Sepsis MPage - Data Display Specification

Overview

This document specifies the data display logic for the Sepsis MPage application, with particular emphasis on intervention column logic and clinical decision support features.

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Column Structure

Complete Column Reference

Index	Column Name	Data Field	Width	Type	Description
0	Patient	`PATIENT_NAME`	120px	text	Patient name (ZZZTEST prefix for test data)
1	Unit	`UNIT`	50px	text	Hospital unit (ER, ICU, 3W, 2N)
2	Room/Bed	`ROOM_BED`	80px	text	Room and bed number
3	Alert	`ALERT_TYPE`	50px	html	Alert severity indicator with clickable icon
4	Priority	`SEPSIS_PRIORITY`	60px	text	Sepsis priority level (High/Medium)
5	Time Zero	`LAST_SEPSIS_SCREEN`	140px	text	Sepsis identification timestamp
6	Timer	`SEPSIS_TIMER`	100px	text	Elapsed time since Time Zero
7	PowerPlan	`POWERPLAN_ORDERED`	75px	text	Sepsis PowerPlan order status
8	① Lac	`LACTATE_ORDERED`	50px	text	Initial lactate order status
9	① Result	`LACTATE_RESULT`	60px	numeric	Initial lactate result value
10	Cultures	`BLOOD_CULTURES_ORDERED`	65px	text	Blood culture order status
11	Abx	`ANTIBIOTICS_ORDERED`	45px	text	Antibiotics order status
12	② Lac	`REPEAT_LACTATE_ORDERED`	50px	text	Repeat lactate order status
13	Fluids	`SEPSIS_FLUID_ORDERED`	60px	text	IV fluid order status
14	Vol Doc	`FLUID_VOLUME_DOCUMENTED`	60px	text	Fluid volume documentation status
15	Perfusion	`PERFUSION_ASSESSMENT`	70px	text	Perfusion assessment status
16	Pressors	`PRESSORS_ORDERED`	65px	text	Vasopressor order status
17	Timeline	`SHOW_TIMELINE`	60px	html	Timeline visualization (Currently Hidden)

Intervention Display Logic

Standard Intervention Columns

Applies to: PowerPlan, ① Lac, Cultures, Abx, ② Lac, Fluids, Vol Doc

Data Values and Display

Data Value	Display	Icon	Color	Font Weight	CSS Class
`"Y"`	✓	`fas fa-check`	Green (#16a34a)	Bold	`text-green-600 font-bold`
`"N"`	✕	`fas fa-times`	Red (#dc2626)	Bold	`text-red-600 font-bold`
`"Pend"`	⏳	`fas fa-hourglass-half`	Orange (#f59e0b)	Normal	`text-yellow-600 italic`
`null`, `""`, missing	--	Text	Gray (#9ca3af)	Normal	N/A

Implementation Code

```
if (value === "Y") {
  TD.innerHTML = '<i class="fas fa-check"></i>';
  TD.style.color = "#16a34a";
  TD.style.fontWeight = "bold";
} else if (value === "N") {
  TD.innerHTML = '<i class="fas fa-times"></i>';
  TD.style.color = "#dc2626";
  TD.style.fontWeight = "bold";
} else if (value === "Pend") {
  TD.innerHTML = '<i class="fas fa-hourglass-half"></i>';
  TD.style.color = "#f59e0b";
  TD.style.fontWeight = "normal";
} else {
  TD.innerHTML = "--";
  TD.style.color = "#9ca3af";
}
```

Lactate Result Column (① Result) - Special Logic

Display Rules

1. **When lactate is ordered and has result:**
   `javascript if (LACTATE_ORDERED === "Y" && LACTATE_RESULT exists) { Display: LACTATE_RESULT.toFixed(1) // e.g., "4.5" }`

2. **Critical value highlighting (≥ 4.0 mmol/L):**
   `javascript if (LACTATE_RESULT >= 4.0) { Background: Pink (#fee2e2) Text Color: Red (#dc2626) Font Weight: Bold }`

3. **No result available:** `javascript Display: "--" Color: Gray (#9ca3af)`

Clinical Significance

- **Normal:** < 2.0 mmol/L
- **Elevated:** 2.0 - 3.9 mmol/L (triggers repeat lactate requirement)
- **Critical:** ≥ 4.0 mmol/L (indicates severe tissue hypoperfusion, triggers perfusion/pressor protocols)

Perfusion & Pressors Columns - Conditional Logic

Special Display Rules

These columns have conditional display based on lactate results:

```
// Columns 15 (Perfusion) and 16 (Pressors)
if (LACTATE_RESULT < 4.0 || LACTATE_RESULT === null || LACTATE_RESULT === undefined) {
  Display: "N/A"
  Color: Gray (#9ca3af)
  Font Weight: Normal
  Rationale: Not clinically indicated
} else {
  // Display standard Y/N/Pend based on actual data
  Apply standard intervention display logic
}
```

Clinical Rationale

- Perfusion reassessment and vasopressors are only indicated when lactate ≥ 4.0 mmol/L
- "N/A" prevents inappropriate alerts for interventions that aren't clinically warranted
- Follows SEP-1 guidelines for shock management

Clinical Decision Logic

Alert Types and Criteria

1. SIRS (Systemic Inflammatory Response Syndrome)

- **Icon:** Yellow circle (`fas fa-circle` , #eab308)
- **Criteria:** 3 or more of the following:

    - Heart Rate > 90 bpm
    - Respiratory Rate > 20/min
    - Temperature > 38.3°C or < 36°C
    - WBC < 4 or > 12 x10⁹/L
    - Glucose 7.8-11.1 mmol/L (in non-diabetic)

2. Sepsis (SIRS + Organ Dysfunction)

- **Icon:** Orange circle (`fas fa-circle` , #f97316)
- **Criteria:** SIRS + one or more organ dysfunction markers:

    - Lactate > 2.0 mmol/L
    - Creatinine > 176.8 µmol/L
    - Bilirubin 35.9-171 µmol/L
    - Platelets < 100 x10⁹/L
    - INR > 1.5

3. Septic Shock (SIRS + Cardiovascular Dysfunction)

- **Icon:** Red circle (`fas fa-circle` , #dc2626)
- **Criteria:** SIRS + cardiovascular dysfunction:

    - SBP < 90 mmHg
    - MAP < 65 mmHg
    - Lactate ≥ 4.0 mmol/L

Timer Display and Bundle Compliance

Time Format

- **Under 1 hour:** Display as `Xm` (e.g., "45m")
- **1 hour or more:** Display as `Xh Ym` (e.g., "2h 15m")

Visual Indicators by Time Elapsed

Time Range	Status	Text Color	Background	Meaning
0-2 hours	On track	Default	None	Within optimal window
2-3 hours	Warning	Yellow-brown (#ca8a04)	None	Approaching 3-hour deadline
3-6 hours	Missed 3-hour	Orange (#ea580c)	Light orange (#fed7aa)	3-hour bundle missed
>6 hours	Critical	Red (#dc2626)	Light red (#fee2e2)	Both bundles missed

Visual Styling Rules

Color Palette

Purpose	Color	Hex Code	Usage
Success/Complete	Green	#16a34a	Completed interventions (Y)
Error/Not Done	Red	#dc2626	Not ordered interventions (N)
Warning/Pending	Orange	#f59e0b	Pending interventions
Inactive/N/A	Gray	#9ca3af	Not applicable or no data
Critical Background	Pink	#fee2e2	Lactate ≥ 4.0, Timer >6h
Warning Background	Light Orange	#fed7aa	Timer 3-6h

Font Awesome Icons

- **Version:** 6.5.1
- **Icons Used:**

  - `fas fa-check` - Completed/Yes
  - `fas fa-times` - Not ordered/No
  - `fas fa-hourglass-half` - Pending
  - `fas fa-circle` - Alert severity indicators

Data Integration

Expected JSON Structure

```
{
  "REC": {
    "CCL_SCRIPT": "1_MP_SEPSIS_HANDSONTABLE",
    "SEPSIS": [
      {
        "PATIENT_NAME": "ZZZTEST, Name",
        "UNIT": "ICU",
        "ROOM_BED": "201-A",
        "ALERT_TYPE": "SIRS",
        "ALERT_DETAILS": {
          "HR": 96,
          "RR": 22,
          "TEMP": 38.1,
          "WBC": 13.2,
          "LACTATE": 2.3
        },
        "SEPSIS_PRIORITY": "High",
        "LAST_SEPSIS_SCREEN": "08/13/25 16:06 [Yes]",
        "SEPSIS_TIMER": "00:24",
        "POWERPLAN_ORDERED": "Y",
        "LACTATE_ORDERED": "Y",
        "LACTATE_RESULT": 4.5,
        "ANTIBIOTICS_ORDERED": "Pend",
        "BLOOD_CULTURES_ORDERED": "Y",
        "SEPSIS_FLUID_ORDERED": "N",
        "REPEAT_LACTATE_ORDERED": "N",
        "PERFUSION_ASSESSMENT": "N",
        "PRESSORS_ORDERED": "N"
      }
    ]
  }
}
```

Data Validation Rules

1. **String fields:** Accept "Y", "N", "Pend", or null/empty
2. **Numeric fields:** LACTATE_RESULT accepts float values
3. **Missing fields:** Default to "--" display
4. **Invalid values:** Numeric values in Y/N/Pend fields display as "--"
5. **Timer format:** Expected as "HH:MM" string

SEP-1 Bundle Compliance

3-Hour Bundle (Must complete within 3 hours)

1. **Measure lactate level** (① Lac + ① Result)
2. **Obtain blood cultures** before antibiotics (Cultures)
3. **Administer broad-spectrum antibiotics** (Abx)
4. **Begin rapid administration of 30mL/kg crystalloid** for hypotension or lactate ≥4 (Fluids)

6-Hour Bundle (Must complete within 6 hours)

1. **Re-measure lactate** if initially elevated >2 (② Lac)
2. **Apply vasopressors** if hypotensive after fluid resuscitation (Pressors)
3. **Reassess volume status and tissue perfusion** (Perfusion)

Bundle Compliance Indicators

- **Green background zones:** Interventions completed within time windows
- **Timer colors:** Visual cues for bundle deadline status

- **Column ordering:** Follows SEP-1 intervention sequence

Implementation Notes

Performance Considerations

- Handsontable renders only visible cells (virtual rendering)
- AfterRenderer called on scroll/update - keep logic lightweight
- Font Awesome icons loaded via CDN for consistency

Accessibility

- Color coding supplemented with icons (not color alone)
- Text alternatives for all visual indicators
- Clickable elements have cursor pointer and tooltips

Future Enhancements

- Timeline visualization (currently hidden, column 17)
- Real-time timer updates
- CCL backend integration for live data
- Export functionality for compliance reporting

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