Sepsis Awareness Training
Clinical Staff
Please complete the Pre-training Assessment questions at the TOP and on the LEFT side of the form.

Thank you!
Sepsis Training Content Outline

- Sepsis Alliance video “SEPSIS: EMERGENCY”
- What is sepsis
- High risk populations
- Importance
- Early signs/symptoms
- Definitions
- Treatment strategies and antibiotic stewardship
- Post sepsis syndrome
- Tools for screening and education
- Case study
- Prevention
Sepsis: Emergency video

Cut and paste this URL into your browser

https://www.youtube.com/watch?v=DnsQ4RlXsZY
What is Sepsis?

- Sepsis is the body’s overwhelming and life-threatening response to INFECTION
- NOT ENOUGH OXYGEN is reaching the tissues
- If not recognized and treated PROMPTLY, sepsis can result in:
  - Organ failure
  - Tissue damage
  - Death

Sepsis and Infection

• Sepsis is always triggered by an infection
• Sometimes people don’t know they have an infection
• Sometimes the causative agent of the infection is not identified
• Sepsis diagnosis is sometimes missed due to various manifestations of sepsis
• Conversely: If symptoms of sepsis exist a source of infection should be sought
Common Infectious Diseases That May Progress to Sepsis:

- Pneumonia
- Skin Infections (cellulitis)
- Urinary Tract Infections
- Intra-abdominal infections
- Post-partum Endometritis
- Influenza
- *Clostridium difficile* (*C. diff*) Enteritis
- Tick Borne Infections especially in the immunocompromised
Who is at Risk for Sepsis?

Anyone with an infection!

Those at **higher risk** include:

- People 65 or older or infants less than 1 year old
- People with chronic illnesses: diabetes, cancer, AIDS
- People with weakened immune systems
- People recently hospitalized or recovering from surgery
- People with wounds, invasive lines, drains, catheters
- People who have had sepsis in the past
Elderly are more susceptible to infections:
- Weakened immunity
- Fragile skin, bedsores, ulcerations
- Multiple chronic conditions
- Admissions to a hospital or other facility

Some patients may not be able to communicate symptoms of infection due to dementia or stroke

Why This is Important…

• Each year over 1.5 million people in the US get sepsis and about 250,000 die from it \(^1\)
• 1 in 3 patients who die in a hospital have sepsis \(^1\)
• Mortality rate for Severe Sepsis is \(29\%\) \(^1\) which is greater than:
  - AMI (25\%) \(^2\)
  - Stroke (23\%) \(^3\)
  - Trauma (1.5\%) \(^4\)
• A leading cause of hospital readmissions
• The most expensive condition treated in U.S. hospitals \(^5\)

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2. JACC 1996
5. AHRQ http://www.hcup-us.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-Hospital-Conditions.pdf
*Medicare fee-for-service beneficiaries discharged with sepsis (on any diagnosis code) and readmitted within 30 days for any reason
Public Awareness is Poor

• 35% of Americans have never heard of sepsis, yet 80% of sepsis cases originate in the community (outside of the hospital)

• Only 12% can identify the most common symptoms

• 50% do not know you need to seek urgent medical attention

• The public needs an understandable definition of sepsis

https://www.cdc.gov/mmwr/volumes/65/wr/mm6533e1.htm?s_cid=mm6533e1_w
https://ccforum.biomedcentral.com/articles/10.1186/cc11511
Sepsis and Famous People You May Know

Died from Sepsis

- Mother Theresa
- Pope John Paul II
- Patty Duke (actor)
- Leslie Nielsen (actor)
- Casey Kasem (radio)
- Lawrence Welk (musician)
- Mohammed Ali (boxer)
- Prince Ranier of Monaco
- Christopher Reeve (actor)
- Jim Henson (Muppets creator)

Survived Sepsis

- Angelica Hale (child singer)
- Mary Louise Parker (actor)
- Chris Young (singer/song writer)

Angelica Hale partnered with Sepsis Alliance on the It’s About TIME campaign

Picture source: https://www.sepsis.org/itsabouttime/
Healthcare Providers Awareness

- Sepsis is one of the most under recognized and misunderstood conditions by healthcare providers
- Healthcare providers need improved clinical prompts to facilitate earlier identification of sepsis
Know the signs and symptoms of sepsis.

- Shivering, fever, or very cold
- Extreme pain or discomfort
- Clammy or sweaty skin
- Confusion or disorientation
- Short of breath
- High heart rate

An easy way to remember:

When it comes to sepsis, remember **IT’S ABOUT TIME.™** Watch for:

- **T**emperature higher or lower than normal
- **I**nfection may have signs and symptoms of an infection
- **M**ental decline confused, sleepy, difficult to rouse
- **E**xtremely ill “I feel like I might die,” severe pain or discomfort

Watch for a combination of these symptoms. If you suspect sepsis, see a doctor urgently, CALL 911 or go to a hospital and say, “I AM CONCERNED ABOUT SEPSIS.”
Fever may be low grade, delayed or absent

Decline in functional status may be a symptom of infection, including new or increasing confusion, incontinence, falling, deteriorating mobility, reduced food intake, or failure to cooperate with staff

Signs of infection and organ dysfunction may be difficult to recognize with multiple comorbidities

Resources::

Let’s look at some important definitions to help recognize the progression of sepsis.

**Systemic Inflammatory Response Syndrome (SIRS)**

- Temperature $\geq 38.3$ C ($101$ F) or $\leq 36$ C ($96.8$ F)
- Respiratory Rate $\geq 20$
- Heart Rate $\geq 90$
- White Blood Count $\geq 12K$, $\leq 4K$ or $\geq 10\%$ bands

*Note: SIRS can exist without progressing to sepsis*
Let’s look at some important definitions to help recognize the progression of sepsis.

**SIRS**

**Sepsis**

≥2 SIRS + suspected or confirmed infection

- Infections that lead to sepsis most often:
  - Bladder or kidney infections
  - Lung infections
  - Skin infections
  - Abdominal infections
Let’s look at some important definitions to help recognize the progression of sepsis.

**SIRS**

**Sepsis**

**Severe Sepsis**

**Severe Sepsis**

Sepsis (+) NEW or ACUTE onset organ dysfunction and/or failure
Let’s look at some important definitions to help recognize the progression of sepsis.

**SIRS**

**Sepsis**

**Severe Sepsis**

**Septic Shock**

**Septic Shock**

Severe Sepsis (+) hypotension (SBP ≤ 90 mm/Hg) that does NOT respond to fluid OR lactate ≥ 4 mmol/L
Acute Organ Dysfunction as a Marker of Severe Sepsis

**Neurological**
- Confusion, altered consciousness

**Respiratory**
- Increased oxygen requirements
  - SaO2 < 90%

**Metabolic**
- Unexplained metabolic acidosis
  - pH ≤ 7.30 or base deficit
    - ≥ 5.0 mEq/l
  - Lactate > 4 mmol/L

**Cardiovascular**
- Tachycardia
  - SBP < 90 mm/Hg

**Renal**
- UO < 0.5 ml/kg per hour
  - (despite fluid)

**Hematologic**
- Platelets < 80,000/mm³
- Decline in platelet count
  - of 50% over 3 days

Kathleen M. Vollman RN, MSN, CCNS, FCCM Clinical Nurse Specialist/Educator/Consultant ADVANCING NURSING kvollman@comcast.net
Relationship of Infection, SIRS, Sepsis, Severe Sepsis and Septic Shock

Adapted from: Bone et al. Chest 1992; 101:1644
Sepsis should be defined as life-threatening organ dysfunction caused by a dysregulated host response to infection.

For clinical operationalization, organ dysfunction can be represented by an increase in the Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score of 2 points or more, or the quickSOFA.

(Singer, et al. JAMA 2016;315(8) 801-810)
quickSOFA (qSOFA) Criteria:

- Better predictor of patient outcomes for non-hospital and non-ICU settings (vs. SIRS criteria)
- Appropriate and easy to use in the outpatient setting

2 of the 3 criteria provides simple bedside criteria to identify adults with suspected infection who are likely to have poor outcomes:

- Altered mental status
- Hypotension (systolic <100mmHg)
- Increased respiration rate (>22 breaths per minute)
Septic shock should be defined as a subset of sepsis in which particularly profound circulatory, cellular, and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone.

Patients with septic shock can be clinically identified by:

- Vasopressor requirement to maintain a mean arterial pressure of 65 mm Hg or greater.
- Serum lactate level greater than 2 mmol/L (>18 mg/dL) in the absence of hypovolemia.

(Singer, et al. JAMA 2016;315(8) 801-810)
100-100-100 Early Detection Tool

Early recognition is key

• Sepsis-induced organ damage **may not be apparent**
• You cannot detect organ damage until it is too late
• Survival depends on **timely** assessment and treatment when **changes** first happen in the patient/resident’s condition
• Knowing which patient/residents are **more susceptible** to sepsis and are at higher risk will help with early recognition

http://www.prweb.com/releases/sepsis/awareness/prweb11102587.htm
Mortality increases by 8% for every hour that appropriate treatment is delayed\(^1\)

Early identification and treatment are the keys to improved outcomes

When sepsis is caught early, it...
- increases the chance for surviving
- can prevent progression to septic shock

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Initial Treatment - Evidence Based

Consistent with Surviving Sepsis Campaign¹

Recommended within 1st hour of recognition

Within 3 Hours of Presentation

- Measure blood lactate level
- Obtain blood cultures (prior to giving antibiotics)
- Administer broad-spectrum IV antibiotics
- Administer 30ml/kg crystalloid for hypotension or lactate≥4mmol/L

1. Surviving Sepsis Campaign Bundle revised 4/2015 by SSC Executive Committee
Within 6 Hours of Presentation of Septic Shock

- Administer vasopressors (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) ≥65mmHg

- For persistent hypotension (MAP<65) or initial lactate ≥4mmol/L, reassess volume status and tissue perfusion

- Repeat lactate level if initial level was elevated

*Time of presentation is defined as the time of triage in the emergency department or, if presenting from another care venue, from the earliest chart annotation consistent with all the elements of severe sepsis or septic shock ascertained through chart review
Antibiotic Stewardship vs. Treating Sepsis

Not a Conflict in Strategies!

The right drug
For the right diagnosis
With the right dose and duration

- Appropriate use of all antibiotics in all health care settings
- Urgent antibiotic therapy required for bacterial infections to prevent progression to sepsis and septic shock
- Next steps should focus on identifying pathogens to tailor antimicrobial therapy or scale back (de-escalation)
Additional Guidance ¹

- **Treat clinically significant infections** (not contamination or colonization)
  - Do not treat asymptomatic bacteriuria

- **Track local resistance patterns**
  - CDC interactive maps [https://www.cdc.gov/hai/](https://www.cdc.gov/hai/)
  - Health Map Resistance [https://www.resistanceopen.org/](https://www.resistanceopen.org/)
  - How to read and interpret an antibiogram video: [https://www.youtube.com/watch?v=_Vv6Z0HeECM&feature=youtu.be](https://www.youtube.com/watch?v=_Vv6Z0HeECM&feature=youtu.be)

¹. Antibiotic Stewardship in Sepsis. The Hospitalist. May 2018
Hospitalization

Sepsis patients of any age:

- Are more severely ill than others hospitalized
- Have considerably longer lengths of stay (median=10 days)\(^1\)
- Are more likely to die during hospitalization

Older adult sepsis patients are:

- 13 times more likely to be hospitalized \(^2\)
- More likely to be admitted to the ICU \(^3\)
- 76% are more likely to be discharged to SNF \(^4\)

3. Sepsis in Older Americans: Saving Lives through Early Recognition
4. Sepsis in Older Americans: Saving Lives through Early Recognition
Post Sepsis Syndrome

Affects up to 50% of sepsis survivors

Physical and/or psychological long-term effects, such as:

• Impaired cognitive function—especially among older patients
• Mobility impairments (muscle weakness)
• Disabling muscle and joint pain
• Amputations
• Loss of self-esteem
• Extreme fatigue
• Insomnia
• Nightmares, hallucinations, and panic attacks

Higher risk with an ICU or extended hospital stay
Significant impact on family, friends, and caregivers

- Increased dependency on caregivers
- Inadequate hospital discharge education on what to expect during recovery
- Difficulty accessing follow-up community treatment
- Disruption to their lives
- Cost
Does this agency /facility have sepsis reduction efforts in place?
  - A process to screen patients/residents for sepsis?
  - A process for sepsis treatment? Standing order/protocol?

Do you know which patients/residents have the **potential for sepsis** in your facility?

Are you more closely monitoring patients/residents who were discharged from a hospital with an infection or sepsis?
Stop and Watch is a helpful tool to help identify changes in a patient’s condition that could be the early signs of sepsis:

STOP

Seems different than usual
Talking or communicating less than usual
Overall needs more help than usual
Participating in activities less than usual

http://www.pathway-interact.com/
Stop and Watch is a helpful tool to help identify changes in a patient’s condition that could be the early signs of sepsis:

- **A**te less than usual (not because dislikes food)
- **N**o bowel movement in 3 days: or diarrhea
- **D**rinking less than usual

http://www.pathway-interact.com/
Stop and Watch is a helpful tool to help identify changes in a patient’s condition that could be the early signs of sepsis:

- **W**eight change
- **A**gitated or nervous more than usual
- **T**ired weak confused or
- **C**hange in skin color or condition
- **H**elp with walking, transferring or toileting more than usual

http://www.pathway-interact.com/
SBAR for Sepsis

SITUATION
- My name is __________________________
- I’m calling from ______________________
- I need to speak with you about patient/resident, Mr. or Mrs. ______________________
- This patient/resident is showing signs and symptoms of infection and sepsis.

BACKGROUND
- The patient/resident was admitted on _______________ (date) with the diagnosis of _____________________________ (original condition).
- The patient/resident is now showing these signs of possible infection ____________________________ (describe the signs and potential source of infection).
- This started on _______________ (date).
- The patient/resident is allergic to __________________________
- The patient’s/resident’s advance care directive is __________________________

ASSESSMENT (describe key findings)
- My assessment of the situation is that the patient/resident may be experiencing a new or worsening infection. Here are my findings:
  - Current vital signs
    - BP __________ HR __________ RR __________ Temp __________
    - SpO2 __________ (on room air or supplemental O2)
  - The patient/resident has voided __________ times in the last 8 hours.
  - Mental status is (changed OR unchanged) from baseline: __________
  - Other physical assessment findings that are related to possible infection or sepsis
    (e.g., lung sounds, wound assessment): __________

RECOMMENDATION
- I am concerned that this patient/resident may have sepsis.
  - Would you like to order a serum lactate, blood culture and basic metabolic panel?
  - How soon can you see this patient/resident?
- If the patient/resident is hypotensive, should I start an IV and give a fluid bolus?
- The physician should confirm, clarify and request additional information and then work with the nurse to take appropriate action with this patient/resident.

Example 1

Example 2
**Post-Acute Care Sepsis Early Identification and Treatment Pathway**

**Assess for Infection and SIRS**

**Symptoms or signs of infection can include:**
- Fever/chills
- Cough/shortness of breath
- Cellulitis/wound drainage
- Changes in urine (volume, color, odor)
- Confusion or more so than usual
- Just does not look right
- Weakness
- Difficult to arouse

**Assess for two or more of the following SIRS criteria:**
- Temperature ≥ 101 F or ≤ 96.8 F
- Heart rate ≥ 90 bpm
- Respiratory rate ≥ 20 bpm
- White blood cell count ≥ 12,000 or ≤ 4,000
- Altered mental status

*SIRS = Systemic Inflammatory Response Syndrome*

**Yes to Both? THINK SEPSIS!**

**Prepare to contact the medical provider:**
- Review the record for medications, allergies, recent infection or antibiotic use
- Note the patient’s advance directive or care wishes (if comfort care, see suggested interventions* below)
- Educate resident/family about status
- Complete sepsis SBAR

**Notify Provider**

**Prepare for these possible interventions to be completed as soon as possible:**
- Transfer to a higher level of care
- Draw labs: lactate, CBC with differential, blood cultures
- Establish IV access
- Administer broad-spectrum intravenous antibiotics

For hypotension (SBP ≤ 90 mm/Hg) or lactate ≥ 4 mmol/L:
- Administer IV fluid bolus at 30 mL/kg

**Monitor the patient and notify the medical provider of any worsening or progression of sepsis.**

*Comfort care interventions:*
- Pain control
- Medications to lower fever
- Frequent repositioning
- Frequent oral care
- Offer fluids (if tolerated)
- Keep family informed
- Adjust care plan as needed
Sepsis Zone Tool

Patient information sheet to self-monitor for the early signs and symptoms of sepsis

Provide this for residents that have either been diagnosed with an infection or are at high risk for developing an infection.

My plan for preventing infection at home

### Signs of infection and sepsis at home

Common infections can sometimes lead to sepsis. Sepsis is a deadly response to an infection.

<table>
<thead>
<tr>
<th>Green Zone</th>
<th>Yellow Zone</th>
<th>Red Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>No signs of infection</td>
<td>Take action today.</td>
<td>Take action now!</td>
</tr>
</tbody>
</table>

#### Things I can do

- Wash my hands and water thoroughly.
- Stay away from people with colds or flu.
- Get regular checkups.
- Eat healthy foods.
- Keep my room clean.
- Have a plan to self-monitor for the yellow or red zone.

**Look for signs of infection:**
- Do a daily health check.
- Report any yellow zone signs.
- Watch for any signs that my infection might be getting worse.

**Look for signs of sepsis:**
- Do I have fever?
- Do I feel cold?
- How is my energy?
- How is my thinking?
- Are there changes in how I feel after a hospitalization, procedure, infection or change in wound or IV site?

<table>
<thead>
<tr>
<th>Are there changes in my heartbeat or breathing?</th>
<th>My heartbeat is as usual.</th>
<th>Heartbeat is faster than usual.</th>
<th>Heartbeat is very fast.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Breathing is normal for me.</td>
<td>Breathing is a bit more difficult and faster than usual.</td>
<td>Breathing is very fast.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do I have a fever?</th>
<th>I have not had a fever in the past 24 hours and I am not taking medicine for a fever.</th>
<th>Fever between 100°F to 101.4°F.</th>
<th>Fever is 101.5°F or greater.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Do I feel cold?</th>
<th>I do not feel cold.</th>
<th>I feel cold and cannot get warm.</th>
<th>Temperature is below 96.8°F.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I am shivering or my teeth are chattering.</td>
<td>Skin or fingernails are pale or blue.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How is my energy?</th>
<th>My energy level is as usual.</th>
<th>I am too tired to do most of my usual activities.</th>
<th>I am very tired.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am too tired to do most of my usual activities.</td>
<td>I am very tired.</td>
<td>I cannot do any of my usual activities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How is my thinking?</th>
<th>Thinking is clear.</th>
<th>Thinking feels slow or not right.</th>
<th>My caregivers tell me I am not making sense.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are there changes in how I feel after a hospitalization, procedure, infection or change in wound or IV site?</th>
<th>I feel well.</th>
<th>I have a bad cough.</th>
<th>I feel sick.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I had pneumonia, a urinary tract infection (UTI) or another infection.</td>
<td>My wound or IV site looks different.</td>
<td>My wound or IV site is painful, red, swollen or has pus.</td>
</tr>
<tr>
<td></td>
<td>I had a wound or IV site. It is healing.</td>
<td>I have not urinated (peed) for 5 or more hours. When I do urinate (pee), it burns, is cloudy or smells bad.</td>
<td></td>
</tr>
</tbody>
</table>
Teach Back Method

• Studies have shown that patients forget 40-80% of the information they receive almost immediately after hearing it 1

• Teach Back is asking people to restate in their own words what has been presented to them

• How Teach Back can help ensure effective communication:
  ▪ Helps gauge the need for re-explaining if necessary
  ▪ Heightens engagement of your audience
  ▪ Fosters trust between presenter and audience
  ▪ Creates an opportunity for dialogue between you and the audience

Talking with Patients & Families

• Start the discussion by asking if they have heard of sepsis
• *If they have let them tell you what they know*

Do you know what sepsis is?

I think so. Does it have something to do with bacteria?
Talking with Patients & Families

• Share key points about sepsis:
  ▪ The body’s over active/often life threatening response to an infection anywhere (skin, urine, respiratory etc.)
  ▪ Anyone with an infection may be at risk for developing sepsis
  ▪ Early signs and symptoms; fever/feeling cold, sleepy/confused, short of breath, rapid heart rate, decreased /dark urine
    ▪ It’s important that you let your caregiver know if you experience any of the above
    ▪ **Sepsis is a medical emergency!**
A 74-year-old female, who is a longtime nursing home resident, has a medical history of CAD, osteoarthritis and stroke with left-leg weakness.

She normally eats in the dining room, but wanted to stay in her room today. She asked for a blanket because she feels chilled and is not acting like her usual self. Her color is pale and she stated it burned when she went to the bathroom. You also notice she is coughing more than normal.
Case Study

Her vital signs are:
T 100.3
HR 117
RR 22
BP 105/43
O2 SAT 90% on room air

Does she have two or more SIRS criteria? HR, RR
Does she have a possible or active infection? UTI?
Does she have additional organ dysfunction? Respiratory?
Does she screen positive for severe sepsis? Yes
Preventing Sepsis

- Follow infection control practices (hand hygiene, catheter removal)
- Treat infections promptly
- Recognize the symptoms of severe infection
- Ensure vaccinations are up-to-date
- Maintain good overall health and care for chronic conditions
How You Can Help

• Educate colleagues, patients, family and friends:
  – About the signs of sepsis and who is at risk
  – About need to seek immediate care and use the words “I suspect sepsis”
  – About how to prevent infections
  – With use of patient education materials and Teach Back Method

• Take precautions to prevent infections and sepsis
• If you suspect sepsis- Act immediately and initiate care
Organizations Working to Stop Sepsis

New England QIN-QIO
Providing education and resources to promote awareness and educate on early identification and treatment of sepsis
http://www.healthcarefornewengland.org/sepsis

Sepsis Alliance
Largest sepsis advocacy organization in the U.S. working in all 50 states
Resources for patients and health professionals
http://www.sepsis.org/

Centers for Disease Control (CDC)
Resources for patients, families and health care professionals including clinical information and guidelines
https://www.cdc.gov/sepsis/index.html
Organizations Working to Stop Sepsis

IPRO and TMF
We thank the NY and TX QIN-QIOs for sharing their resources:

Surviving Sepsis Campaign- Society of Critical Care Medicine
Clinical guidelines, bundles, performance improvement
http://www.survivingsepsis.org/Pages/default.aspx

Rory Staunton Foundation:
Advocacy, education, resources and Rory’s Regulations for hospitals
https://rorystauntonfoundationforsepsis.org/

Global Sepsis Alliance
Not-for-profit charitable organization to raise awareness worldwide
https://www.global-sepsis-alliance.org/
Questions

Feedback

Recommendations
Post-Training Assessment

Please complete Post Training Assessment questions on the RIGHT and BOTTOM and hand in to the presenter at the end of training session.

Thank you!

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Please complete Post Training Assessment questions on the RIGHT and BOTTOM and hand in to the presenter at the end of training session.

Thank you!
In order to get your CEUs, please complete the evaluation form provided.
For more information

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https://healthcentricadvisors.org/sepsis-training

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