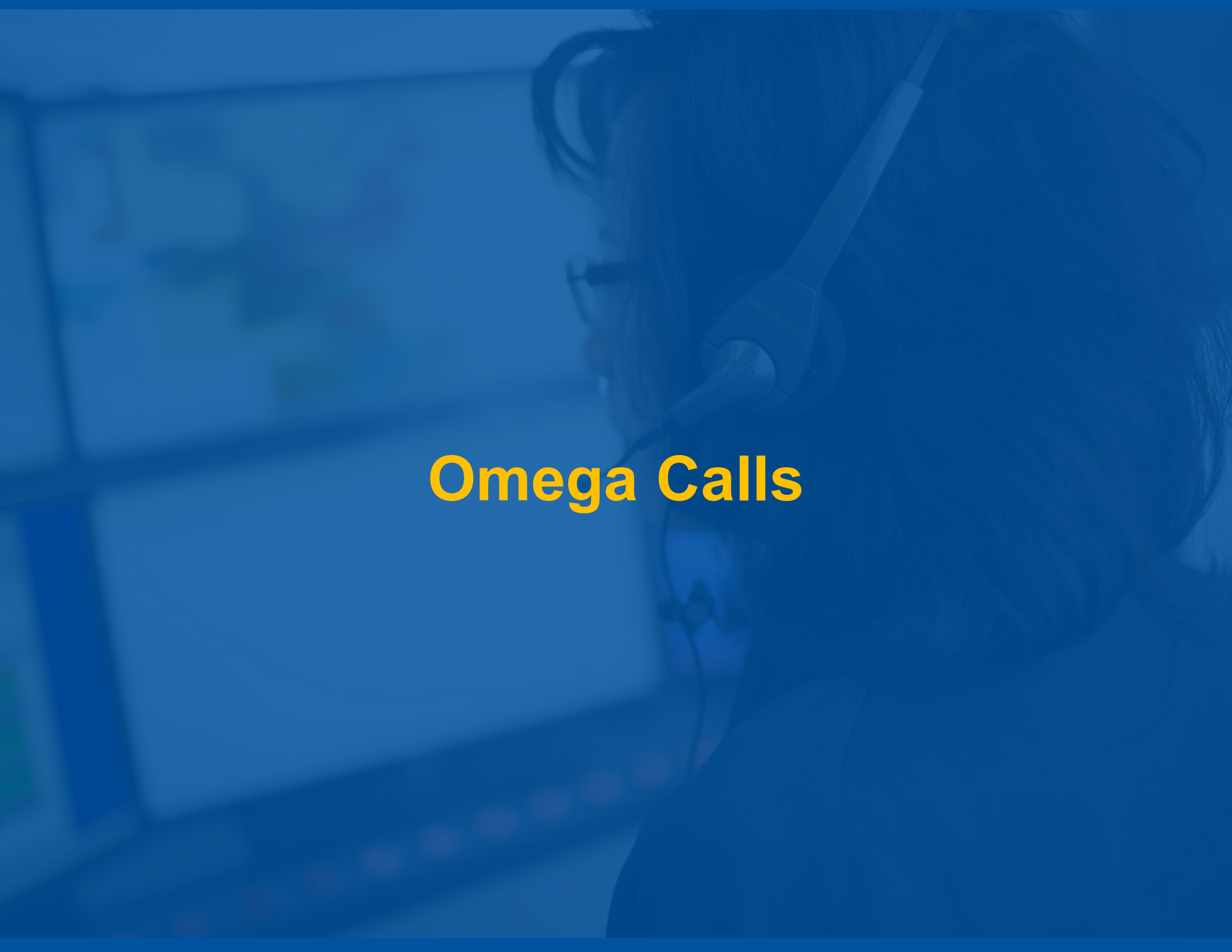


Were your questions answered?



Would you use our service again in the future?




Omega Calls

REMSA NHL Management of Non-emergent Calls

- July 2016 through June 2017

68,481
911 Calls

230 (0.34%)
Omega Transfers

28,416
7 Digit NHL Calls

7 (3.04%)
Omegas Returned
to EMD

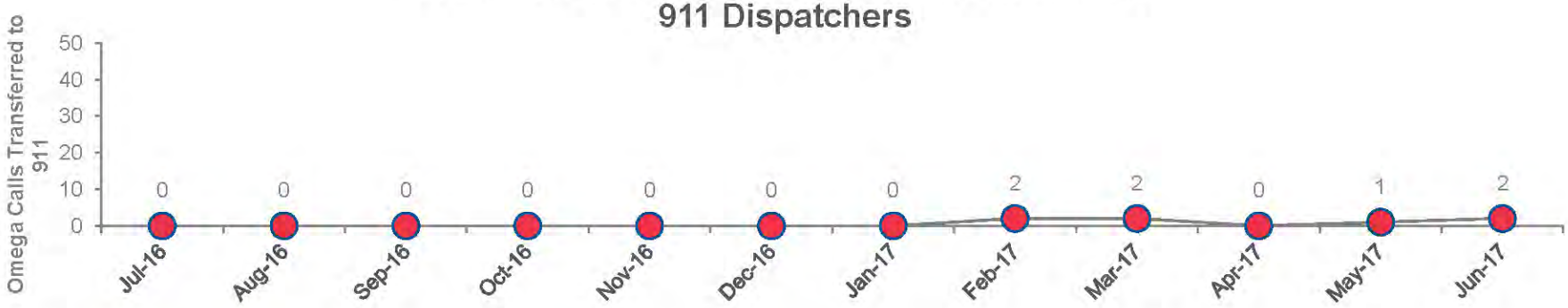
237 (0.83%)
7 Digit NHL Calls
Sent to EMD

REMSA NHL Omega Calls

- July 2016 through June 2017

Source: Low Code, CAD

Calls Transferred from the Nurse Health Line to 911 Dispatchers



	All CAD Calls With an Approved Omega Protocol Determinant[1]	Omega Calls 911 to NHL[2]	Omega Calls Transferred to 911[3]
Jul-16	69	44	0
Aug-16	61	22	0
Sep-16	48	17	0
Oct-16	55	16	0
Nov-16	51	16	0
Dec-16	50	17	0
Jan-17	61	22	0
Feb-17	52	26	2
Mar-17	51	21	2
Apr-17	31	9	0
May-17	37	13	1
Jun-17	35	7	2
Totals:	**601**	**230**	**7**

1 The REMSA Medical Director has approved 52 of the 178 Omega Protocols that identify "no acuity" patients.

2 These are the Omega calls that have been transferred to the REMSA Nurse Health Line for further triage.

3 These are the Omega calls that have been transferred to the REMSA Nurse Health Line for further triage and have been deemed by the Emergency Communication Nurse System (ECNS) Protocol to require an ambulance response.

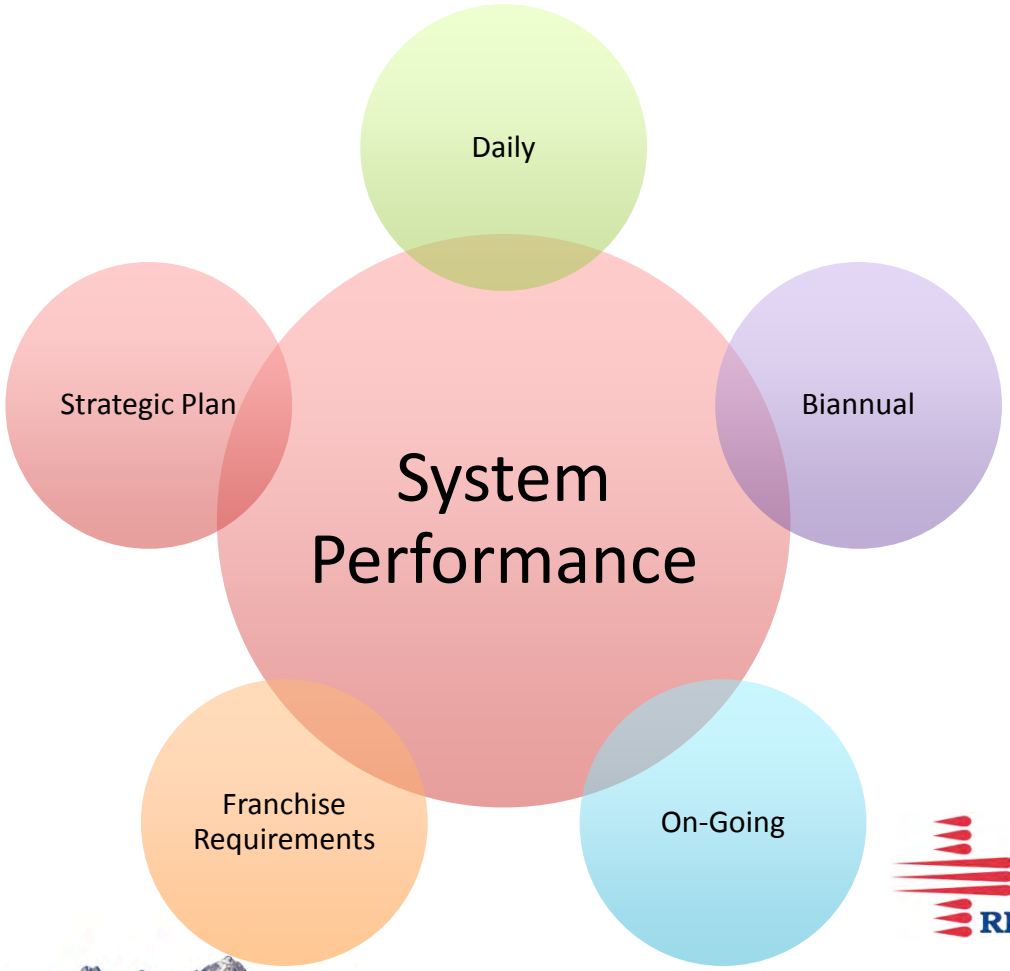
Attachment B

Regional Emergency Medical Service Authority Growth Planning

Adam Heinz, NRP, AEMD
Director of Emergency Communications


How does REMSA plan for growth?

Multifaceted Growth Plan

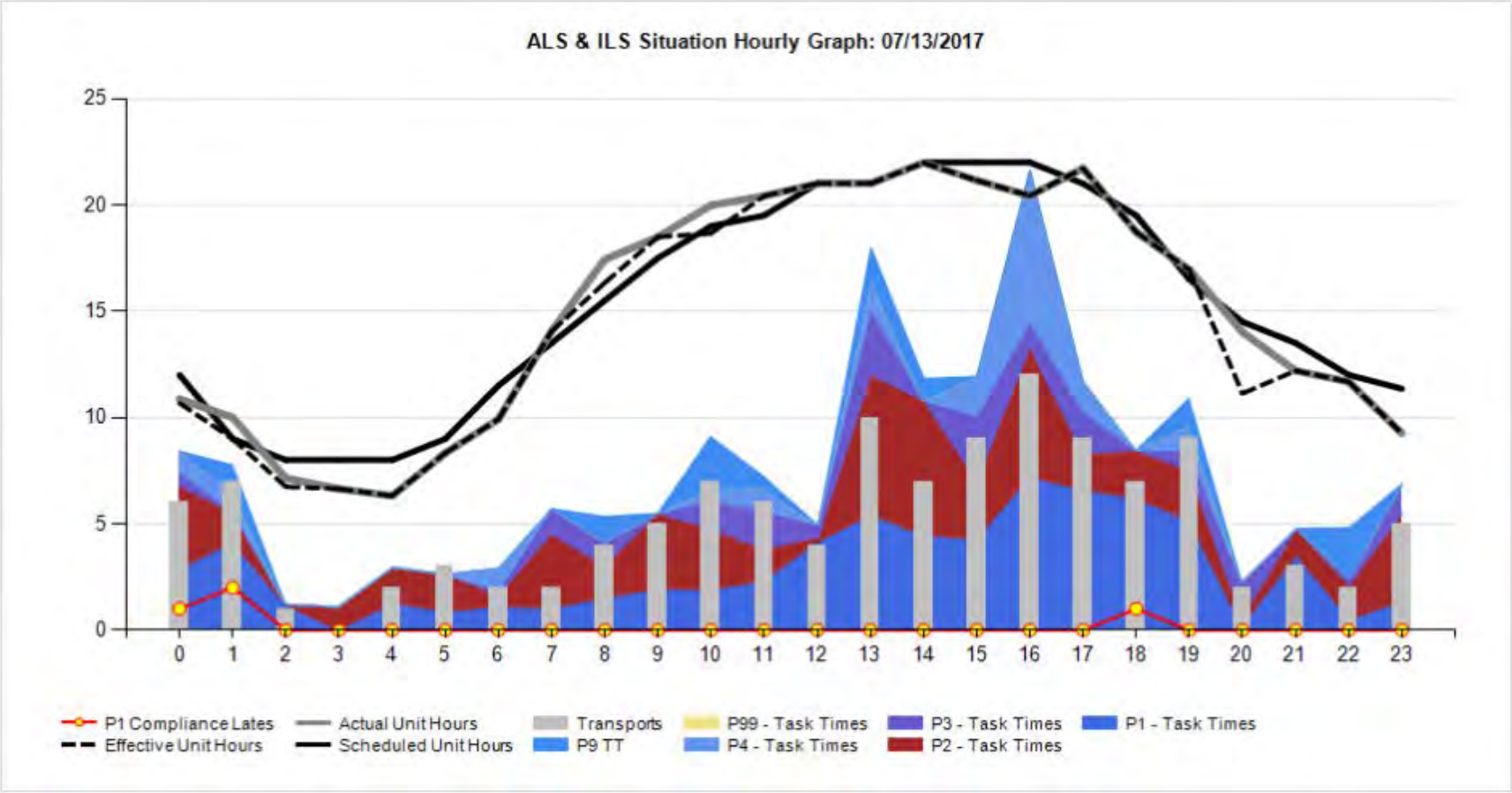



Daily System Review

Daily System Review

- Daily After Action Review Group
  - Performance Data
  - Schedule
  - Weather
  - Seasonal / Special Events
  - Disaster Mitigation (e.g. Lemmon Valley Flood)
  - Tracking & Trending
  - Catalyst for permanent system changes

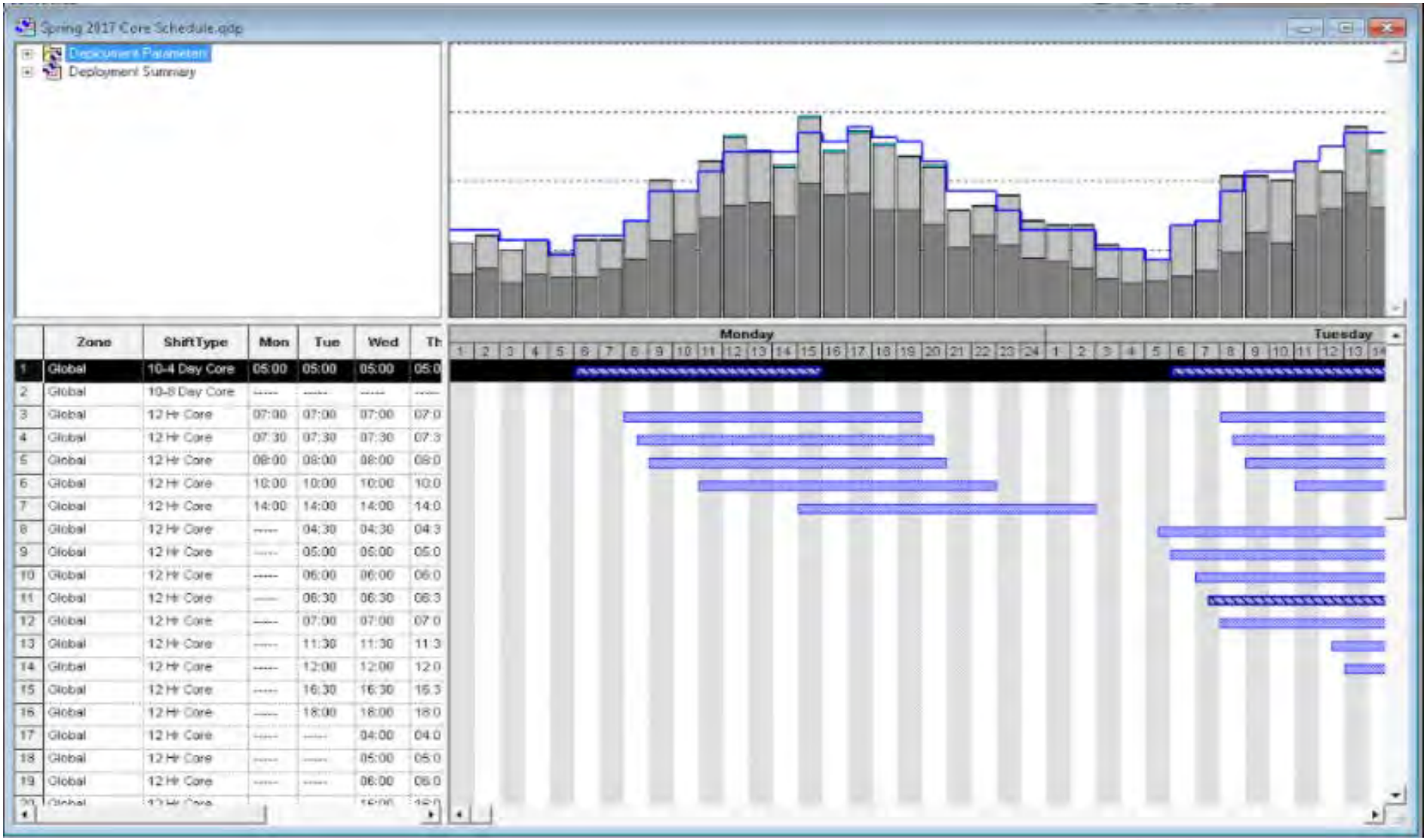
After Action Review



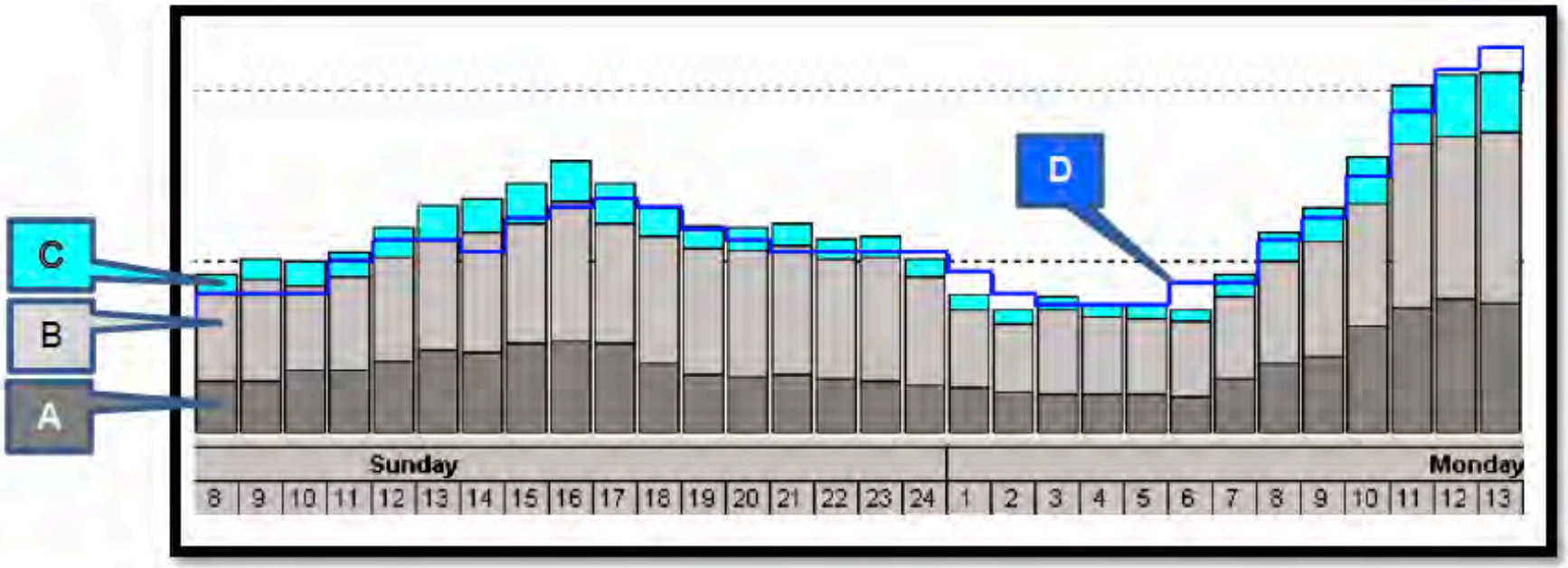
Biannual System Review

Data Driven Biannual System Review

- Framework for our Staffing Model
- Past 20 weeks of call volume
- Seasonal Variables
- Supply (ALS Units) & Demand (Calls for Service)


Spring 2017 Core Schedule.qdp
Deployment Parameters
Deployment Summary
Monday
Tuesday
Zone
ShiftType
Mon
Tue
Wed
1 Global 10-4 Day Core 05:00 05:00 05:00
2 Global 10-8 Day Core
3 Global 12 Hr Core 07:00 07:00 07:00
4 Global 12 Hr Core 07:30 07:30 07:30
5 Global 12 Hr Core 08:00 08:00 08:00
6 Global 12 Hr Core 10:00 10:00 10:00
7 Global 12 Hr Core 14:00 14:00 14:00
8 Global 12 Hr Core 04:30 04:30
9 Global 12 Hr Core 05:00 05:00
10 Global 12 Hr Core 06:00 06:00
11 Global 12 Hr Core 06:30 06:30
12 Global 12 Hr Core 07:00 07:00
13 Global 12 Hr Core 11:30 11:30
14 Global 12 Hr Core 12:00 12:00
15 Global 12 Hr Core 16:30 16:30
16 Global 12 Hr Core 18:00 18:00
17 Global 12 Hr Core 04:00
18 Global 12 Hr Core 05:00
19 Global 12 Hr Core 06:00

System Scheduling Model



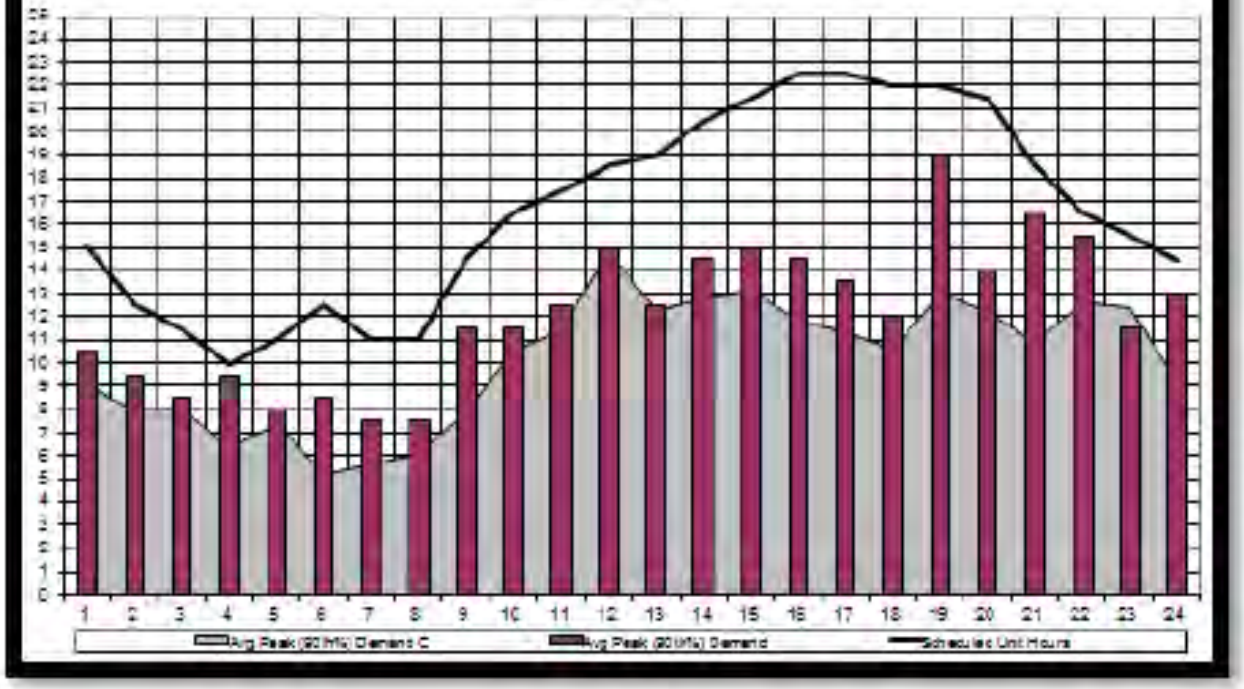
REMSA

Demand Analysis & Consumption

Nov 2015-Feb 2016 Demand

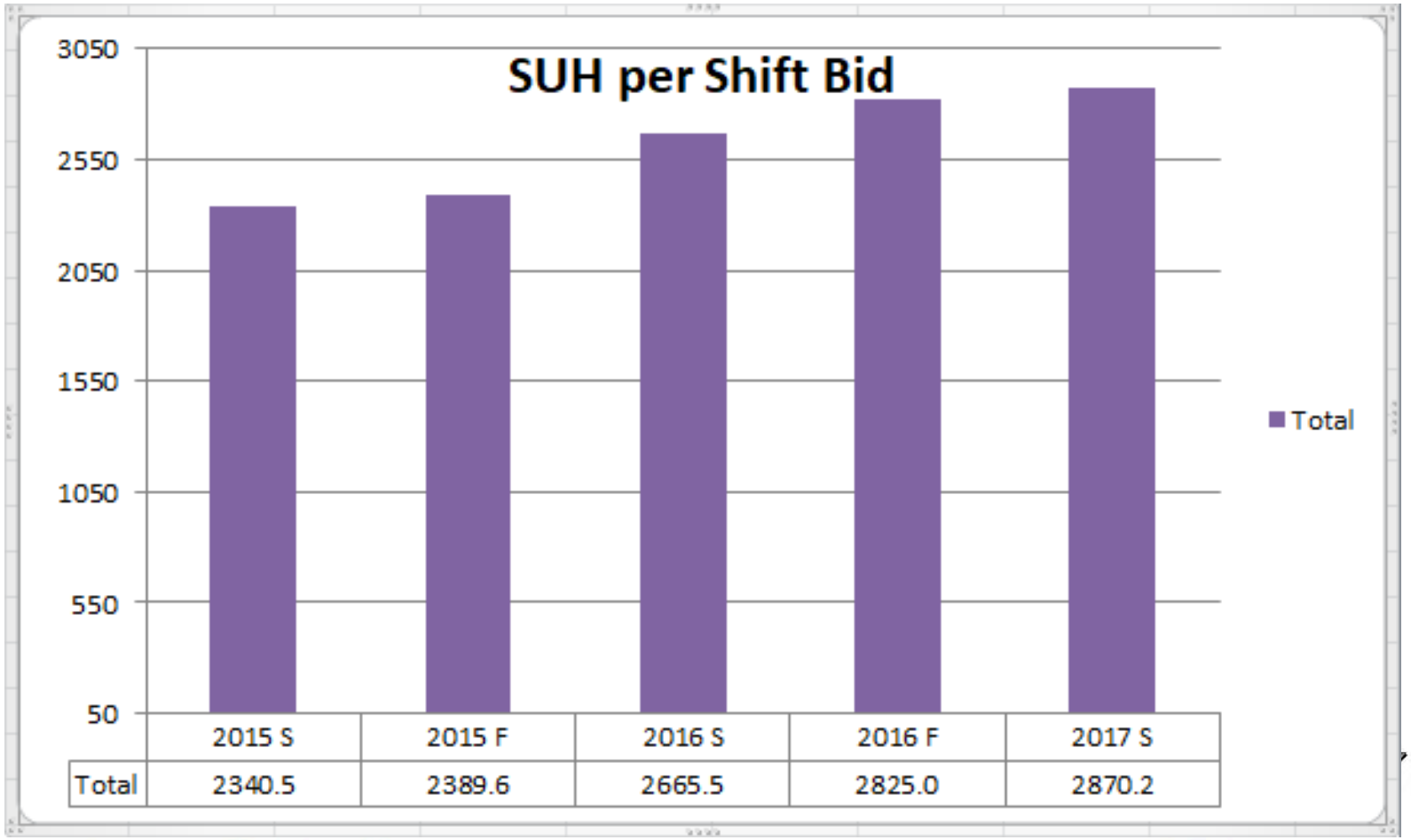
Summer Shift Schedule Apr-Oct

Saturday

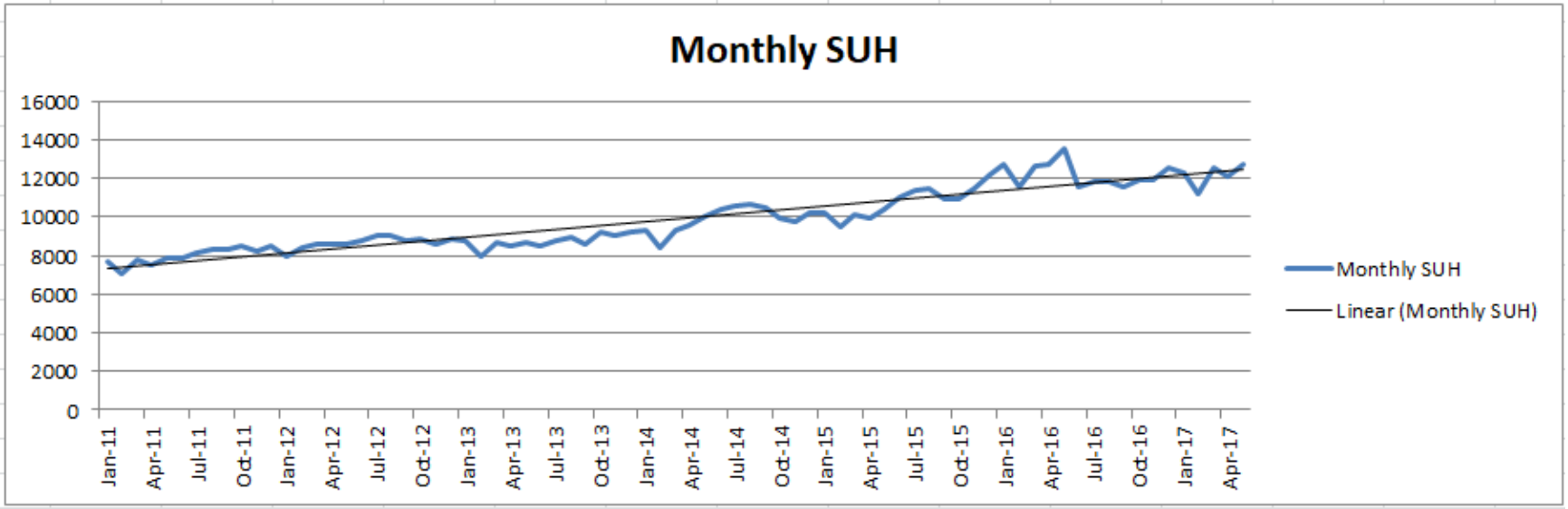


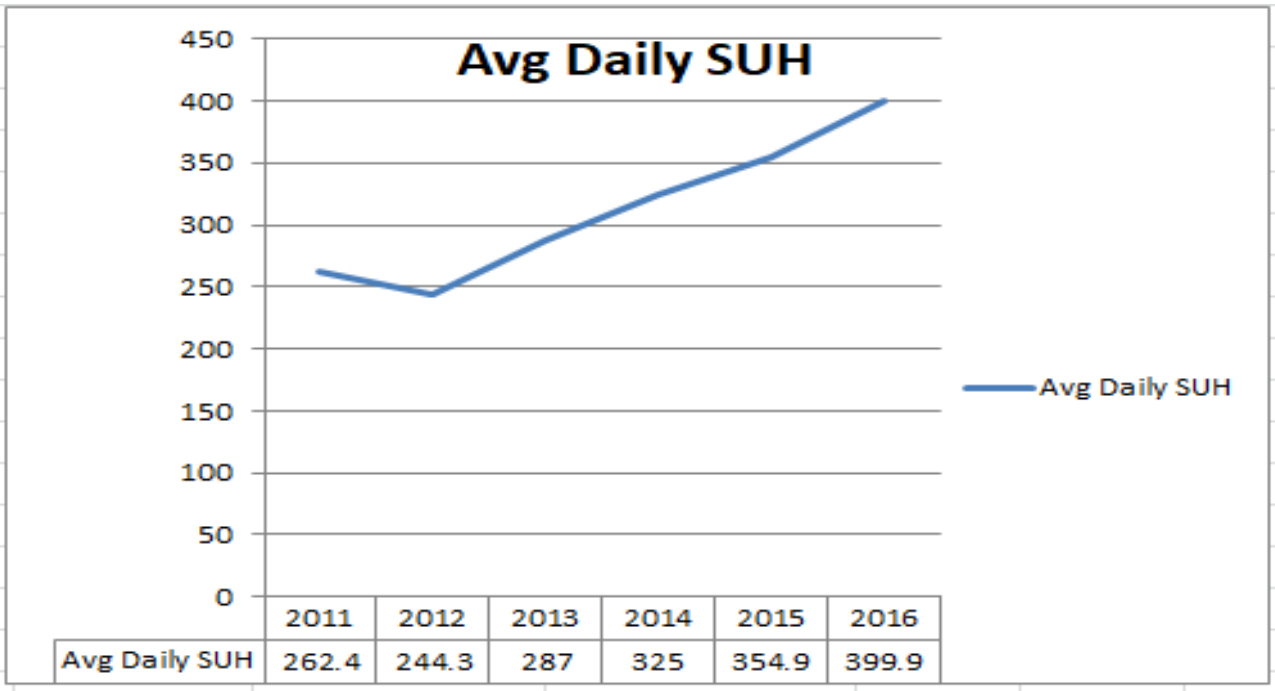
REMSA

Unit Hour increase by Shift Bid



	2015 S	2015 F	2016 S	2016 F	2017 S
Total	2340.5	2389.6	2665.5	2825.0	2870.2

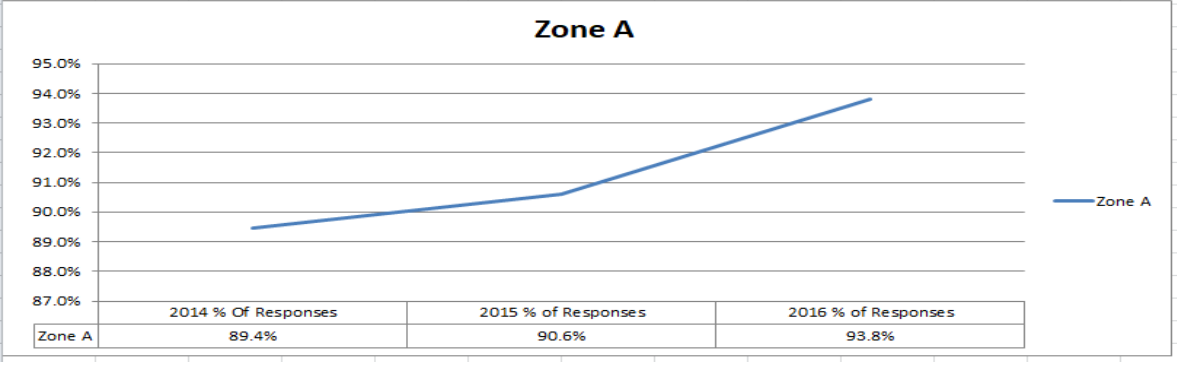




	2011	2012	2013	2014	2015	2016
Avg Daily SUH	262.4	244.3	287	325	354.9	399.9

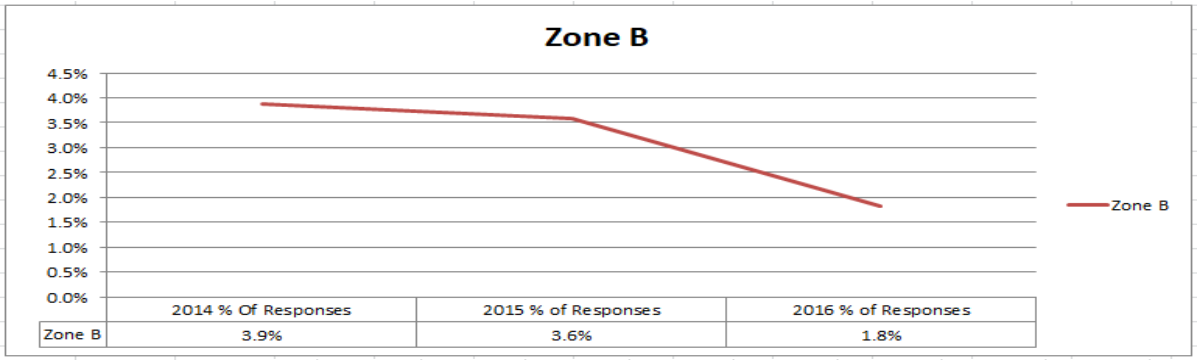
Franchise Map Review

Zone A



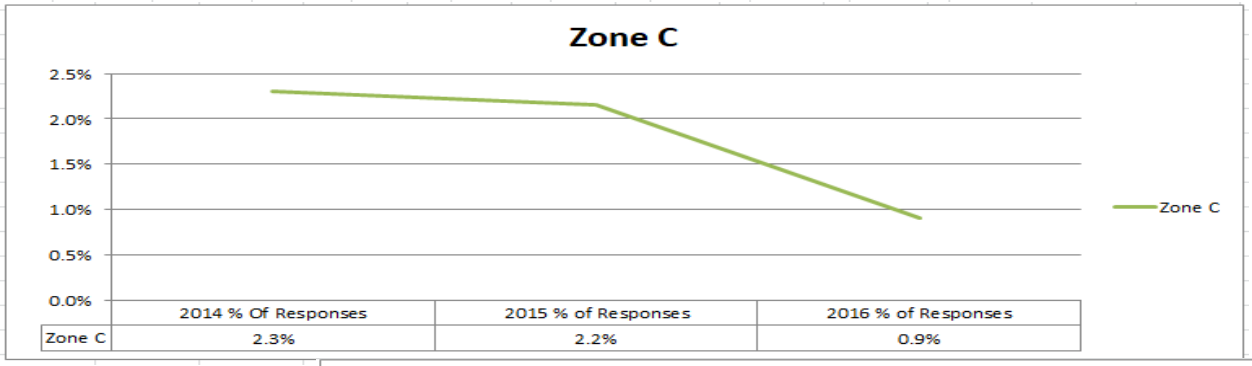
	2014 % Of Responses	2015 % of Responses	2016 % of Responses
Zone A	89.4%	90.6%	93.8%

Zone B



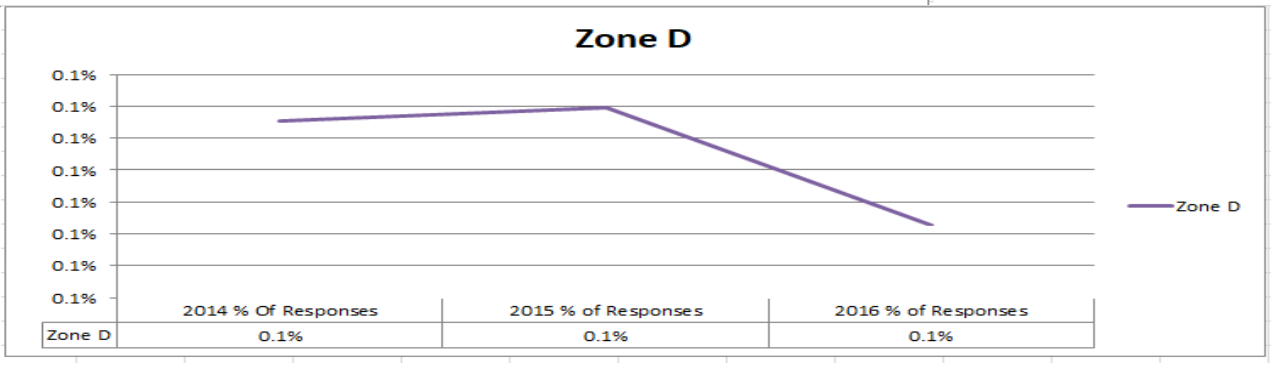
	2014 % Of Responses	2015 % of Responses	2016 % of Responses
Zone B	3.9%	3.6%	1.8%

Zone C



	2014 % Of Responses	2015 % of Responses	2016 % of Responses
Zone C	2.3%	2.2%	0.9%

Zone D

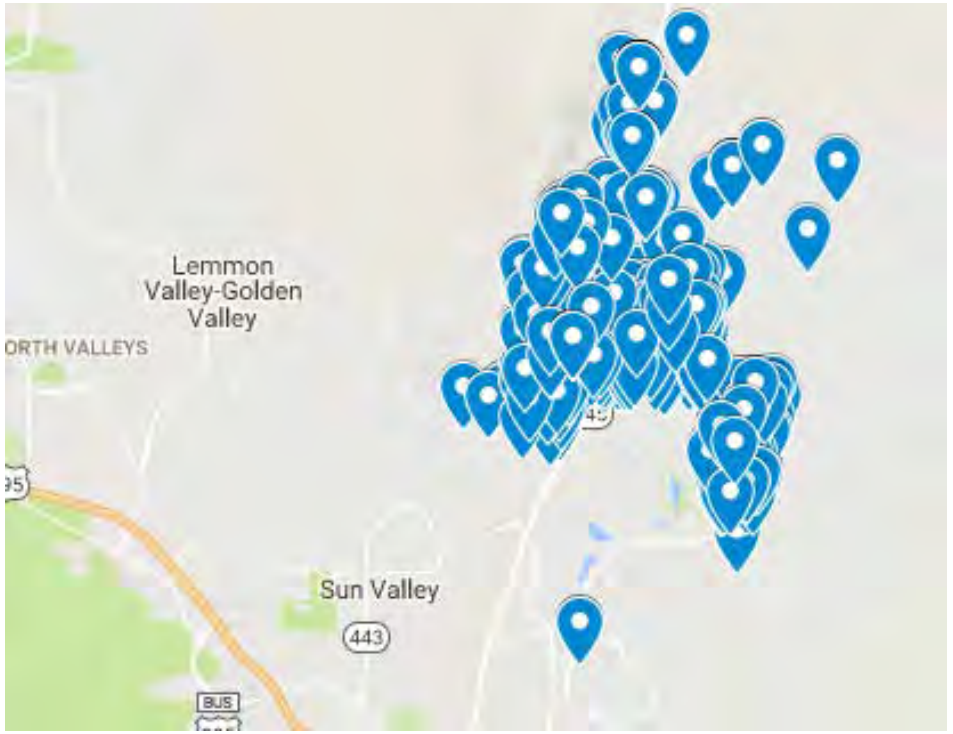


	2014 % Of Responses	2015 % of Responses	2016 % of Responses
Zone D	0.1%	0.1%	0.1%

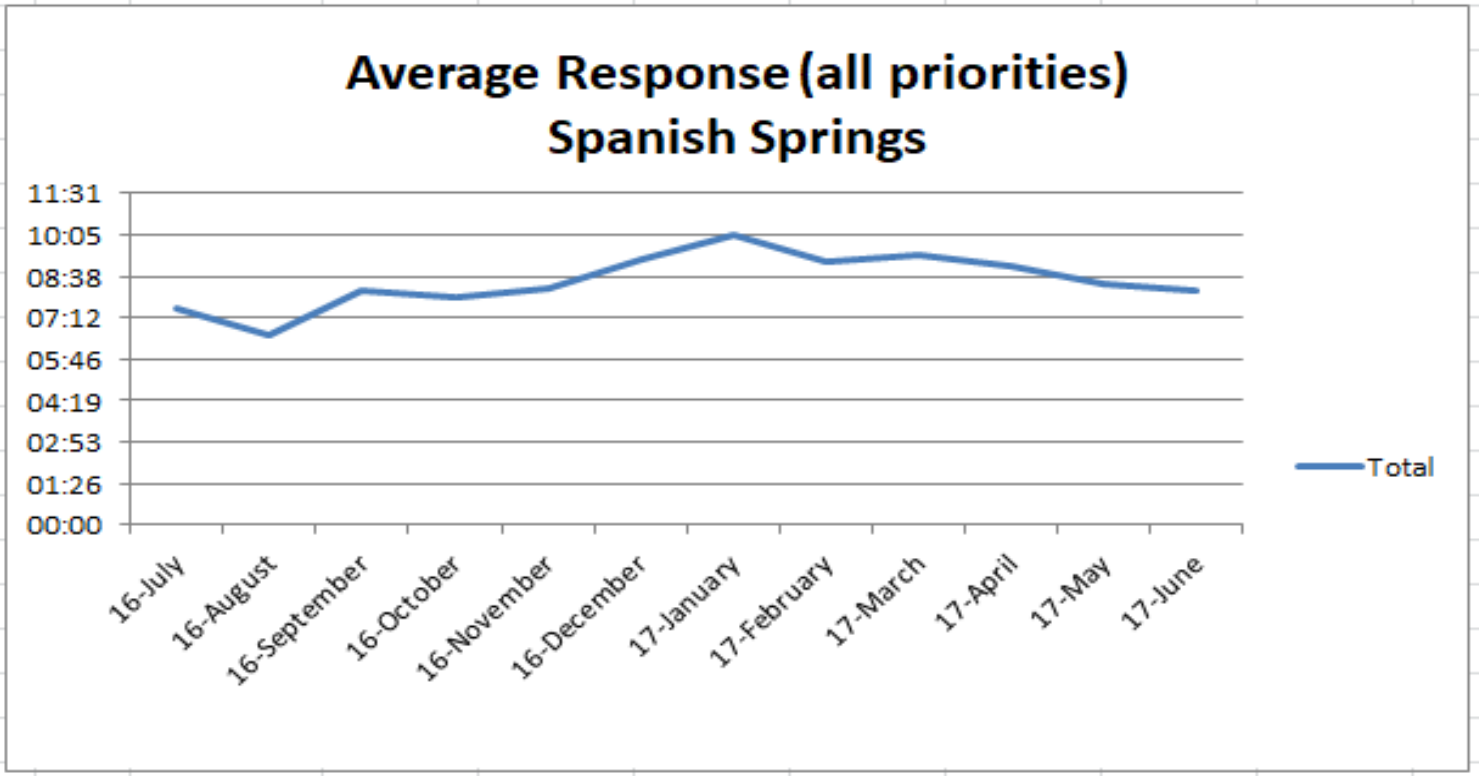
Case Study

WingSpan Post

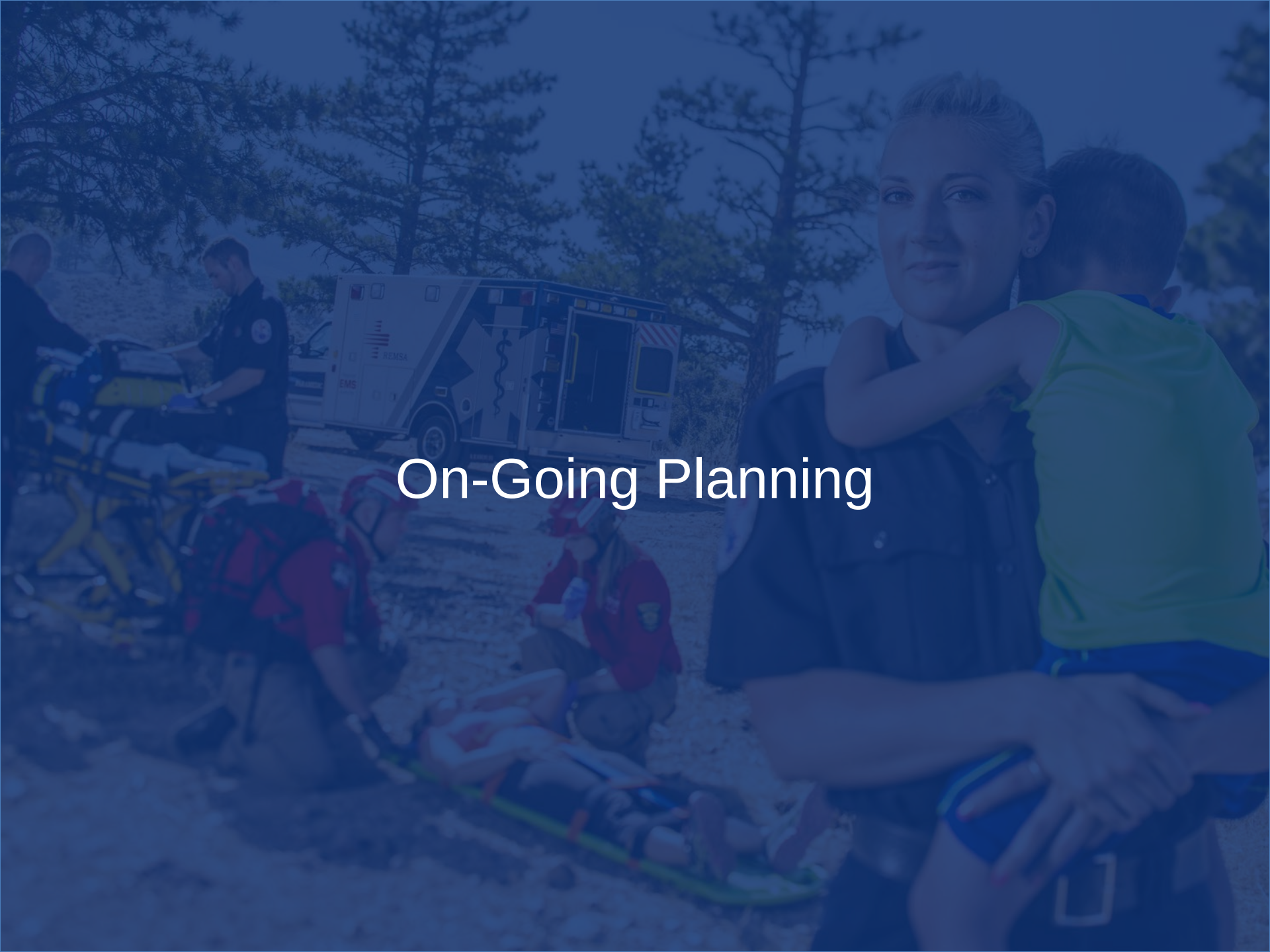
- July 2016 Map Implementation
- Approx. 10 months of Response Data
- June 2017 relocated post to Eagle Canyon & Pyramid



Spanish Springs Response Times



REMSA


On-Going Planning

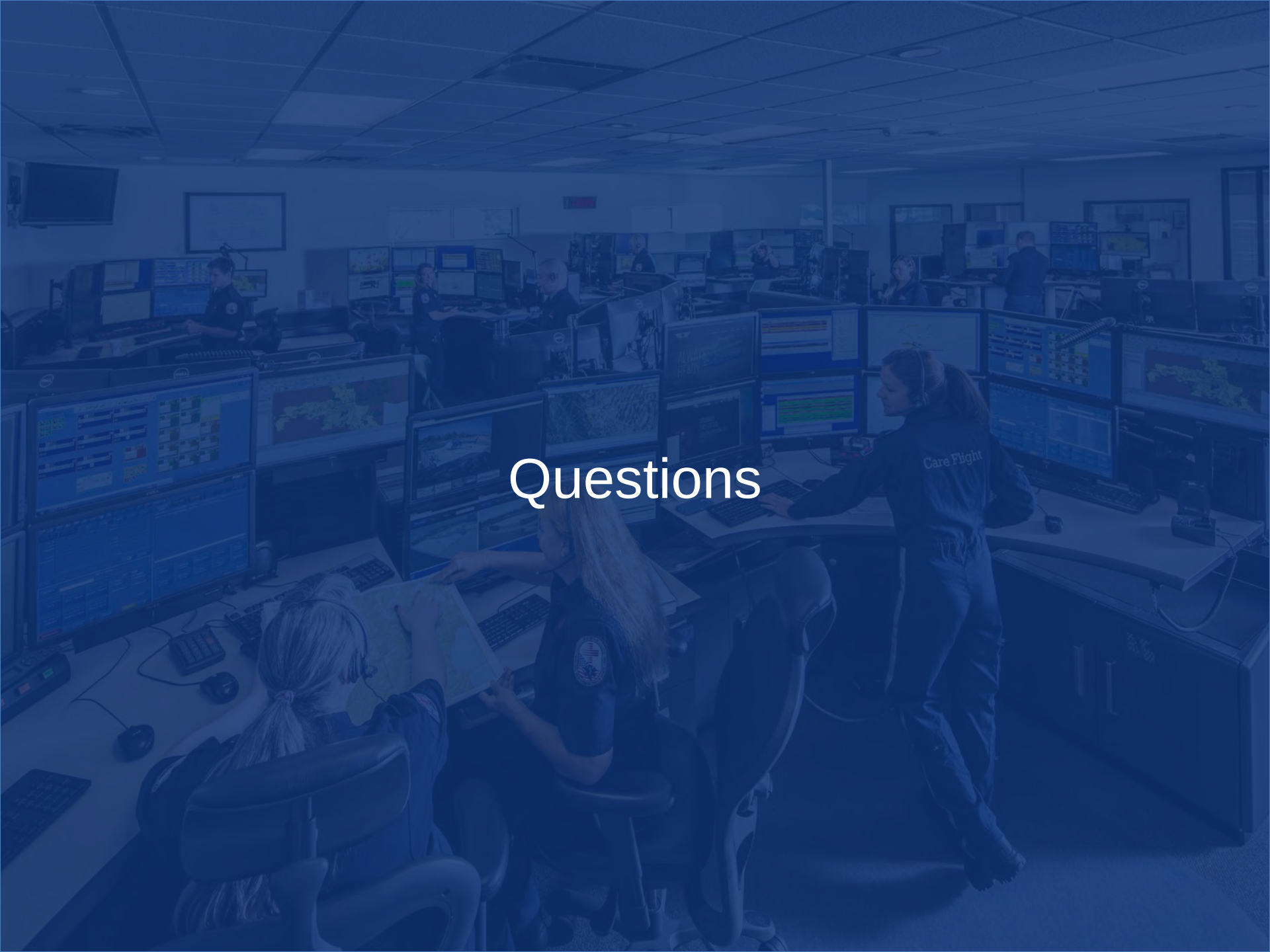
On-Going Planning

- Community Developer & Planning Meetings
- Road & Access Infrastructure Planning

EMS System Innovations

EMS System Innovations

- OMEGA / Nurse Health Line
- ILS Interfacility Unit Utilization
- Public Service Campaigns
- Special Event Medical Coverage
- Specialty Team Utilization (e.g. TEMS, SAR)
- ALS Single Resource Rapid Response
- First Response Partner Collaboration



Questions

The attached was presented to the **Emergency Medical Services Advisory Board** during the meeting held on August 3, 2017 by REMSA for Agenda Item No. 9.

Attachment C

2017 ANNUAL CONFERENCE
COUNCIL OF STATE AND TERRITORIAL EPIDEMIOLOGISTS

JUNE 4-7, 2017
BOISE, ID

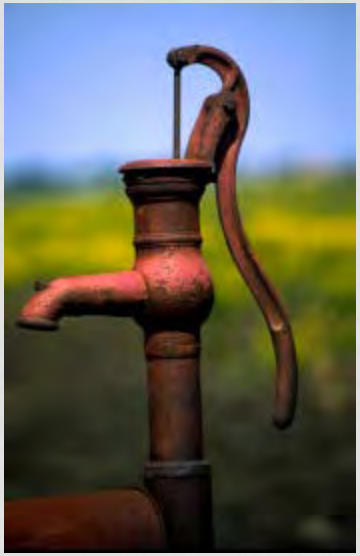
COUNCIL OF STATE AND TERRITORIAL EPIDEMIOLOGIST (CSTE)

- CSTE is an organization which helps foster relationships among epidemiologists nationwide & internationally
- Work focused on advancing public health policy & epidemiologic capacity
- Promote effective use of epidemiologic data to guide public health practice & improve health
- Develop standards of practice
- 2017 annual conference
  - The largest gathering of applied epidemiologists in the nation (~1,500)
  - Over 700 presentations & roundtable discussions related to public health

CSTE CONFERENCE TRACKS

- Chronic disease
- Maternal child health
- Environmental health
- Infectious disease
- Occupational health
- Surveillance/informatics**
- Injury epidemiology**
- Substance abuse**
- Tribal epidemiology

**largely focused on these tracks



EXAMPLES OF SESSIONS ATTENDED

- Identifying risk factors for opioid overdose deaths using EMS data (Kansas)
- Impacts of bystander versus EMS administered Naloxone (Tennessee)
- Use of ED syndromic surveillance data to monitor opioid-related overdoses (New Hampshire)
- Monitoring for an increase in mental health-related ED admits after a terrorist event (New Jersey)
- Developing & importing electronic case report forms (CDC representative)
- Emergency preparedness & infection control practices in urgent care facilities (NYC)
- Attended over 45 presentations

REOCCURRING THEMES

- Fentanyl analogues are an increasing concern nationwide

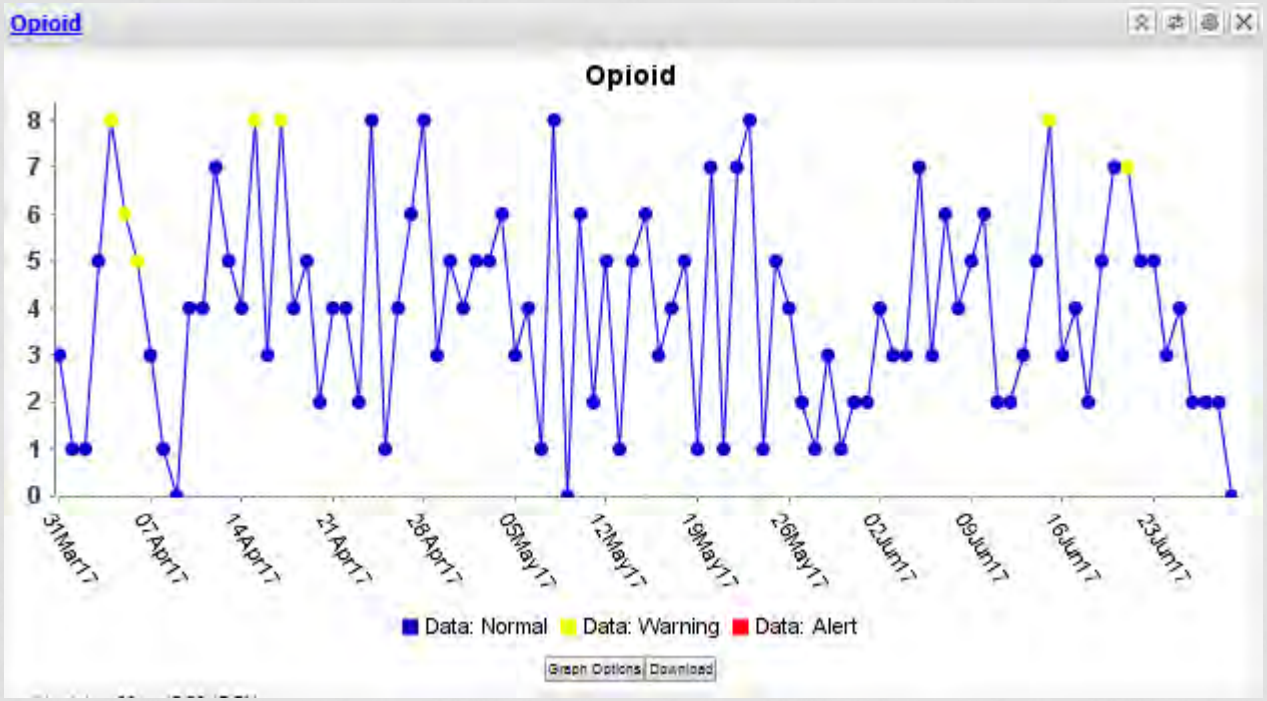
- Emergency room & hospital data are widely used for
  1. As an early warning system
     - Overdoses, environmental hazards, & foodborne illness

  2. To conduct retrospective studies to describe populations impacted by a public health issue or evaluate trends related to public health issues
     - Motor vehicle accidents, falls, & heat-related illnesses

SIMILAR TO 2016…

SYNDROMIC SURVEILLANCE REOCCURRING THEME

EXAMPLE OF ESSENCE UTILITY



FUTURE PROJECTS

- Work with state partners to explore utilization & application of Nevada's Prescription Drug Monitoring Program data
- Continue to build ESSENCE (syndromic surveillance tool) queries to include more than substance-related ED visits
- Continue to pilot with local hospitals in order to obtain pertinent information to evaluate pre-hospital patient care & work towards improving health outcomes

Data collection & analysis should result in action intending to improve public health