



SKY LAKES  
MEDICAL CENTER

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ANNUAL  
TRAUMA  
REPORT

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2020

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VOLUME 4

**SKY LAKES MEDICAL CENTER**

2865 Daggett Avenue

Klamath Falls, OR.

547.882.6311

[www.skylakes.org](http://www.skylakes.org)

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# CORONA VIRUS RYUK VIRUS TRAUMA

## 2020: A SYSTEM-WIDE LIVE TEST

In simultaneous circumstances of world-wide pandemic and Ryuk ransomware attacks trauma patients were provided care without falter.

# 25%

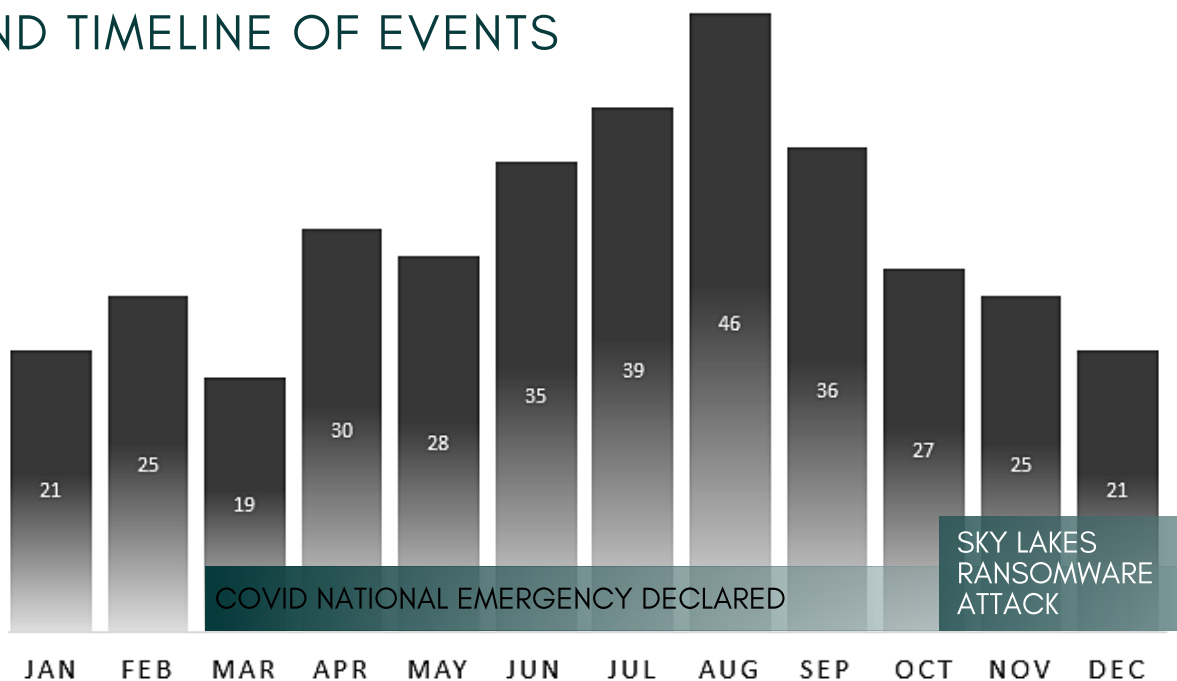
WORKFORCE TRANSITIONED  
TO WORK FROM HOME

# 23

DAYS OF 100% OFFLINE  
TECHNOLOGIES (NO EMR)

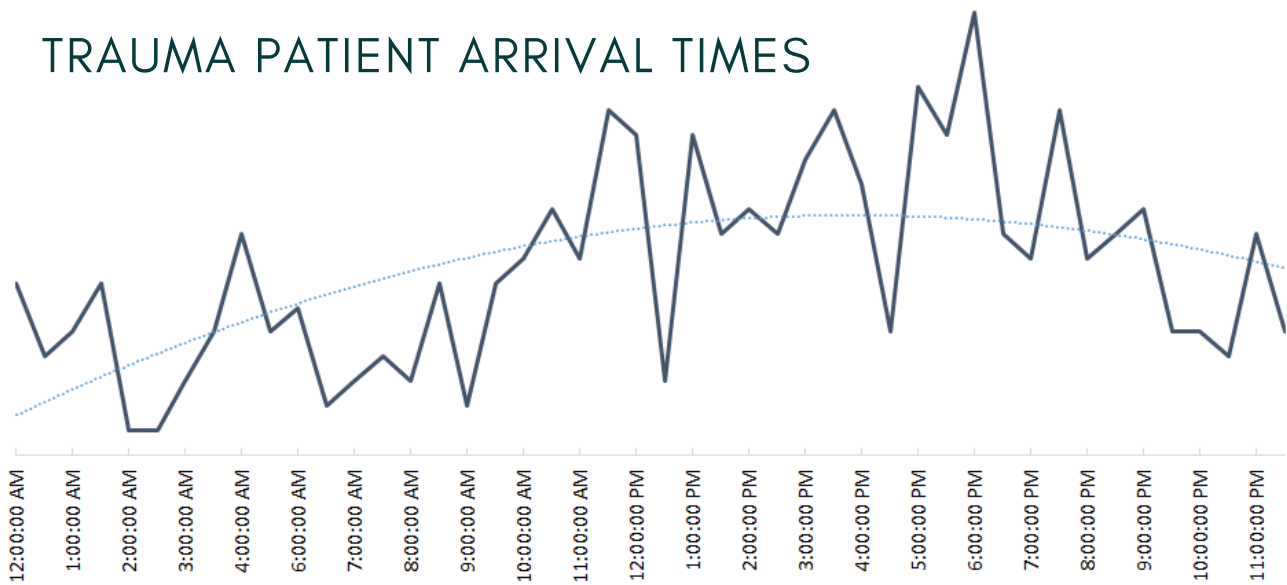


## TRAUMA BY MONTH OF 2020 AND TIMELINE OF EVENTS

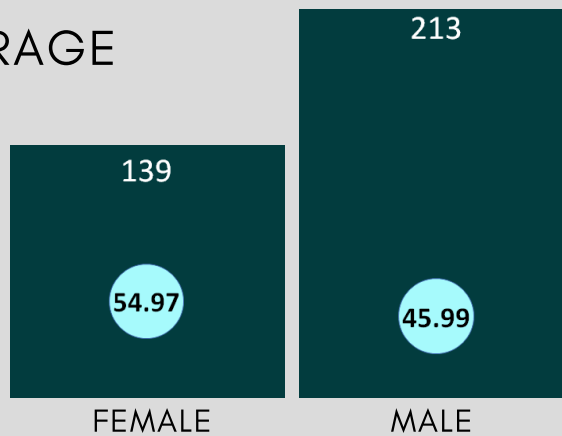




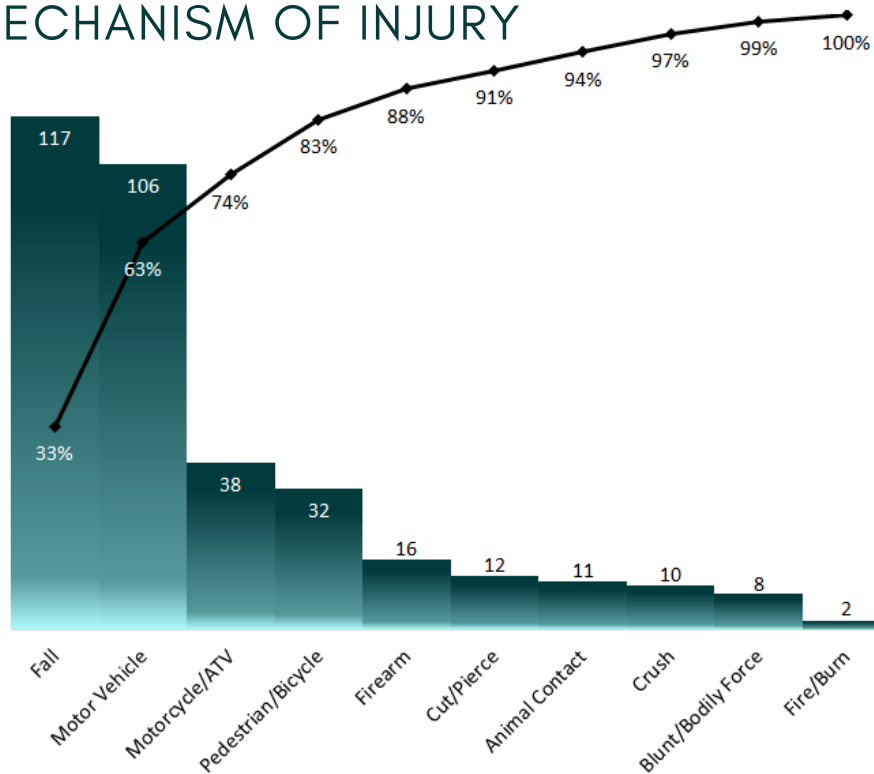
## TRAUMA PATIENT ARRIVAL TIMES



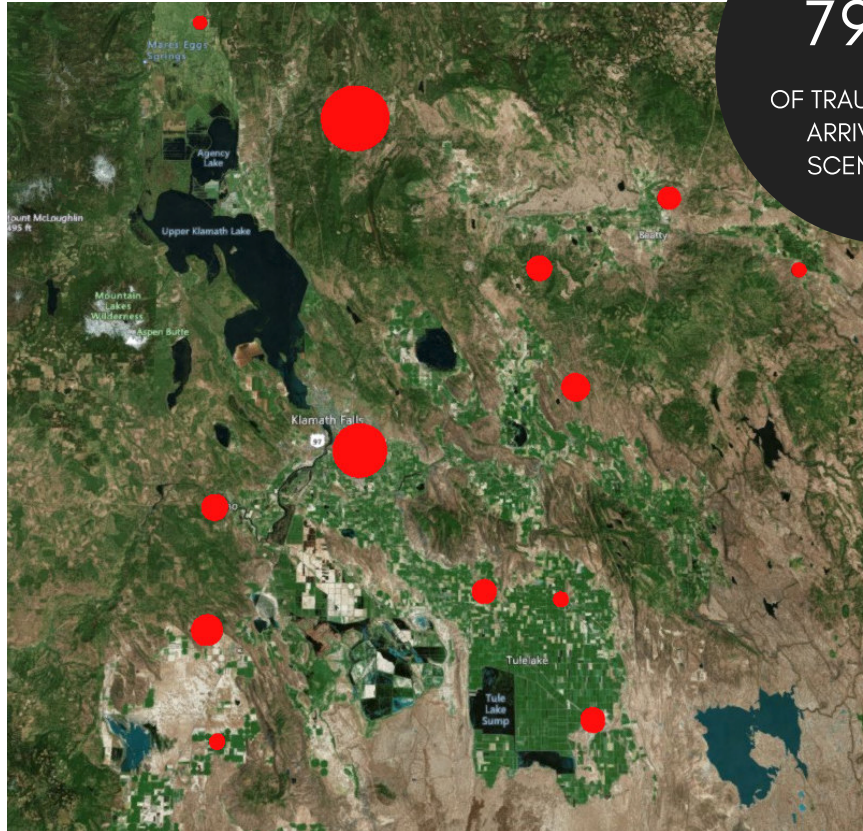
## SUMMARY OF AVERAGE AGE AND GENDER



## 2020 MECHANISM OF INJURY



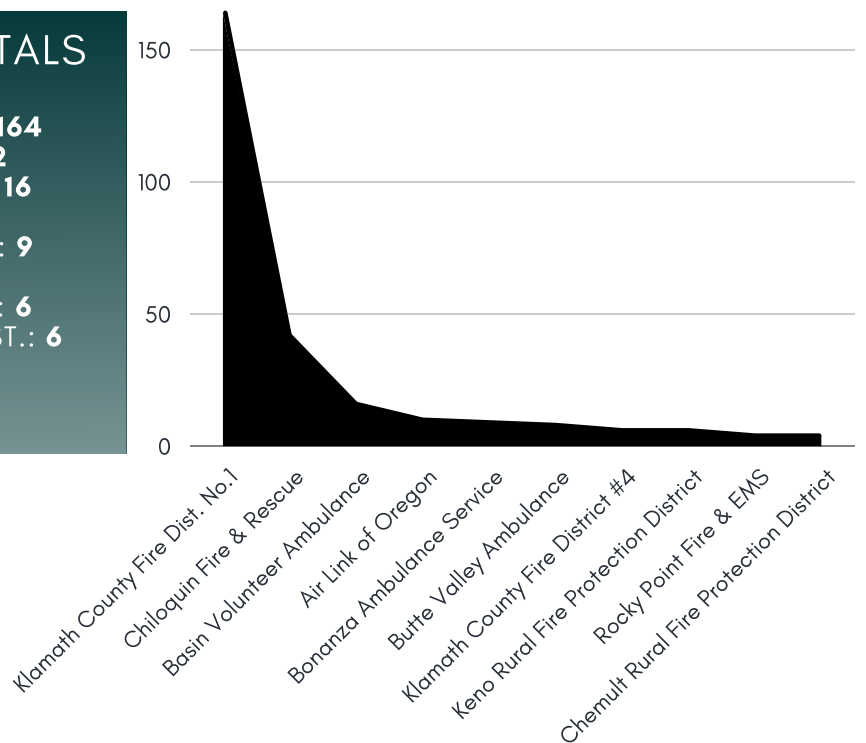
## LOCATION OF TRAUMA SHOWN BY QUANTITY SCALE AND LOCATION



**79.3%**  
OF TRAUMA PATIENTS  
ARRIVED FROM  
SCENE BY EMS

### TRANSPORT AGENCY TOTALS

KLAMATH COUNTY FIRE DIST. #1: **164**  
 CHILOQUIN FIRE & RESCUE: **42**  
 BASIN VOLUNTEER AMBULANCE: **16**  
 AIR LINK OF OREGON: **10**  
 BONANZA AMBULANCE SERVICE: **9**  
 BUTTE VALLEY AMBULANCE: **8**  
 KLAMATH COUNTY FIRE DIST. #4: **6**  
 KENO RURAL FIRE PROTECTION DIST.: **6**  
 ROCKY POINT FIRE & EMS: **4**  
 CHEMULT RFPD: **4**



## MCLAUGHLIN LIFETIME ACHIEVEMENT AWARD

The McLaughlin Lifetime Award in EMS was established in 2014 by Sky Lakes Medical Center and the Klamath County Ambulance Advisory Committee. The award was originally presented to and named after Paramedic Jane McLaughlin for her lifetime dedication to the EMS system of Klamath County. Jane represents all of the qualities and characteristics of lifetime dedication to EMS.

Some of those qualities include: Provides the highest standards in EMS care; exemplifies compassionate care; is a respected role model within their local community; demonstrates commitment to continuing education; exhibits leadership skills and encourages the learning and development of others.

### 2020 RECIPIENT KATHY FARNAM

In 1982 our family was involved in an auto vs motorcycle accident. As a young boy laid in the road needing medical attention and nobody on scene knew what to do, it was then that Mom decided she wanted to be an EMT. I can remember conversations between her and Dad about having 4 kids, living on a ranch, and never wanting to feel helpless in an emergency situation again.

Mom enrolled in an EMT class shortly after the accident and has been a volunteer with Butte Valley Ambulance since. Over the years it has been a part of all of our lives, Mom's pager goes off and we all know that she will be gone for at least 3 hours. Mom has always had the extraordinary ability to balance life, she was a mother involved in all of our sports and other extracurricular activities, she was a rancher's wife, and held a career in the dental field and was able to volunteer her time as an EMT on the ambulance. There were times growing up that I can remember her being out on the ambulance during the middle of the night and just getting home in time to get us kids off to school and go to work herself. Being an EMT out in a rural area requires a person to be quick on their feet, not only being able to make life saving decisions but also decisions to keep herself and other team members safe.

- Kathy's Daughter, Chana



**Kathy Farnam &  
Jane McLaughlin**  
2020 Awards Ceremony

# KLAMATH COUNTY AMBULANCE ADVISORY COMMITTEE

KCAAC REPORT TO KLAMATH COUNTY COMMISSIONERS  
JANUARY 1, 2020 - DECEMBER 31, 2020

	NUMBER OF AMBULANCES	TOTAL EMS RESPONSES	TOTAL MILEAGE	NUMBER OF TRANSPORTS
<b>Basin AMB</b>	4	435	Not reported	277
<b>Bonanza AMB</b>	1	306	11729	224
<b>Butte Valley AMB</b>	2	Not reported	Not reported	Not reported
<b>Chemult RFD</b>	3	154	10894	52
<b>Chiloquin F&amp;R</b>	3	509	46006	408
<b>Crater Lake AMB</b>	1	25	Not reported	6
<b>Crescent RFPD</b>	2	513	34860	268
<b>KCFD#1</b>	5	5832	27745	4178
<b>KCFD#4</b>	1	Not reported	Not reported	Not reported
<b>Keno RFPD</b>	2	Not reported	Not reported	Not reported
<b>Lapine FD</b>	2	1528	39020	888
<b>Rocky Point RFPD</b>	1	96	1400	53
<b>Grand Total</b>	<b>27</b>	<b>9398</b>	<b>171654</b>	<b>6354</b>

# 9,398

EMS RESPONSES

# 6,354

EMS TRANSPORTS

# 27

AMBULANCES

## KLAMATH COUNTY AMBULANCE ADVISORY COMMITTEE

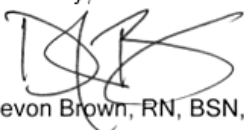
### PRESIDENT'S STATEMENT OF SUPPORT

The Klamath County Ambulance Advisory Committee fully supports Sky Lakes Medical Center's Trauma Program. The Committee consists of appointed members representing every Ambulance Service Area (ASA) in Klamath County. Other agencies that are represented on this committee include Butte Valley Ambulance, Central Cascades Fire & EMS, Crater Lake National Park, Kingsley Fire Department, La Pine RFPD, Klamath County Commissioners, Klamath County 9-1-1 Dispatch Center, Klamath Community College EMS Education and Sky Lakes Medical Center. We provide service over 6,000 square miles in Klamath County and transport the vast majority of our patients to Sky Lakes Medical Center.

Stacey Holmes RN, CEN, TCRN Trauma Program Manager at Sky Lakes Medical Center, has been an active participant of the Klamath County Ambulance Advisory Committee since 2004. As the hospital/EMS liaison, Stacey is an ex-officio member and provides regular information to the committee related to best practices in trauma care. She is also actively involved in our QI program, educational endeavors and review/implementation of standing orders.

As a committee of EMS providers in Klamath County, we take great pride in supporting the Trauma Program at Sky Lakes Medical Center.

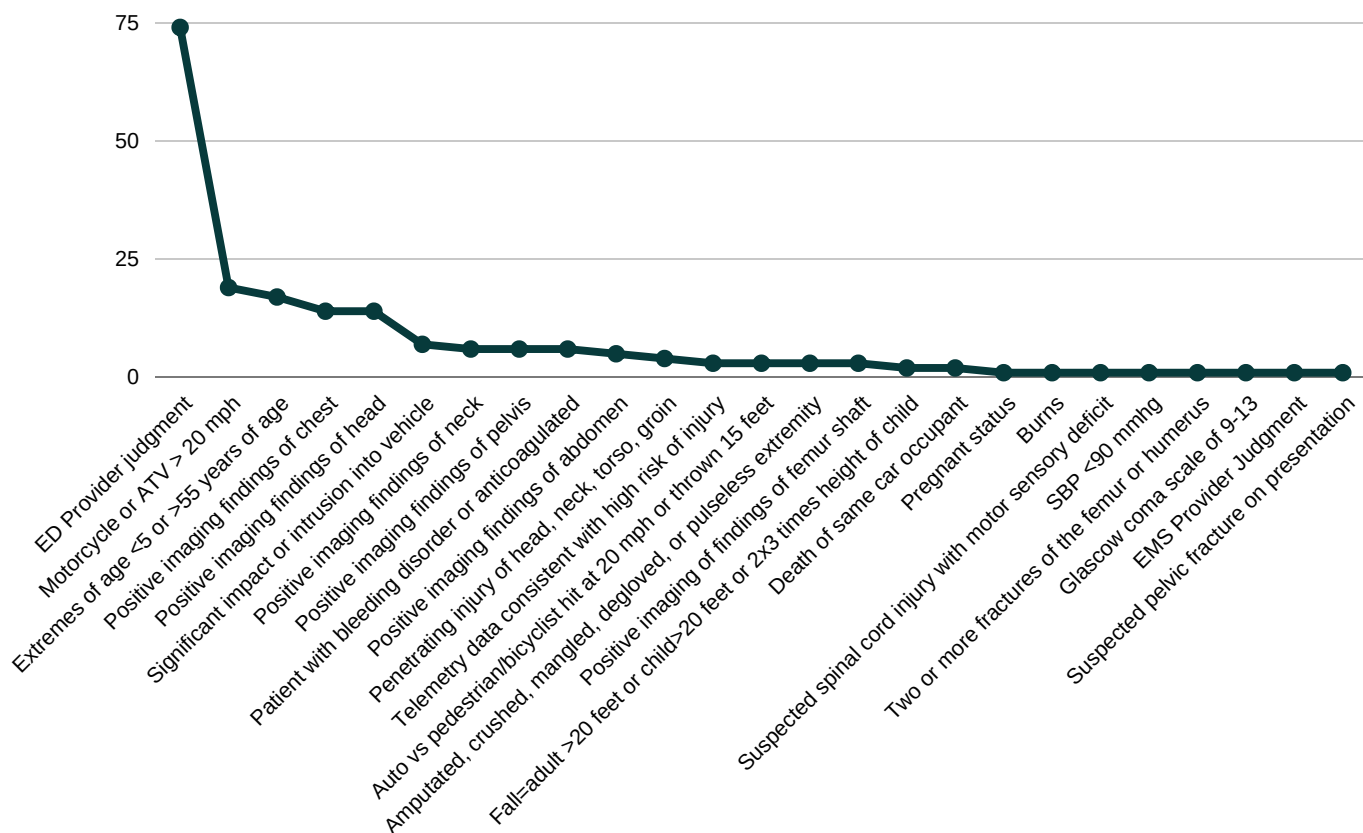
Sincerely,



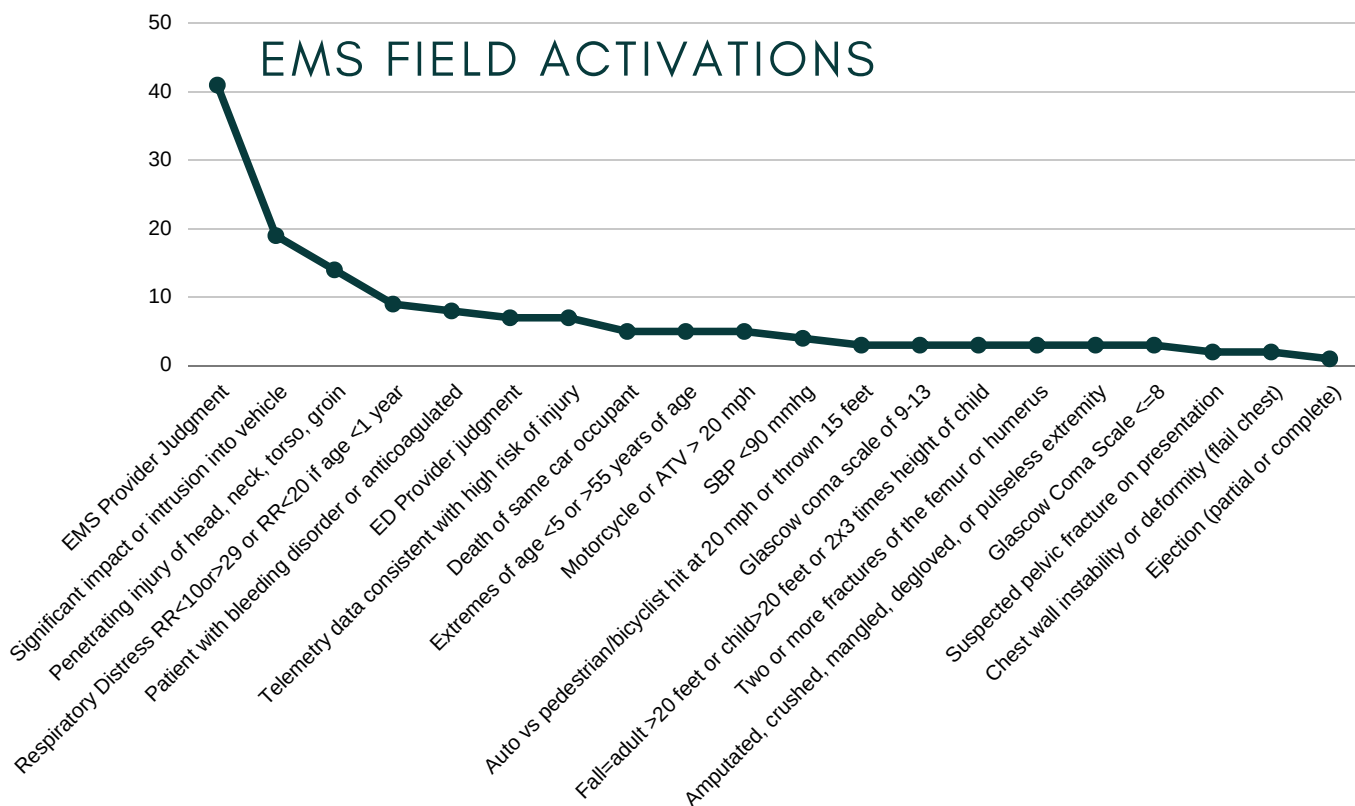
Devon Brown, RN, BSN, Paramedic

President, Klamath County Ambulance Advisory Committee

## EMERGENCY DEPARTMENT ACTIVATIONS



## EMS FIELD ACTIVATIONS



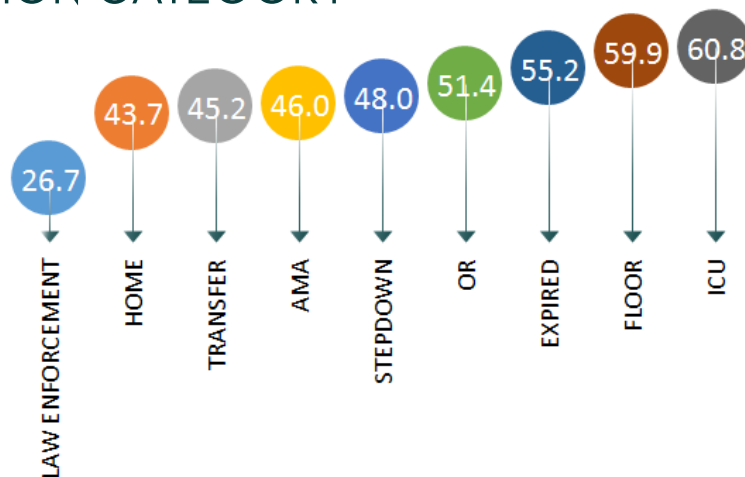


## AVERAGE PROVIDER RESPONSE TIMES BY ACTIVATION LEVEL

	Average EDMD Door to Doc Time (Mins.)	Average NP Door to Doc Time (Mins.)	Average TRS Door to Doc Time (Mins.)	Average ORS Door to Doc Time (Mins.)
Full Activation	1.83	NA	12.21	51.20
Modified Activation	12.62	36.63	82.23	118.54
No Team Activation	18.00	NA	NA	NA
Retrospective	32.88	NA	NA	155.00
<b>Grand Total</b>	<b>11.81</b>	<b>36.63</b>	<b>43.21</b>	<b>108.53</b>

When trauma occurs it's vital that the trauma team respond quickly. During a full trauma system activation Sky Lakes demonstrates immediate response by all members of the trauma team, including but not limited to the Surgeons, ED Doctors, Residents, Nurses, Techs, Radiology, Respiratory, Lab, and Pharmacy team members. We are proud to serve our community with a trauma service composed of so many knowledgeable, caring, and dedicated staff members. Families in Klamath County and surrounding areas can count on a skilled trauma response in times of emergency.

## AVERAGE TRAUMA PATIENT AGE IN YEARS BY DISPOSITION CATEGORY



# 49.6

OVERALL AVERAGE AGE  
2020 TRAUMA PATIENTS

# 244

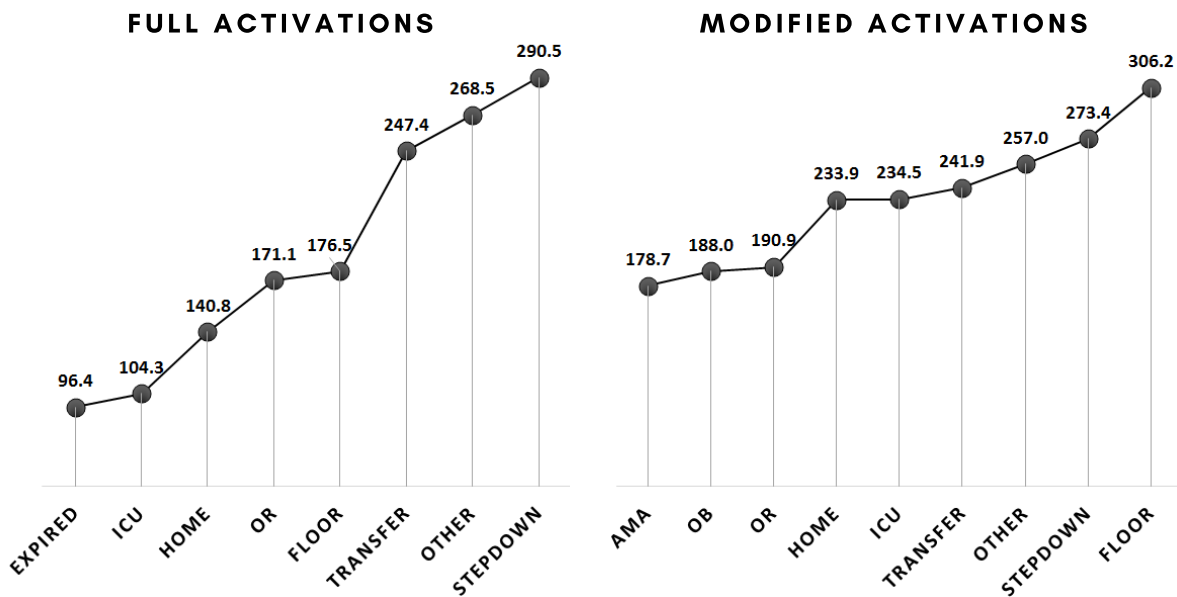
2020 OVERALL AVERAGE  
MINUTES LENGTH OF STAY  
IN ED, ALL TRAUMA

# 352

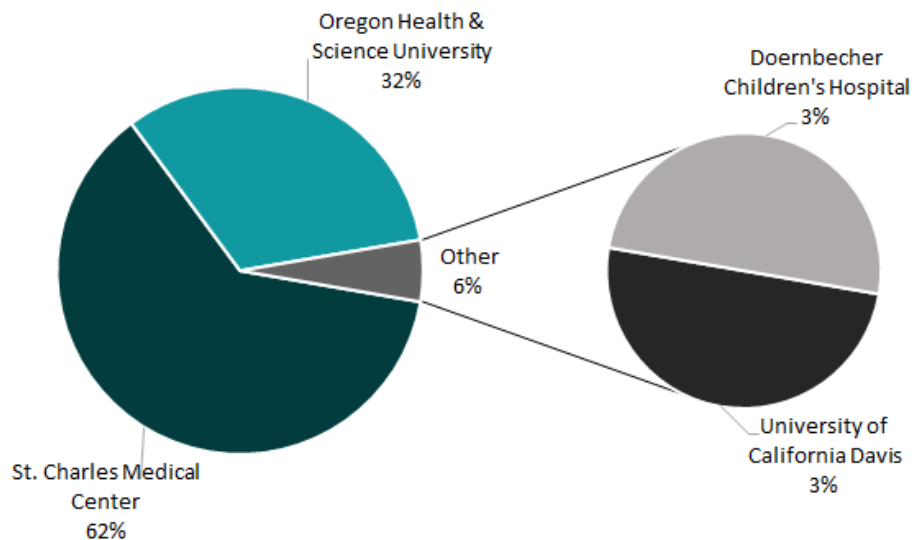
TOTAL TRAUMA PATIENTS  
IN 2020



## AVERAGE EMERGENCY DEPARTMENT LENGTH OF STAY IN MINUTES



## REGIONAL TRAUMA SYSTEM TRANSFER FROM ED TO OUTSIDE FACILITIES



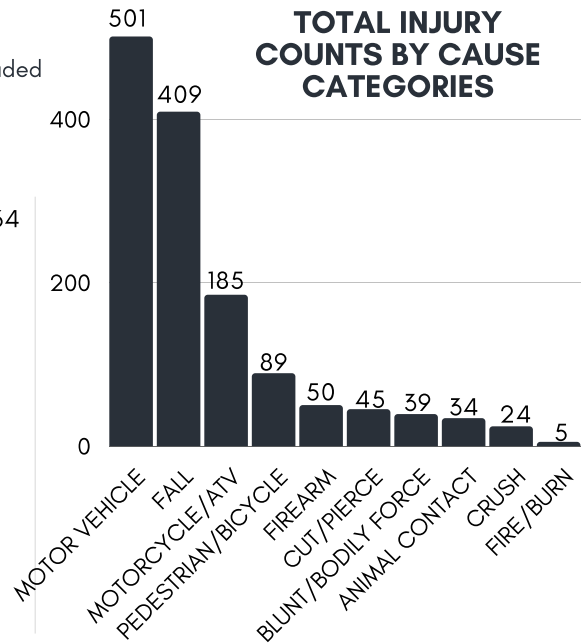
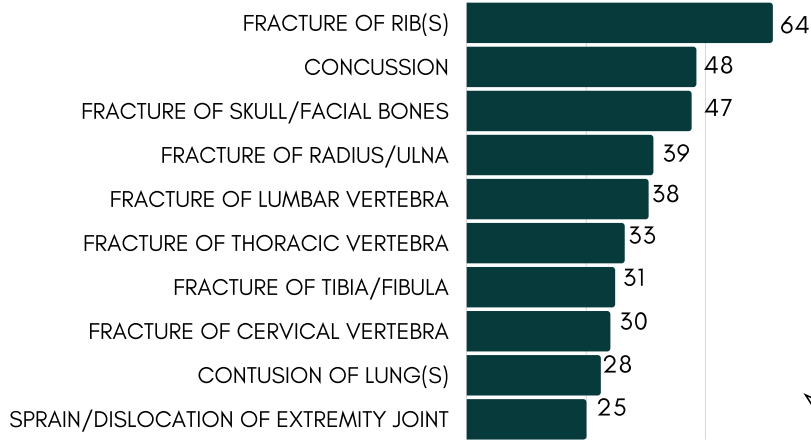
# 37

TRAUMA PATIENTS REQUIRED TRANSFER TO HIGHER LEVEL OF CARE

## TOP INJURIES FROM TRAUMA

221 external abrasions/contusions & 131 external lacerations were excluded from comparing and ranking all other injuries from trauma in 2020.

### TOP 10 INJURIES ACROSS CAUSE CATEGORIES



1ST: FRACTURE OF RIB(S)  
 2ND: CONCUSSION  
 3RD: FRACTURE OF LUMBAR VERTEBRA  
 4TH: FRACTURE OF TIBIA/FIBULA  
 5TH: FRACTURE OF RADIUS/ULNA

501

TOTAL INJURES



1ST: FRACTURE OF RIB(S)  
 2ND: CONCUSSION  
 3RD: FRACTURE OF LUMBAR VERTEBRA  
 4TH: FRACTURE OF THORACIC VERTEBRA  
 5TH: FRACTURE OF RADIUS/ULNA

409

TOTAL INJURES



1ST: FRACTURE OF SKULL/FACIAL BONES  
 2ND: FRACTURE OF RIB(S)  
 3RD: FRACTURE OF RADIUS/ULNA  
 4TH: FRACTURE OF HAND/FINGER(S)  
 5TH: CONCUSSION

185

TOTAL INJURES



1ST: FRACTURE OF THORACIC VERTEBRA  
 2ND: FRACTURE OF LUMBAR VERTEBRA  
 3RD: FRACTURE OF TIBIA/FIBULA  
 4TH: FRACTURE OF HUMERUS  
 5TH: FRACTURE OF SKULL/FACIAL BONES

89

TOTAL INJURES



1ST: PUNCTURE OF THIGH  
 2ND: FRACTURE OF HAND/FINGER(S)  
 3RD: PUNCTURE OF ABDOMEN/THORAX  
 4TH: PUNCTURE OF LOWER LEG  
 5TH: FRACTURE OF FOOT/TOE(S)

50

TOTAL INJURES

## DEPARTMENT SPOTLIGHT: ENVIRONMENTAL SERVICES

Arlene cleans an average of 25 rooms daily. She is able to manage the cleanliness of the rooms while at the same time maintain the rest of the auxiliary areas within the ED. Arlene's roll in the ED is of high importance and her perfect attendance makes her a very reliable staff member. We can depend on Arlene to be in for her shift early in the morning ready to rock and roll.

Arlene is a perfect fit for the ED and we are very fortunate to have her.



## COVID UNIT RESPONSE: EMERGENCY DEPARTMENT TENTS AND PLAN

In March of 2020 Sky Lakes Medical Center was preparing to for an impending surge of COVID-19 patients. The Trauma Team members were asked to assist in developing and implementing processes to triage and treat large numbers of patients. The Trauma Team's experience with Mass Causality Incident Drills as wells as the team's connections with local and regional partners allowed them to quickly and effectively implement the operational plans.



The tents were equipped for rapid triage and treatment. Patient flow patterns were established, and education was provided to all members of the care team. Consideration was made for the possibility of needing to triage large numbers of patients.

Through partnerships with Keno Fire Department and Klamath County Fire District #4 two large tents were erected in the Emergency Department ambulance bay. The Trauma Team worked with department leaders to modify the MCI START Triage process to meet symptomology of COVID-19 patients.

- Blue - No COVID symptomology
- Green - COVID symptomology with no oxygen demands
- Yellow - COVID symptomology with low-flow oxygen demands
- Red - COVID symptomology with high-flow oxygen demands or aerosolized procedures



## 2020 TRAUMA TRACK RESIDENTS

### NICK WEST

My name is Nick West and I am a resident at Cascades East Family Medicine. I grew up on a cattle ranch in northeast Oregon. I attended Oregon State University for undergraduate education before going to OHSU for medical school. In college I spent my summers either fighting wildland fire or doing basic science research in Amyotrophic Lateral Sclerosis. I enjoy mountaineering, mountain biking, running and backpacking. My wife and I have two young boys as well as two golden retrievers - life is busy right now! I plan to work at Winding Waters Clinic in Enterprise, Oregon, where I will do full scope Family Medicine including emergency medicine, inpatient medicine, outpatient, and endoscopies.



### CHARLIE PRICE

My name is Charlie Price and I am a resident in the 2022 class at Cascades East. I went to undergrad at University of Nevada and medical school at WesternU, COMP-NW. I love spending time with my family and doing all sorts of outdoor activities like snowboarding, hiking, biking, hunting, and fishing. I hope to stay in Oregon after residency and help grow our ranch in central/eastern Oregon and continue full spectrum Family Medicine care, which would include working in the emergency department.

### JOEL KLAS

My name is Joel Klas and I am a second year resident Family Medicine resident at Cascades East. I am originally from Virginia but have been living up and down the West Coast for the past 10 years. I graduated from the University of San Diego School of Medicine where I was part of the Global Health Research Track and participated in studying the effects of pesticide use in rural communities in Ecuador. I am happily married and have a little girl who is almost three and we have another one on the way. We are hoping to stay here in Klamath Falls after graduation and hope to have a diverse practice of working locums in rural ERs around the area, possibly hospitalist work here at Sky Lakes and out-patient as well. When not working, I love distance trail running, gardening with my wife, biking, and surfing.





## TRAUMA TRACK RESIDENT PROGRAM & PROCEDURES

In 2020, the Trauma Committee members worked with the Cascade Family Practice Resident Team to develop and launch a Resident Trauma Track Program. The physician champions included Dr. Mirande Trauma Chair, Dr. Freid ED Physician, Dr. Jolley CEFP Faculty, & Dr. Klas CEFP Resident.

The objective of the program provide additional training related to the management of trauma patients for those Residents that plan to work in rural level IV trauma centers where they will be required to provide initial treatment at stabilization of trauma patients.

The Resident Trauma Track will be available to second-year and third-year residents who may opt into the Trauma Track, thus only residents interested in additional trauma training may participate.

### REQUIREMENTS FOR PARTICIPATING IN THE RESIDENT TRAUMA TRACK

#### Advanced Trauma Life Support (ATLS):

- ATLS Certification is required prior to beginning the Resident Trauma Track

#### Additional ED Exposure:

- The Resident will use two elective slots during their second and third year to complete a total of one month of additional ED elective time.

#### Trauma Team Participation:

- Trauma Track Residents will be paged via the Vocera paging system while on ED, RMT, General Surgery & Orthopedic rotations.
- One Resident per trauma patient may respond to the ED.
- Residents may come in after hours as long as they do not violate ACGME work-hour requirements.
- ED physician or Surgeon will provide direct oversight
- Attendance at Quarterly Trauma Committee Meetings is recommended (1.5 Trauma CME)

#### Trauma Program Process Improvements:

- Trauma Track Resident was added to the Trauma Flowsheet for tracking of participation and arrival times.
- Trauma Track Resident was added to the ED Monitor Tech Trauma Tracking tool for monitoring of notification times.
- Trauma Roles and Responsibilities Policy was updated to include the Trauma Track Resident's Role in Trauma Care.
- The number of all resident preformed procedures will be tracked by individual resident (intubations, chest tubes, central lines, etc.)

## 2020 RESIDENT PERFORMED PROCEDURES SUMMARY

	Count of Resident at Bedside	Average of Provider Response Time (Mins.)	Average of Pat Arr to Prov Arr (Mins.)
<b>PRICE</b>	3	13.7	18.3
<b>KLAS</b>	3	3.5	0.0
<b>WEST</b>	5	4.2	29.6
<b>Grand Total</b>	<b>11</b>	<b>6.9</b>	<b>20.3</b>

Resident	Count of Procedures Performed
<b>KLAS</b>	<b>2</b>
RESIDENT FAST EXAM	2
<b>PRICE</b>	<b>3</b>
RESIDENT CHEST TUBE	1
RESIDENT FAST EXAM	2
<b>WEST</b>	<b>6</b>
RESIDENT FAST EXAM	4
PROC PI - RES SUT/STAP	2
<b>NON TRR</b>	<b>10</b>
RESIDENT CHEST TUBE	1
RESIDENT INTUBATION	2
PROC PI - RES SUT/STAP	7
<b>Grand Total</b>	<b>21</b>

## SYSTEM SHUTDOWN: RANSOMWARE ATTACK

On Monday 26, 2020, at 12:08 Pacific Standard Time, an email offering a bonus arrived in the inbox of a Sky Lakes Medical Center employee. The unsuspecting employee opened the email and clicked on one of the available hyperlinks in the document. Her computer froze, she lost access to her mouse and then about 30 seconds later, the computer unfroze. The employee had recently had a conversation with Human Resources concerning her employment. Something seemed a bit odd in the email, the computer freezing up was not normal either. The employee felt that something was not quite right.

Early Tuesday morning, at 01:30 PST, Information Services received a phone call from a clinician reporting 'system slowness' on the computers. The on-call engineer logged in remotely to the data center to discover that many servers were running at full capacity. It just so happened that Information Services already had a case open investigating performance issues which only complicated the matter.

## TIMELINE OF RYUK RANSOMWARE ATTACK

### 10/26/2020

**12:08** - A Google document "Annual Bonus" link was clicked.

**12:34 - 12:47** - A zero-day malicious web site is contacted and drops a malicious file onto the initial PC.

**12:54** - The first execution of bad actor command line was deployed.

**22:50** - The first identified execution of the ransomware began.

### 10/27/2020

**01:30** - A clinician contacts Information Services reporting system slowness.

**03:30** - The Director of Information Services notified of issues.

**05:52** - Via Cisco Webex Teams "Sky Lakes Medical Center House-wide Downtime Communication" space, a notice goes out that all systems are impacted and IS is working to restore systems.

**07:27** - The Chief Information Officer at Asante Health System was notified.

**07:36** - Via Cisco Webex Teams space, the organization was notified that the system impact was due to the Ryuk Ransomware.

**08:14** - Via Cisco Webex Teams space, a request to power off all PC's went out house-wide.

**08:32** - All servers were brought off-line.

**08:15** - At the daily huddle official house-wide communications were ensued.

**13:00** - SLMC engaged Cisco Talos - Incident Response Services.

**14:00** - House wide huddle with an update.



**John Gaede**



## TIMELINE OF RYUK RANSOMWARE ATTACK CONTINUED

**15:00** – Meeting with the SLMC's Cyber Insurance company.

**16:00** – House-wide huddle.

**21:59** – Approval from Sr. Management to engage both Cisco Talos (forensics analysis) and insurance approved KIVU Consulting (recovery assistance).

### **11/4/2020 - 11/5/2020**

Active Directory and Domain Controllers brought on-line.

### **11/6/2020 - 11/7/2020**

Kronos – Time Keeping, Payroll brought on-line.

House-wide password changes rolled out.

### **11/9/2020**

The first clinical system brought back online: The Cancer Treatment Radiation Oncology System along with the Medical Oncology Information Systems.

The Family Birthing Center software on-line: OBIX.

The EKG management system on-line: Epiphany.

### **11/18/2020**

**22:30** – The Electronic Medical Record (EMR) Epic brought on-line.

### **12/28/2020**

The first patient bills dropped from Epic (from prior to the downtime).

### **1/5/2021**

Vocera hands-free communication brought back on-line.

Most systems fully recovered from back-ups.

### **3/22/2021**

The first downtime patient bills sent out for payment.

### **4/8/2021**

Back entry for Health Information Management (HIM) and Laboratory continues.

During the outage, a cross functional, multidisciplinary team met twice a day at 08:15 and 17:00 from 10/27/2020 through 11/19/2020 for daily communication huddles. The team included representation from the Emergency Department, Operating Room, Intensive Care Unit, Progressive Care Unit, Medical Surgical Unit, Family Birthing Center, Ambulatory, Hospitalists, Pharmacy, Laboratory, Imaging, Cardiology, Respiratory Therapy, Environmental Services, Facility Services, Quality, Dietary, Human Resources, Staffing, Health Information Management, Billing, Finance, Senior Management, and Information Services. The meetings transitioned to the standing daily communication huddles from 11/20/2020 through 01/05/2021.

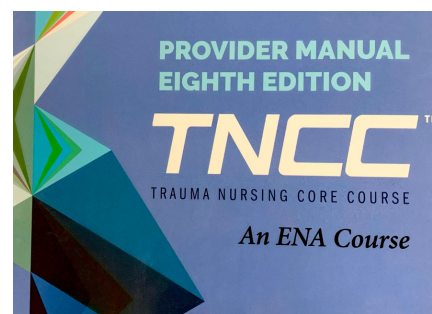
Due to the incredible teamwork, transparency, leadership, and commitment of multiple departments to uncompromising quality patient care, Sky Lakes Medical Center clinicians worked through 23 days of 100% offline technologies (no Electronic Medical Records). The teams managed the downtime workflows during an increasingly dangerous COVID-19 pandemic. As of April 2021, most of the back log of patient care data has been re-keyed into the EMR. Most technologies were functional by mid-January 2021.

**– John Gaede, Director of Information Systems**

## TRAUMA EDUCATION

### Trauma Nurse Core Course (TNCC)

As our commitment to trauma education we hosted two TNCC courses. With small class sizes in a large venue we were able to host in person class while meeting all social distancing requirements.



### Trauma Care After Resuscitation (TCAR)

After one successful completion of TNCC, our ICU nurses may choose to maintain their TNCC certifications or attend a TCAR class every 4 years. 2020 posed some challenges related to in person class sizes and social distancing requirements. Therefore, Sky Lakes Medical Center hosted an on-line TCAR course which allowed our ICU nurses to maintain the trauma continuing education requirements.



### Emergency Nurses Association Orientation Modules

Emergency Department Nurses are encouraged to participate in a yearlong Emergency Nurses Association Orientation Program. The program offers a comprehensive, evidence-based solution for emergency nursing orientation, supporting new and experienced nurses in providing competent care. The nurses spend four hours per week completing didactic work and four hours per month focusing on hands on learning and skills stations. They complete a total of 45 modules totaling 75.34 CEUs with several of modules focused on trauma care.



## TRAUMA CERTIFICATIONS



<https://bcen.org/cen/>

RON W.  
JULIA M.  
HOLLY M.  
SHANNON S.  
ELLIE B.  
STACEY H.  
KACY D.  
STACEY M.  
DAN L.  
SAM M.



<https://www.aacn.org/certification>

MONICA M.  
ROBYN E.  
JULIE B.  
LUSANN S.  
JAMIE O.  
JEN J.  
KELLY M.  
NICOLE G.  
BROOKE B.  
ALEX B.



<https://bcen.org/tcrn>

SHANNON S.  
STACEY H.

### **SKY LAKES MEDICAL CENTER**

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# 2020

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ON BEHALF OF THE TRAUMA PROGRAM  
THANK YOU TO ALL WHO CONTRIBUTE TO  
CONTINUALLY IMPROVING TRAUMA CARE AT SKY LAKES

TRAUMA PROGRAM MEDICAL DIRECTOR  
DR. RAUL MIRANDE

TRAUMA PROGRAM MANAGER  
STACEY HOLMES, RN, CEN, TCN

TRAUMA REGISTRAR  
KALISSA LEE, LSSGB

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## VOLUME 4