



Deteriorating
Patient
Improvement
Programme



NCEC National Clinical Guideline No. 1. INEWS V2 (September 2020) – Changes and updates

Facilitators Slide-deck

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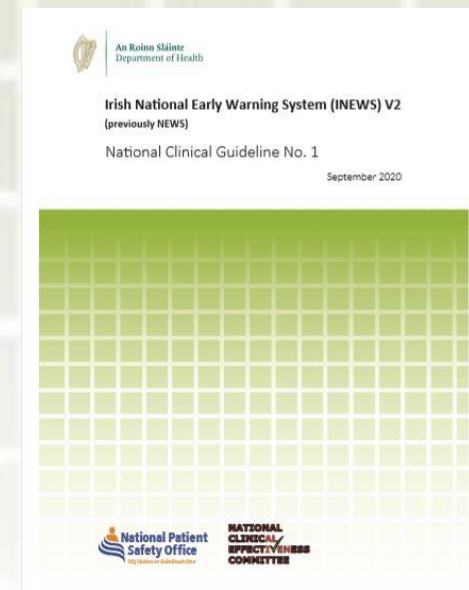
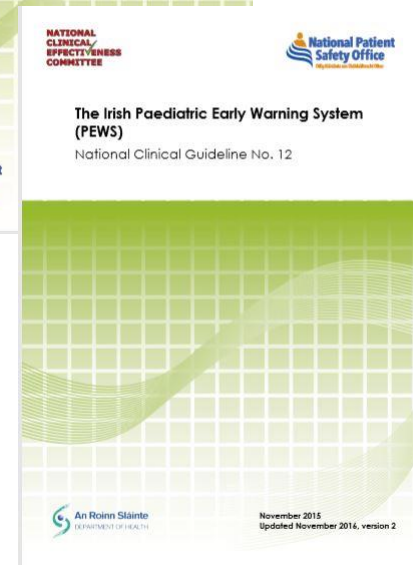
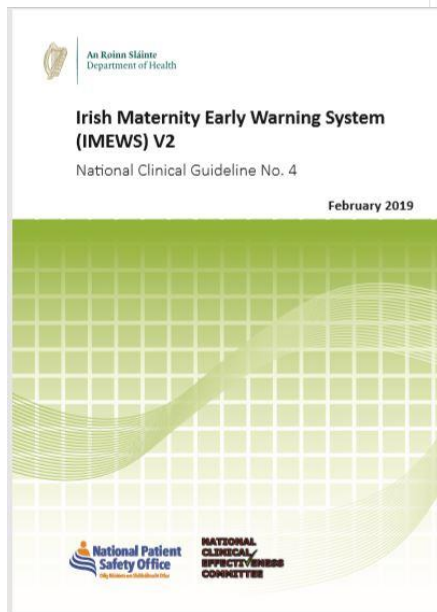


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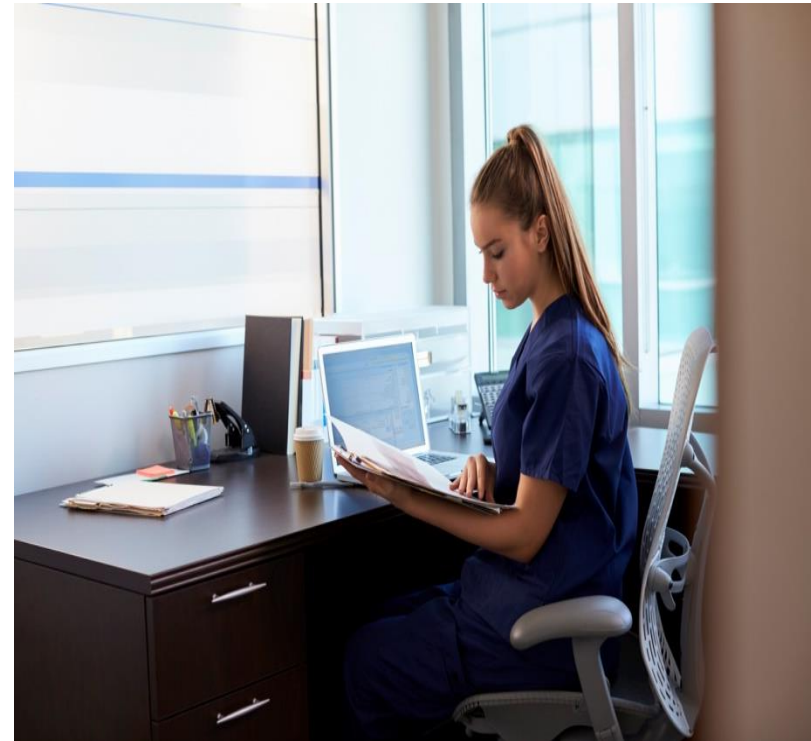
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Irish Early Warning Systems



Participant Learning Outcomes

- Recognise that INEWS is an adjunct to clinical judgement
- Anticipate the potential for deterioration
- Recognise and escalate care for a deteriorating patient
- Recognise role of ISBAR in effective communication
- Become familiar with using the new INEWS observation chart
- Understand when the escalation and response protocol can be modified




What is INEWS?

INEWS is an early warning system to assist staff to recognise and respond to clinical deterioration.



Early recognition of deterioration can prevent:

- Unanticipated cardiac arrest
- Unplanned ICU admission/readmission
- Delayed care resulting in prolonged length of stay, patient or family distress, or more complex interventions
- Requirement for more complex interventions



An Roinn Sláinte
Department of Health

Irish National Early Warning System (INEWS) V2
(previously NEWS)
National Clinical Guideline No. 1
September 2020

Irish National Early Warning System (INEWS)
PATIENT OBSERVATION CHART
could be used as an aid to clinical judgement and decision making

INEWS Escalation & Response Protocol

Observation Frequency	Escalation	Response
As indicated by patient condition only first 24 hours with admission 2 hourly minimum	Nurse at the bedside / Nurse in Charge (NIC)	<ul style="list-style-type: none"> • NIC to review if concern and escalate as appropriate • NIC to review if new score 1
2 hourly	NIC	• NIC to review
3	4 hourly	<ul style="list-style-type: none"> • SHO or ANP service to review within 1 hour • Screen for Sepsis • If no response to treatment within 1 hour, contact Registrar and/or ANP service • Consider continuous patient monitoring • Consider transfer to higher level of care
4 - 6 THINK SEPSIS*	1 hourly	<ul style="list-style-type: none"> • SHO or ANP service to review immediately • Continuous patient monitoring recommended • Plan to transfer to higher level of care • Activate Emergency Response System (as appropriate to hospital model)
Emergency Response Score of 7 or Score of 3 in any single parameter or Score of 2 for HR ≥ 40	1/2 hourly as indicated by patient condition	<ul style="list-style-type: none"> • Registrar / Consultant / ANP service to review immediately • If no response to treatment or if still concerned, contact Registrar/Consultant • Consider activating Emergency Response System

If response does not occur as per protocol the CNMNIC should contact the Registrar or Consultant

RED CUES FOR CAUTION

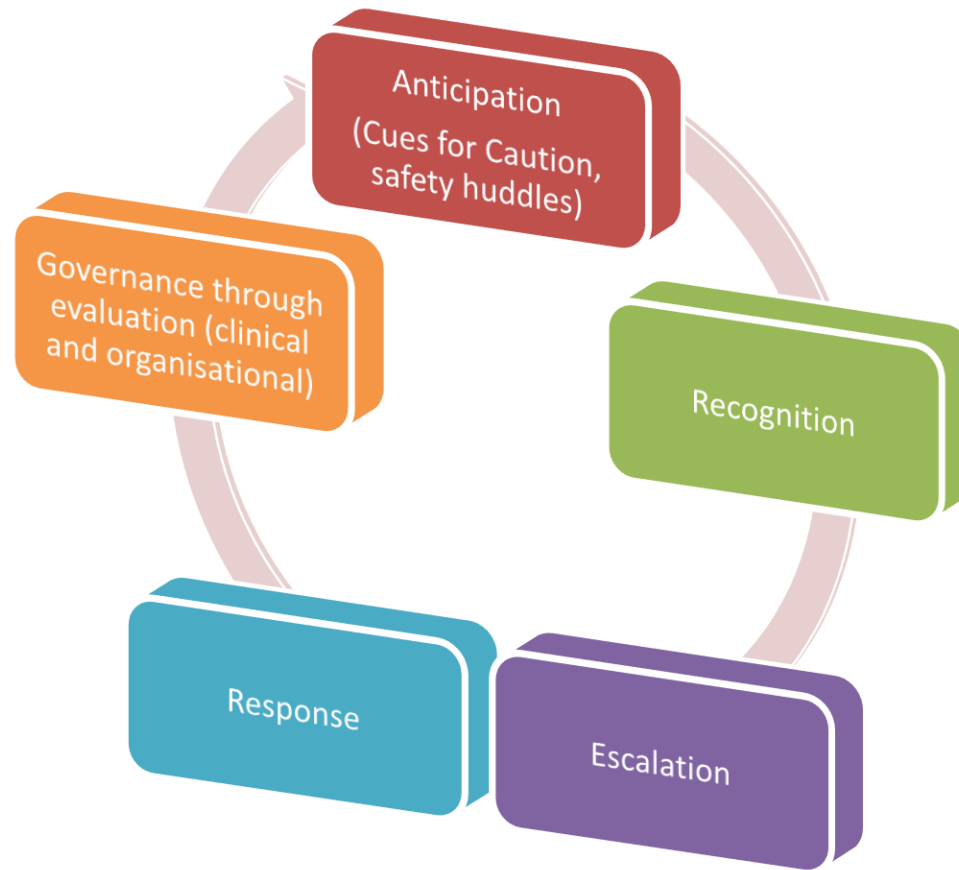
- 1 Increasing O₂ requirements to maintain (SpO₂) levels
- 1 Patient located outside of specialist ward
- 1 Patient receiving high-risk / intravenous therapies
- 1 Communication concerns between staff and/or patient
- 1 Nausea / vomiting / 'gut-feeling'

***THINK SEPSIS**
(Use clinical judgement)

INEWS ≥ 4 or ≥ 5 on Oxygen and suspicion of infection

Older people or those immunocompromised may present with sepsis with an INEWS < 4 (< 5 if on Oxygen)

The aim of this presentation is to provide an overview of the changes and updates in INEWS V2



- INEWS education is mandatory for all relevant HCPs
- HCPs should be familiar with their hospitals INEWS Escalation and Response Protocol
- INEWS education is included in most clinical undergraduate programmes



What's new in INEWS V2?

- ✍ NEWS to INEWS
- ✍ System versus Score
- ✍ Emphasis on clinical judgement
- ✍ Recognition of healthcare worker, patient and family concern as a key indicator of deterioration
- ✍ Increased emphasis on changes in respiratory rate as a key early indicator of deterioration



What's new in INEWS V2?

‘Cues for Caution’
as prompts for staff to
consider when monitoring
patients

Irish National Early Warning System (INEWS)

ADULT PATIENT OBSERVATION CHART

INEWS should be used as an aid to clinical judgement and decision making

INEWS Escalation & Response Protocol

INEWS Score	Minimum Observation Frequency	Escalation	Response	
Bedside Response	Healthcare worker / patient / family concern	As indicated by patient condition	Nurse at the bedside / Nurse in Charge (NIC)	• NIC to review if concern and escalate as appropriate
0 – 1	8 hourly (first 24 hours following admission) then 12 hourly minimum	NIC	• NIC to review if new score 1	
2	6 hourly	NIC	• NIC to review	
Urgent Response	For INEWS scores of 0 – 2 an Urgent Response (SHO or ANP Service) can be called if there is clinical concern			
3	4 hourly	NIC and Team / On-call SHO	• SHO or ANP service to review within 1 hour	
4 – 6 	1 hourly	NIC and Team / On-call SHO	• SHO or ANP service to review within 15 hour • Screen for Sepsis* • If no response to treatment within 1 hour, contact Registrar and/or ANP service • Consider continuous patient monitoring • Consider transfer to higher level of care	
Emergency Response	≥7	NIC and Team / On-call Registrar Inform Team / On-call Consultant	• Registrar / Consultant / ANP service to review immediately • Continuous patient monitoring recommended • Plan to transfer to higher level of care • Activate Emergency Response System (as appropriate to hospital model)	
Score of 3 in any single parameter or Score of 2 for HR and	15 hourly as indicated by patient condition	NIC and Team / On-call SHO	• SHO or ANP service to review immediately • If no response to treatment or if still concerned, contact Registrar/Consultant • Consider activating Emergency Response System	

If response does not occur, as per protocol the CHM/NIC should contact the Registrar or Consultant

 CUES FOR CAUTION	<ul style="list-style-type: none">! Increasing O₂ requirements to maintain SpO₂ levels! Patient located outside of specialist ward! Patient receiving high-risk / unfamiliar therapies! Communication concerns between staff and/or patient! Nurse intuition / 'gut-feeling'	 *THINK SEPSIS (Use clinical judgement) INEWS ≥4 (or ≥5 on Oxygen) and suspicion of infection Older people or those immunocompromised may present with sepsis with an INEWS ≥4 (or ≥5 if on Oxygen)
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What's new in INEWS V2?

- ✍ 'New confusion' a key early sign of deterioration...AVPU becomes A**C**VPU where '**C**' = 'new confusion/altered mental status/delirium'
- ✍ Minimum 6 hourly observations x 24 hours following admission
- ✍ Adjustments of INEWS parameters or score not permitted
- ✍ Modified Escalation and Response Protocol (Consultant or Registrar)
- ✍ Option for a short period of escalation deferral by an RGN

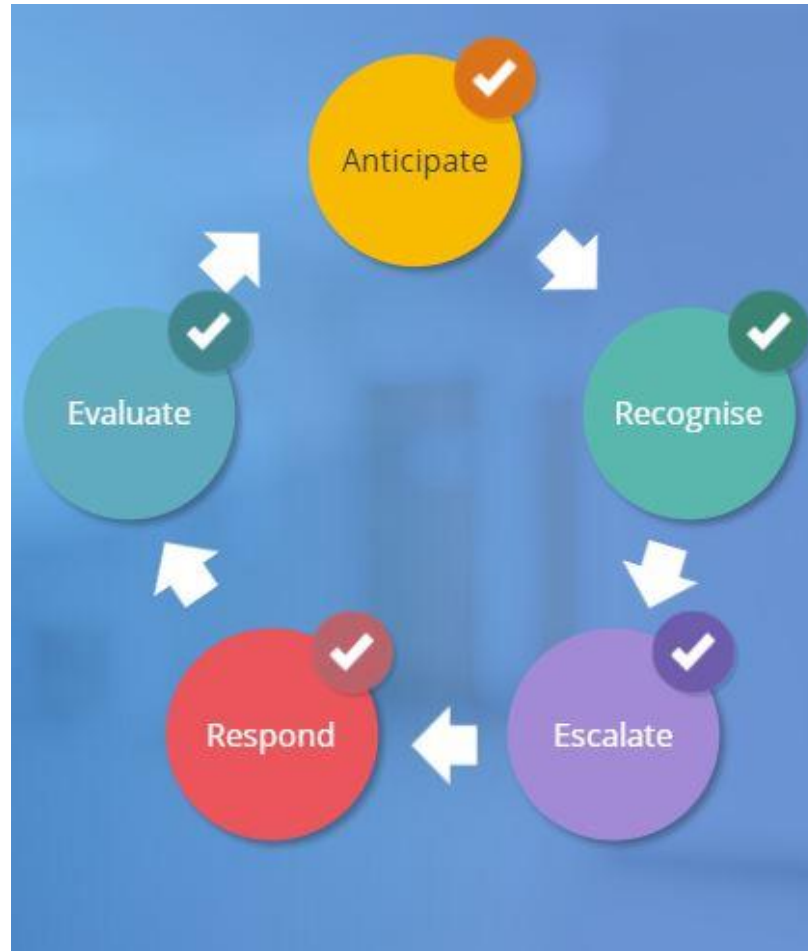


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What's new in INEWS V2?

- ✍ 3-tiered response model
- ✍ Consultant champions with protected time
- ✍ Closed loop governance
- ✍ Safety huddles
- ✍ Move towards digital INEWS
- ✍ Revised INEWS patient observation chart

The Significance of INEWS as a System explained



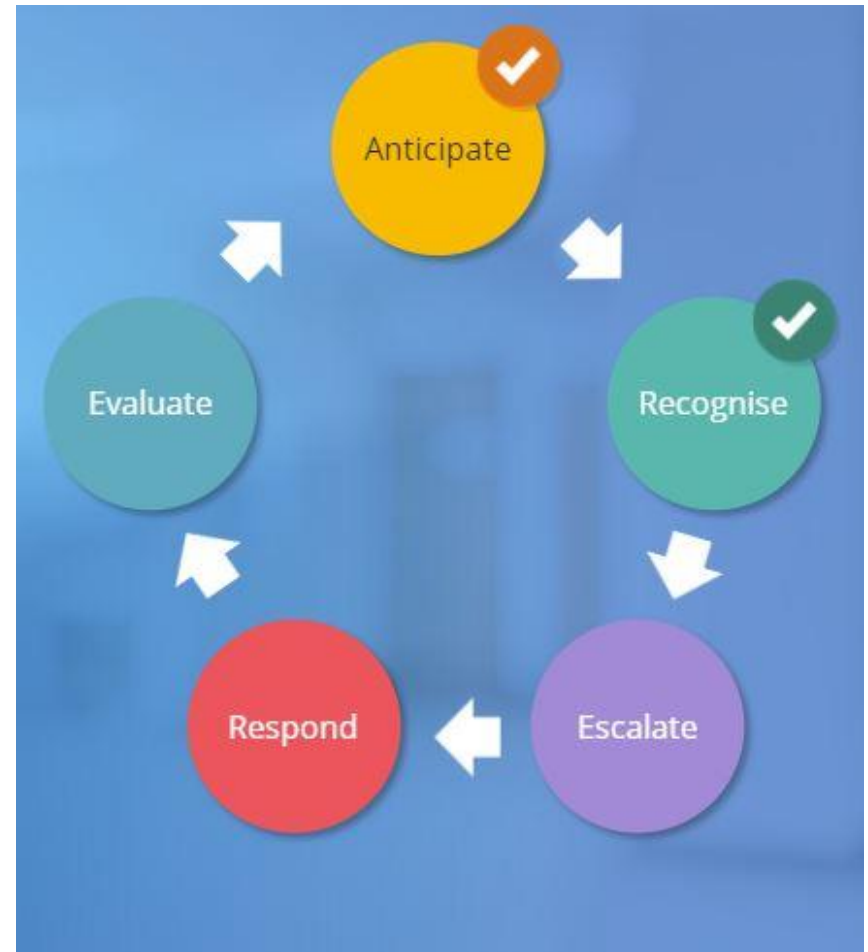
Anticipate

The use of clinical judgement combined with situation awareness using 'cues for caution', staff, patient and/or family concern and safety huddles to anticipate and manage the potential for deterioration in hospitalised patients.



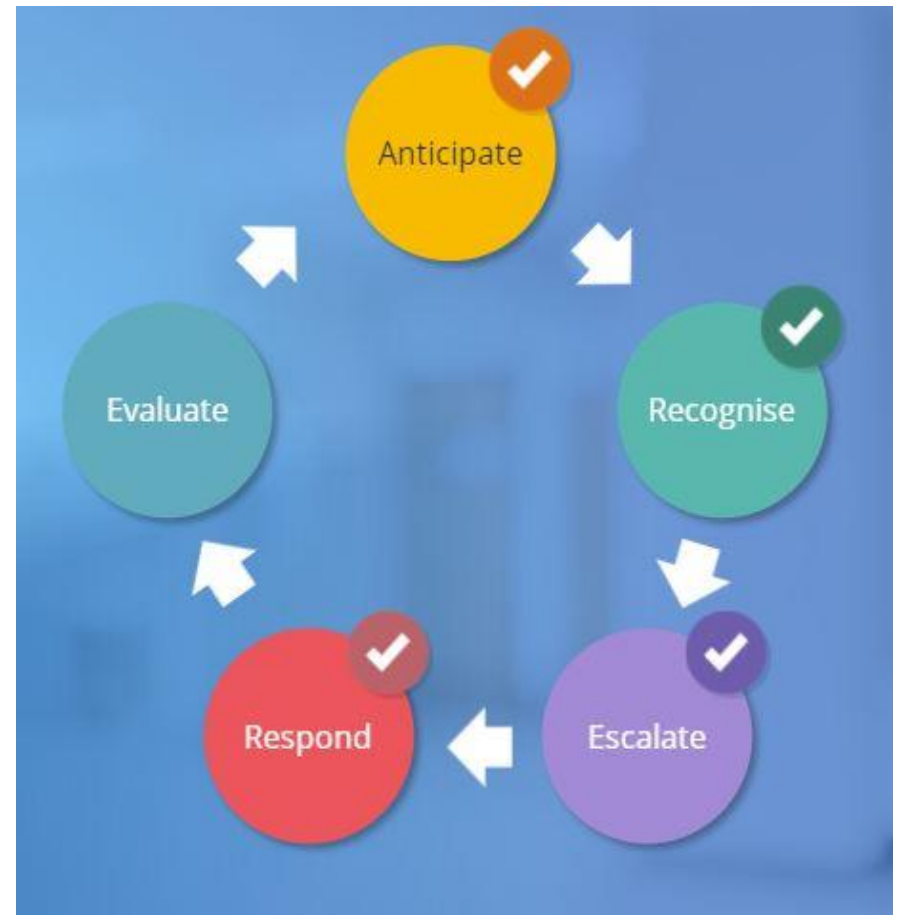
Recognise

- Clinical judgment plus...
- Patient assessment
- Supported by the bedside track-and-trigger tool i.e. the **INEWS patient observation chart**



Escalate and Respond

- INEWS Escalation and Response Protocol to guide decisions on escalation for nursing or medical review
- Provision of a structured mechanism for a tiered clinical response - bedside, urgent or emergency response
- A move towards an ANP-response service



Evaluate

INEWS V2 supports a closed loop governance system involving:

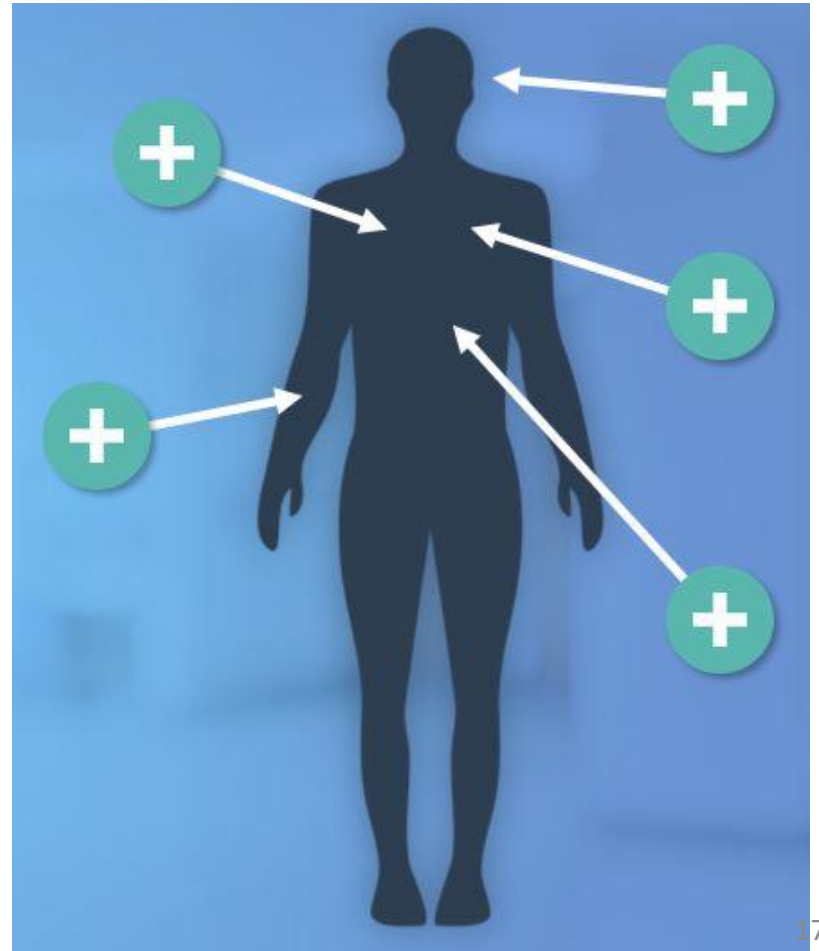
- Bedside clinical evaluation of the effectiveness of treatment interventions
- System-wide evaluation of the management of patient deterioration e.g after-action review, cycles of audit and improvement



Quick review of physiological changes during deterioration

A systems approach to patient assessment helps ensure that you don't miss any of the subtle changes associated with deterioration

INEWS V2 emphasises changes in respiratory rate and new confusion/altered mental status/delirium as key early signs of deterioration



Respiratory Rate (RR)

- Most neglected vital sign
- Often estimated by clinicians rather than counted
- Any change may be an early sign of deterioration
- Changes can be seen up to 24 hrs prior to cardiac arrest
- During early stages of deterioration SpO₂ may remain within normal range while RR may change

RR may be affected by

- Some medications (e.g. opiates)
- Altered level of consciousness



Respiratory Rate monitoring

Two main determinants of blood oxygen (O_2) concentration are **ventilation** and **perfusion**

- Ventilation is the air that reaches the alveoli
- Perfusion is the blood that reaches the alveoli via the capillaries
- Respiratory rate measures ventilation
- Pulse oximetry measures oxygen saturation (SpO_2)



Cardiovascular system

- Changes in heart rate (HR) can affect cardiac output
- High HR and low BP may reflect inadequate O₂ delivery to the tissues
- ↓BP can reflect a decrease in cardiac output
- Other signs include dizziness, syncope, nausea, chest pain and diaphoresis



Neurological System

Early indicators of deterioration include:

- New confusion
- Altered mental status (Subtle or obvious)
- Delirium

What's the patient's baseline status?

- Consult the patient's family or friends

Consider causes including:

- New environment
- Hypoxia
- Hypo/hyperglycaemia

If altered mental status or level of consciousness is noted, measure Glasgow Coma Scale and check blood glucose



GLASGOW COMA SCALE										Date										Time										NEUROLOGICAL OBSERVATIONS									
Best Eye Response Opens spontaneously 4 Opens to verbal command 3 Opens to pain 2 No eye opening 1																																							
Best Verbal Response Oriented 5 Confused 4 Inappropriate words 3 Incomprehensible words 2 No verbal response 1																																							
Best Motor Response Obey commands 6 Localizes pain 5 Normal flexion to pain 4 Abnormal flexion to pain 3 Extension to pain 2 No motor response 1																																							
TOTAL GCS																																							
Pupil Scale (mm) 1+ 2+ 3+ 4+ 5+ 6+ 7+ 8+ 9+ 10+																																							
Pupils Right: Size (mm) Reaction Left: Size (mm) Reaction																																							
ARMS Normal: Flexion, Extension, No Response Abnormal: Flexion, Extension, No Response																																							
LEGS Normal: Flexion, Extension, No Response Abnormal: Flexion, Extension, No Response																																							
Initials Grade NMNI Pin																																							
Numerical Pain Assessment Scale 0 No Pain 1 2 3 4 5 6 7 8 9 10 Worst Pain Imaginable Directions: On a scale of 0-10, how would you rate your pain now; if 0 is no pain and 10 is the worst pain imaginable.																																							

Thermoregulation System

- Both pyrexia and hypothermia are significant
- Immunocompromised and older persons may not produce a fever
- Patients with sepsis can present with any temperature
- Caution if anti-pyretic medication is given as it can mask signs of infection



Renal System

- Decreasing urine output ($<0.5\text{mL/kg/hr}$) is a sign of deterioration
- Monitor renal profile blood results



Knowledge check

Which of these observations are the best predictors of deterioration?

- a. Altered mental state, such as new confusion or delirium
- b. Increase or decrease in temperature
- c. Altered respiratory rate
- d. Change in urine output



Using the INEWS Patient Observation Chart

- How to document INEWS observations
- How to calculate a patient's INEWS score
- INEWS Escalation & Response Protocol

INEWS Patient Observation Chart

ISH NATIONAL EARLY WARNING SYSTEM (INEWS) Scoring Key

Score	0	1	2	3	4	5
Respiratory Rate (bpm)	12-20	21-24	25-30	31-35	36-40	>41
SpO ₂ (%)	94-98	93-94	92-93	91-92	90-91	<90
Heart Rate (bpm)	50-90	91-100	101-110	111-120	121-150	>151
Blood Pressure (mmHg)	90-120	89-90	88-89	87-88	86-87	<86
Temp (°C)	36.0-37.5	37.6-38.0	38.1-38.5	38.6-39.0	39.1-39.5	>39.5

AB (Airway & Breathing)

Respiratory Rate (bpm) 21-24 25-30 31-35 36-40 >41

SpO₂ (%) 94-98 93-94 92-93 91-92 90-91 <90

C (Circulation)

Heart Rate (bpm) 50-90 91-100 101-110 111-120 121-150 >151

Blood Pressure (mmHg) 90-120 89-90 88-89 87-88 86-87 <86

D (Disability)

ACVPU Alert (A) 38.0 38.5 39.0 39.5 40.0 40.5

E (Exposure)

Temperature (°C) 36.0 36.5 37.0 37.5 38.0 38.5

INEWS Score

Consider Sepsis if INEWS ≥ 4 (or ≥ 5 on O₂)

Notify Doctor if urine output is < 0.5 ml/kg/hr

Escalation & Response Protocol

Respiratory Rate (bpm) 21-24 25-30 31-35 36-40 >41

SpO₂ (%) 94-98 93-94 92-93 91-92 90-91 <90

Heart Rate (bpm) 50-90 91-100 101-110 111-120 121-150 >151

Blood Pressure (mmHg) 90-120 89-90 88-89 87-88 86-87 <86

Temp (°C) 36.0 36.5 37.0 37.5 38.0 38.5

ACVPU

Alert (A) 38.0 38.5 39.0 39.5 40.0 40.5

CVPU

38.0 38.5 39.0 39.5 40.0 40.5

Students/HCA Initials

RGN Initials

Observe Coronavirus precautions at all times



The INEWS Physiological Observations are:

- Respiratory rate
- SpO₂
- FiO₂ (Room air or supplemental O₂)
- Heart rate
- Blood pressure
- Neurological response (or ACVPU, where C = new confusion)
- Temperature

INEWS The Joint Royal College of Physicians and Royal College of Nurses Initiative

BRITISH NATIONAL EARLY WARNING SYSTEM (INEWS) Scoring Key

Score	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Respiratory Rate (bpm)	<8	8-11	12-20	21-24	25-30	31-34	35-38	39-42	43-46	47-50	51-54	55-58	59-62	63-66	67-70	71-74	75-78	79-82	83-86	87-90	91-94	95-98	99-102	103-106	107-110	111-114	115-118	119-122	123-126	127-130	131-134	135-138	139-142	143-146	147-150	151-154	155-158	159-162	163-166	167-170	171-174	175-178	179-182	183-186	187-190	191-194	195-198	199-202	203-206	207-210	211-214	215-218	219-222	223-226	227-230	231-234	235-238	239-242	243-246	247-250	251-254	255-258	259-262	263-266	267-270	271-274	275-278	279-282	283-286	287-290	291-294	295-298	299-302	303-306	307-310	311-314	315-318	319-322	323-326	327-330	331-334	335-338	339-342	343-346	347-350	351-354	355-358	359-362	363-366	367-370	371-374	375-378	379-382	383-386	387-390	391-394	395-398	399-402	403-406	407-410	411-414	415-418	419-422	423-426	427-430	431-434	435-438	439-442	443-446	447-450	451-454	455-458	459-462	463-466	467-470	471-474	475-478	479-482	483-486	487-490	491-494	495-498	499-502	503-506	507-510	511-514	515-518	519-522	523-526	527-530	531-534	535-538	539-542	543-546	547-550	551-554	555-558	559-562	563-566	567-570	571-574	575-578	579-582	583-586	587-590	591-594	595-598	599-602	603-606	607-610	611-614	615-618	619-622	623-626	627-630	631-634	635-638	639-642	643-646	647-650	651-654	655-658	659-662	663-666	667-670	671-674	675-678	679-682	683-686	687-690	691-694	695-698	699-702	703-706	707-710	711-714	715-718	719-722	723-726	727-730	731-734	735-738	739-742	743-746	747-750	751-754	755-758	759-762	763-766	767-770	771-774	775-778	779-782	783-786	787-790	791-794	795-798	799-802	803-806	807-810	811-814	815-818	819-822	823-826	827-830	831-834	835-838	839-842	843-846	847-850	851-854	855-858	859-862	863-866	867-870	871-874	875-878	879-882	883-886	887-890	891-894	895-898	899-902	903-906	907-910	911-914	915-918	919-922	923-926	927-930	931-934	935-938	939-942	943-946	947-950	951-954	955-958	959-962	963-966	967-970	971-974	975-978	979-982	983-986	987-990	991-994	995-998	999-1002	1003-1006	1007-1010	1011-1014	1015-1018	1019-1022	1023-1026	1027-1030	1031-1034	1035-1038	1039-1042	1043-1046	1047-1050	1051-1054	1055-1058	1059-1062	1063-1066	1067-1070	1071-1074	1075-1078	1079-1082	1083-1086	1087-1090	1091-1094	1095-1098	1099-1102	1103-1106	1107-1110	1111-1114	1115-1118	1119-1122	1123-1126	1127-1130	1131-1134	1135-1138	1139-1142	1143-1146	1147-1150	1151-1154	1155-1158	1159-1162	1163-1166	1167-1170	1171-1174	1175-1178	1179-1182	1183-1186	1187-1190	1191-1194	1195-1198	1199-1202	1203-1206	1207-1210	1211-1214	1215-1218	1219-1222	1223-1226	1227-1230	1231-1234	1235-1238	1239-1242	1243-1246	1247-1250	1251-1254	1255-1258	1259-1262	1263-1266	1267-1270	1271-1274	1275-1278	1279-1282	1283-1286	1287-1290	1291-1294	1295-1298	1299-1302	1303-1306	1307-1310	1311-1314	1315-1318	1319-1322	1323-1326	1327-1330	1331-1334	1335-1338	1339-1342	1343-1346	1347-1350	1351-1354	1355-1358	1359-1362	1363-1366	1367-1370	1371-1374	1375-1378	1379-1382	1383-1386	1387-1390	1391-1394	1395-1398	1399-1402	1403-1406	1407-1410	1411-1414	1415-1418	1419-1422	1423-1426	1427-1430	1431-1434	1435-1438	1439-1442	1443-1446	1447-1450	1451-1454	1455-1458	1459-1462	1463-1466	1467-1470	1471-1474	1475-1478	1479-1482	1483-1486	1487-1490	1491-1494	1495-1498	1499-1502	1503-1506	1507-1510	1511-1514	1515-1518	1519-1522	1523-1526	1527-1530	1531-1534	1535-1538	1539-1542	1543-1546	1547-1550	1551-1554	1555-1558	1559-1562	1563-1566	1567-1570	1571-1574	1575-1578	1579-1582	1583-1586	1587-1590	1591-1594	1595-1598	1599-1602	1603-1606	1607-1610	1611-1614	1615-1618	1619-1622	1623-1626	1627-1630	1631-1634	1635-1638	1639-1642	1643-1646	1647-1650	1651-1654	1655-1658	1659-1662	1663-1666	1667-1670	1671-1674	1675-1678	1679-1682	1683-1686	1687-1690	1691-1694	1695-1698	1699-1702	1703-1706	1707-1710	1711-1714	1715-1718	1719-1722	1723-1726	1727-1730	1731-1734	1735-1738	1739-1742	1743-1746	1747-1750	1751-1754	1755-1758	1759-1762	1763-1766	1767-1770	1771-1774	1775-1778	1779-1782	1783-1786	1787-1790	1791-1794	1795-1798	1799-1802	1803-1806	1807-1810	1811-1814	1815-1818	1819-1822	1823-1826	1827-1830	1831-1834	1835-1838	1839-1842	1843-1846	1847-1850	1851-1854	1855-1858	1859-1862	1863-1866	1867-1870	1871-1874	1875-1878	1879-1882	1883-1886	1887-1890	1891-1894	1895-1898	1899-1902	1903-1906	1907-1910	1911-1914	1915-1918	1919-1922	1923-1926	1927-1930	1931-1934	1935-1938	1939-1942	1943-1946	1947-1950	1951-1954	1955-1958	1959-1962	1963-1966	1967-1970	1971-1974	1975-1978	1979-1982	1983-1986	1987-1990	1991-1994	1995-1998	1999-2002	2003-2006	2007-2010	2011-2014	2015-2018	2019-2022	2023-2026	2027-2030	2031-2034	2035-2038	2039-2042	2043-2046	2047-2050	2051-2054	2055-2058	2059-2062	2063-2066	2067-2070	2071-2074	2075-2078	2079-2082	2083-2086	2087-2090	2091-2094	2095-2098	2099-2102	2103-2106	2107-2110	2111-2114	2115-2118	2119-2122	2123-2126	2127-2130	2131-2134	2135-2138	2139-2142	2143-2146	2147-2150	2151-2154	2155-2158	2159-2162	2163-2166	2167-2170	2171-2174	2175-2178	2179-2182	2183-2186	2187-2190	2191-2194	2195-2198	2199-2202	2203-2206	2207-2210	2211-2214	2215-2218	2219-2222	2223-2226	2227-2230	2231-2234	2235-2238	2239-2242	2243-2246	2247-2250	2251-2254	2255-2258	2259-2262	2263-2266	2267-2270	2271-2274	2275-2278	2279-2282	2283-2286	2287-2290	2291-2294	2295-2298	2299-2302	2303-2306	2307-2310	2311-2314	2315-2318	2319-2322	2323-2326	2327-2330	2331-2334	2335-2338	2339-2342	2343-2346	2347-2350	2351-2354	2355-2358	2359-2362	2363-2366	2367-2370	2371-2374	2375-2378	2379-2382	2383-2386	2387-2390	2391-2394	2395-2398	2399-2402	2403-2406	2407-2410	2411-2414	2415-2418	2419-2422	2423-2426	2427-2430	2431-2434	2435-2438	2439-2442	2443-2446	2447-2450	2451-2454	2455-2458	2459-2462	2463-2466	2467-2470	2471-2474	2475-2478	2479-2482	2483-2486	2487-2490	2491-2494	2495-2498	2499-2502	2503-2506	2507-2510	2511-2514	2515-2518	2519-2522	2523-2526	2527-2530	2531-2534	2535-2538	2539-2542	2543-2546	2547-2550	2551-2554	2555-2558	2559-2562	2563-2566	2567-2570	2571-2574	2575-2578	2579-2582	2583-2586	2587-2590	2591-2594	2595-2598	2599-2602	2603-2606	2607-2610	2611-2614	2615-2618	2619-2622	2623-2626	2627-2630	2631-2634	2635-2638	2639-2642	2643-2646	2647-2650	2651-2654	2655-2658	2659-2662	2663-2666	2667-2670	2671-2674	2675-2678	2679-2682	2683-2686	2687-2690	2691-2694	2695-2698	2699-2702	2703-2706	2707-2710	2711-2714	2715-2718	2719-2722	2723-2726	2727-2730	2731-2734	2735-2738	2739-2742	2743-2746	2747-2750	2751-2754	2755-2758	2759-2762	2763-2766	2767-2770	2771-2774	2775-2778	2779-2782	2783-2786	2787-2790	2791-2794	2795-2798	2799-2802	2803-2806	2807-2810	2811-2814	2815-2818	2819-2822	2823-2826	2827-2830	2831-2834	2835-2838	2839-2842	2843-2846	2847-2850	2851-2854	2855-2858	2859-2862	2863-2866	2867-2870	2871-2874	2875-2878	2879-2882	2883-2886	2887-2890	2891-2894	2895-2898	2899-2902	2903-2906	2907-2910	2911-2914	2915-2918	2919-2922	2923-2926	2927-2930	2931-2934	2935-2938	2939-2942	2943-2946	2947-2950	2951-2954	2955-2958	2959-2962	2963-2966	2967-2970	2971-2974	2975-2978	2979-2982	2983-2986	2987-2990	2991-2994	2995-2998	2999-3002	3003-3006	3007-3010	3011-3014	3015-3018	3019-3022	3023-3026	3027-3030	3031-3034	3035-3038	3039-3042	3043-3046	3047-3050	3051-3054	3055-3058	3059-3062	3063-3066	3067-3070	3071-3074	3075-3078	3079-3082	3083-3086	3087-3090	3091-3094	3095-3098	3099-3102	3103-3106	3107-3110	3111-3114	3115-3118	3119-3122	3123-3126	3127-3130	3131-3134	3135-3138	3139-3142	3143-3146	3147-3150	3151-3154	3155-3158	3159-3162	3163-3166	3167-3170	3171-3174	3175-3178	3179-3182	3183-3186	3187-3190	3191-3194	3195-3198	3199-3202	3203-3206	3207-3210	3211-3214	3215-3218	3219-3222	3223-3226	3227-3230	3231-3234	3235-3238	3239-3242	3243-3246	3247-3250	3251-3254	3255-3258	3259-3262	3263-3266	3267-3270

The INEWS Scoring Key

Irish National Early Warning System (INEWS) Scoring Key							
SCORE	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 8		9 - 11	12 - 20		21 - 24	≥ 25
SpO ₂ (%)	≤ 91	92 - 93	94 - 95	≥ 96			
Inspired O ₂ (Fi O ₂)				Air			Any O ₂
Heart Rate (BPM)		≤ 40	41 - 50	51 - 90	91 - 110	111 - 130	≥ 131
Systolic BP (mmHg)	≤ 90	91 - 100	101 - 110	111 - 249	≥ 250		
ACVPU/CNS Response				Alert (A)			Confusion (new) (C), Voice (V), Pain (P), Unresponsive (U)
Temp (°C)	≤ 35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥ 39.1	

INEWS allocates 0-3 points to measurements of each of the 7 physiological parameters. A score of 0 represents least risk while a score of 3 represents highest risk

About recognising small changes

Documentation of observations over time demonstrates the patient's individual baseline and trends, which assist in the recognition of the small changes that may signal early deterioration.

Observe the patient

- Introduce yourself
- Situation awareness
 - Current concerns
 - Physiological observations
- Background/reason for admission
- Assessment of the patient
 - Is there a problem?
 - If yes, what IS the problem in your clinical judgement?
- Recommendation for action – what, if any, escalation is needed?



Healthcare worker (HCW), Patient, Family or Carer Concern

New in INEWS V2

Year: _____ Ward: _____ Consultant: _____

Date: _____ Time: _____

Healthcare worker (HCW)/Patient(P)/Family(F) concern

AB (Airway & Breathing)

Record as rate, dot and trend line

Mode of O₂ delivery: _____ Room Air

Respiratory Rate (breaths per minute)	Assess for 60 seconds	Resp.Score	Peripheral Oxygen Saturation (SpO ₂ %)	SpO ₂ Score
3	≥ 25	0	≥ 96	0
2	21-24	1	94-95	1
0	12-20	2	92-93	2
1	9-11	3	≤ 91	3
3	≤ 8			

- Concern is not scored but triggers patient review by a nurse or escalation for medical review, regardless of a low or no INEWS score. *Insert 'HCW' or 'H', 'P' or 'F' as appropriate*
- If a HCW, patient, family or carer reports concern, a full assessment and a complete set of INEWS observations should be undertaken

Respiratory Rate (RR)

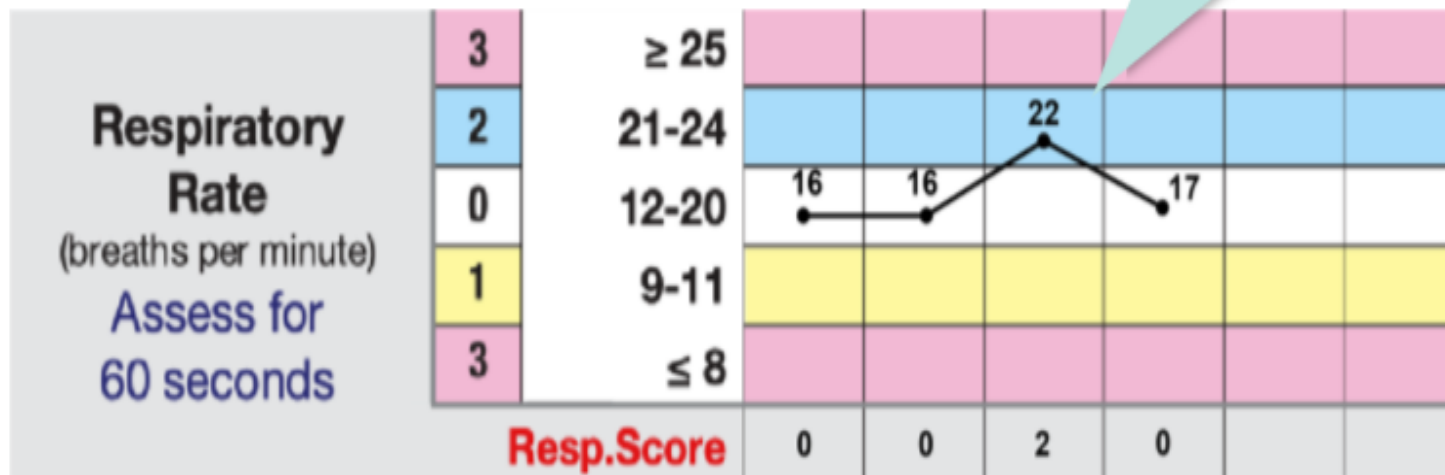
Changes in RR are the earliest sign of deterioration:

- Consider affect of patient position on respiration
- Count the RR for ***a full 60 seconds***
- Assess work of breathing including use of accessory muscles
- Is the chest moving bilaterally?
- Look at trends in RR
- Know the patient's baseline rate



What is the normal rate?

Apply RR as a number and a dot and join with trend line.



Apply the INEWs score for RR as per the INEWs scoring key.

The normal respiratory rate in adults (as per INEWs parameter ranges) is 12-20 breaths per minute. Some patients with a confirmed diagnosis of chronic respiratory conditions may have a higher baseline respiratory rate.

SpO₂

O₂ saturation (SpO₂) is recorded here

- SpO₂ is the '5th vital sign' and should be checked by trained staff using pulse oximetry in all breathless and acutely ill patients
- Increasing supplemental O₂ to maintain targeted SpO₂ indicates deterioration and should be escalated without delay

The image shows a patient chart template with a red circle highlighting the SpO₂ section. The chart is divided into several sections: AB (Vital Signs), C (Observations), D (Investigations), and E (Notes). The SpO₂ section is located in the AB section, specifically in the 'Pulse Oximetry' row. The chart includes various colored bands (pink, yellow, blue, green) representing different levels of patient risk or status. The red circle highlights the 'SpO₂' column, which is part of the 'Pulse Oximetry' row. The chart also includes a 'Notes' section at the bottom, which is currently empty.

Recording the SpO₂

Apply SpO₂ as a number (%).

Peripheral Oxygen Saturation (SpO ₂ %)	0	≥ 96	97	96		97	
	1	94-95			95		
	2	92-93					
	3	≤ 91					
SpO₂ Score			0	0	1	0	

Apply INEWS score for SpO₂ value.

- INEWS parameters identify normal SpO₂ as ≥96%
- Some patients with confirmed diagnosis of chronic respiratory conditions may have lower baseline SpO₂ levels and a specific plan of care may be required

Causes of inaccurate SpO₂ readings

- Poor peripheral circulation
- Shivering or restlessness
- Carbon monoxide/smoke inhalation
- Nail varnish/synthetic nails
- Anaemia
- Inappropriately sized probes or dirty probe sensors



Room Air/Supplemental O₂

Room air/Supplemental O₂ is recorded here.

Oxygen delivery devices are included in the chart.

Mode of O₂ delivery
 Room air (RA)
 Nasal Cannula (NC)
 Face mask (FM)
 Tracheostomy (T)
 HHF/Airvo (H)
 CPAP (C) / BIPAP (B)

Room Air or Supplementary O ₂							
0	Room Air	0	0		0		
3	% or L/min			2L/min			
Device/Mode				NC			
F _i O ₂ Score		0	0	3	0		

- All deteriorating patients should receive supplemental oxygen
- INEWS assigns a score of '3' to 'any O₂'
- The mode of O₂ delivery is documented
- When O₂ is prescribed the target SpO₂ should also be prescribed on the drug chart.

Measuring the heart rate

Count for 60 seconds.

Consider factors such as:

- Rhythm
- Volume
- Pulse quality (irregular, bounding or weak)
- Skin condition (dry, sweaty or clammy)



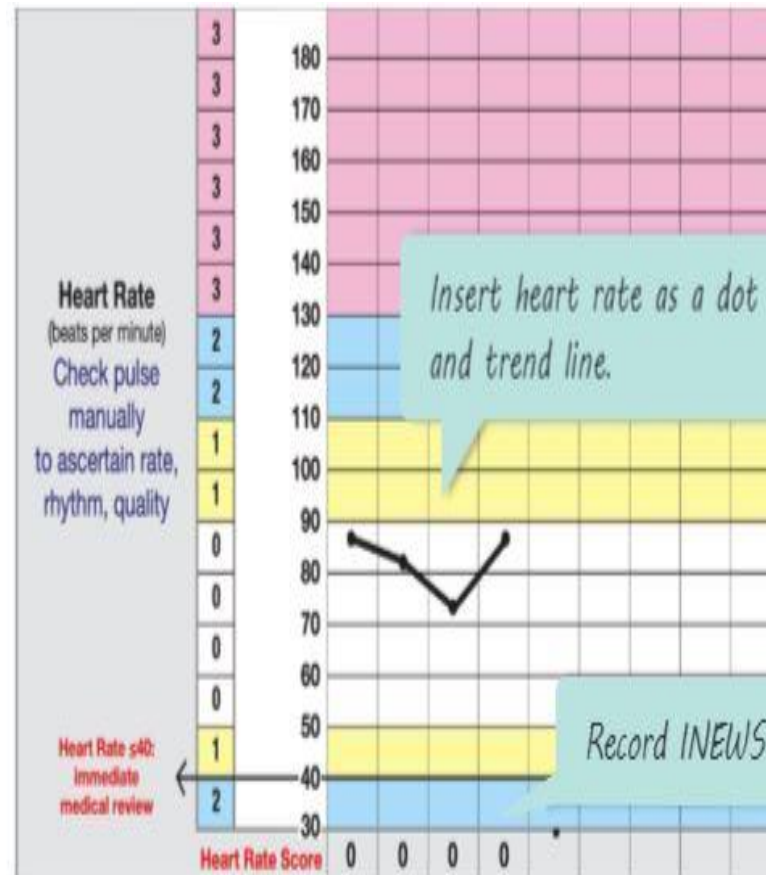
Measuring the heart rate

- Bradycardia of ≤ 40 requires immediate medical review and more frequent monitoring
- Patients being monitored electronically should have their HR checked manually on a regular basis to determine amplitude and volume (as well as rate and rhythm)



Heart Rate

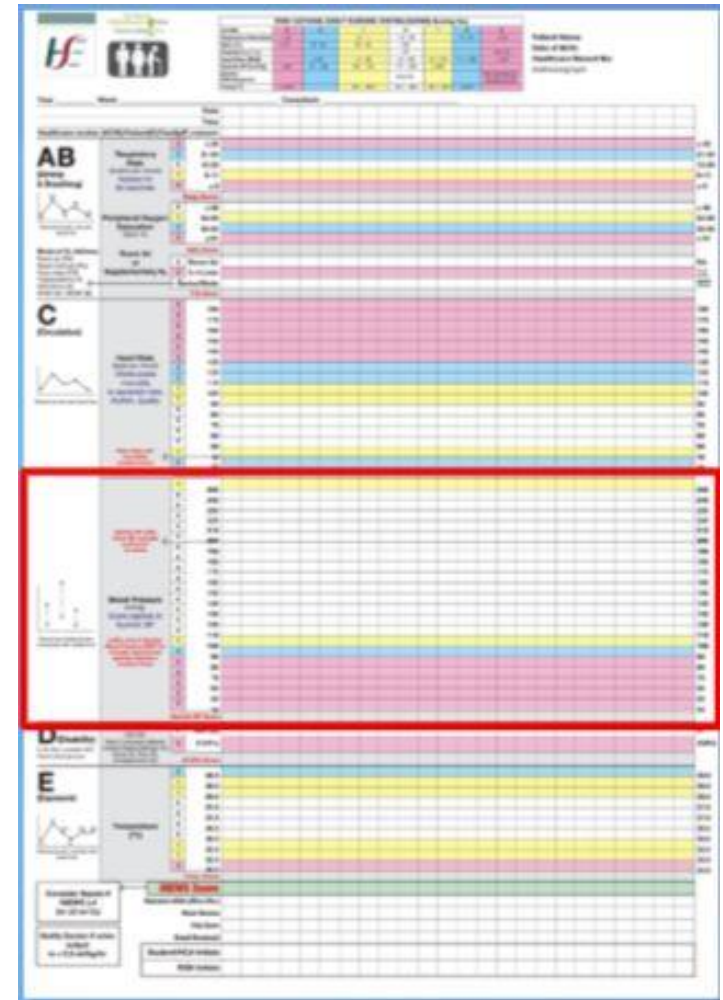
Heart rate is recorded here



Blood Pressure

BP is recorded here

- Establish baseline and identify trends over time
- A normally hypertensive patient may be relatively hypotensive even if their SBP is within normal INEWS parameters
- If systolic BP is ≥ 200 mmHg, urgent medical review is needed

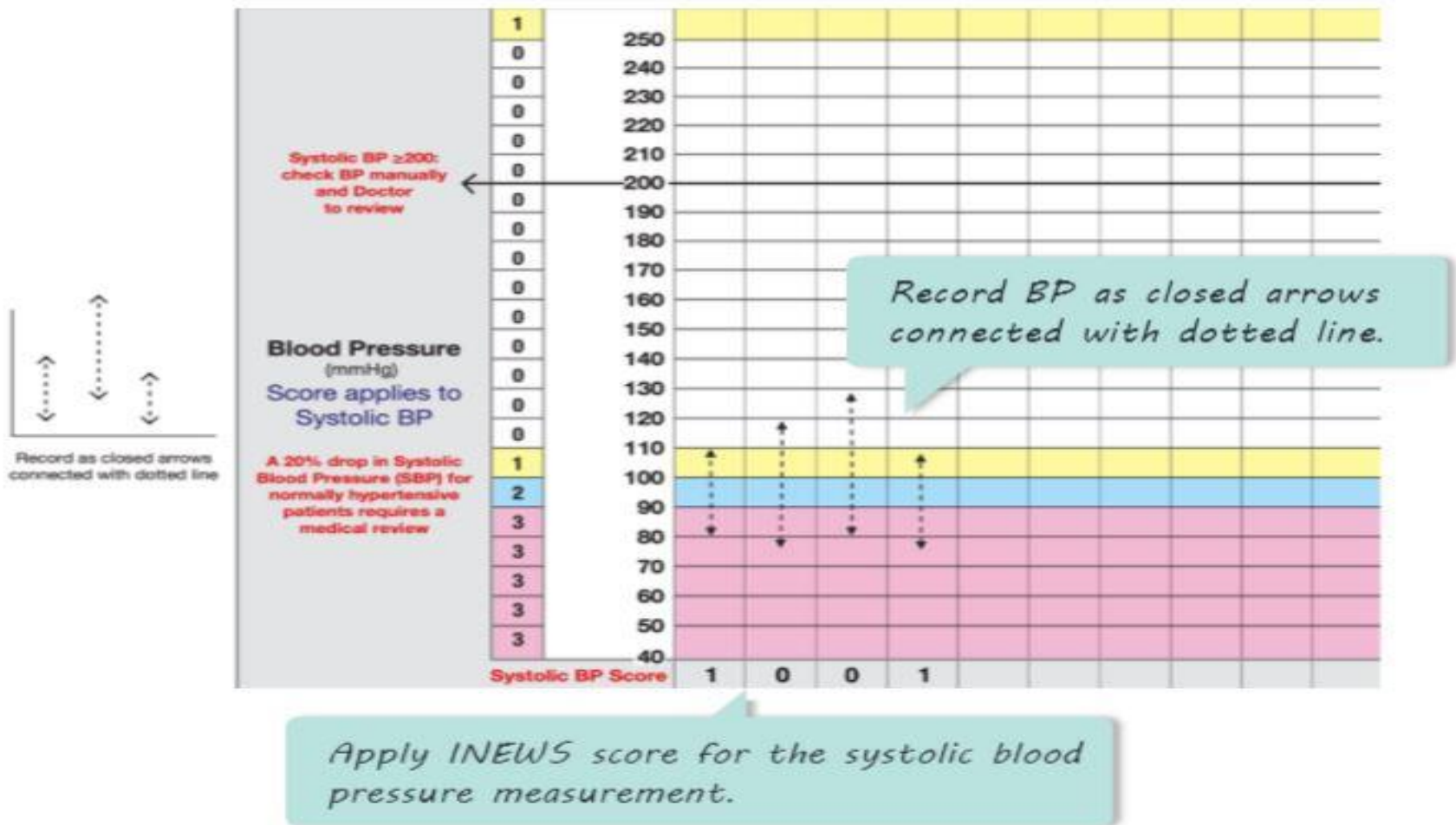


Blood Pressure

- Patients having BP measured electronically should have BP checked manually on a regular basis
- Refer to primary physician for guidance on response to lying and standing BP recordings
- Following two failed attempts at electronic BP measurement, a manual BP should be measured
- Ensure correct cuff size



Blood Pressure



Disability (Neurological Response)

New in INEWS V2

ACVPU (C = new confusion)

Neurological response is measured here.

- 'New' confusion, altered mental status or delirium is a common finding in acute illness
- Hypoxia can cause confusion or depressed level of consciousness
- Check blood glucose
- Think Sepsis

Use ACVPU scale to assess neurological response. If ACVPU scores 3 complete the Glasgow Coma Scale

Disability (Neurological Response)

ACVPU Alert (A), New Confusion/alterned mental status/delirium (C) Voice (V), Pain (P), Unresponsive (U)	0	Alert (A)	A	A	A				
	3	C VPU				C			
	ACVPU Score		0	0	0	3			

Apply INEWS score for ACVPU measurement.

Apply response using A, C, V, P or U.

Notes about neurological response:

- **A (Alert):** Patient is alert and oriented to person, place, time and event.
- **C:** New confusion or altered mental status or delirium has been identified as an early sign of deterioration and is thus now included as 'C' in ACVPU. Consult family to establish the patient's baseline and assume the patient has new confusion until proven otherwise. A patient may respond to questions coherently, i.e., they may be orientated in person, place and time, but may still be confused or have altered mental status and/or agitation. If a patient's baseline is confirmed as 'confusion' (pre-existing/persistent) this is taken as their normal status and they are scored accordingly.
- **V (Voice):** The patient responds to verbal stimuli only.
- **P (Pain):** The patient responds to painful stimuli only with a purposeful or non-purposeful movement.
- **U (Unresponsive):** The patient does not respond to stimuli.

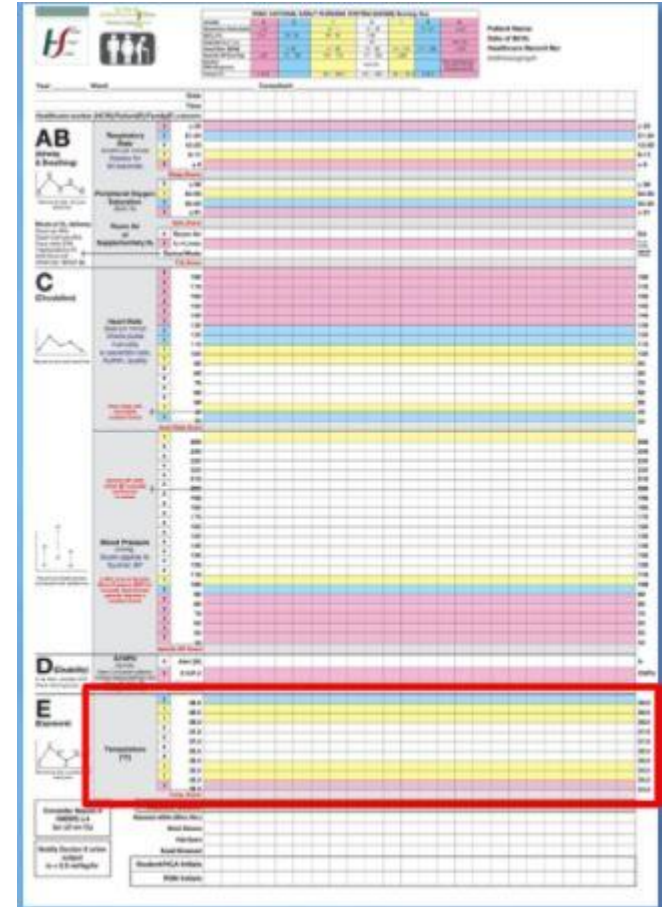


Temperature

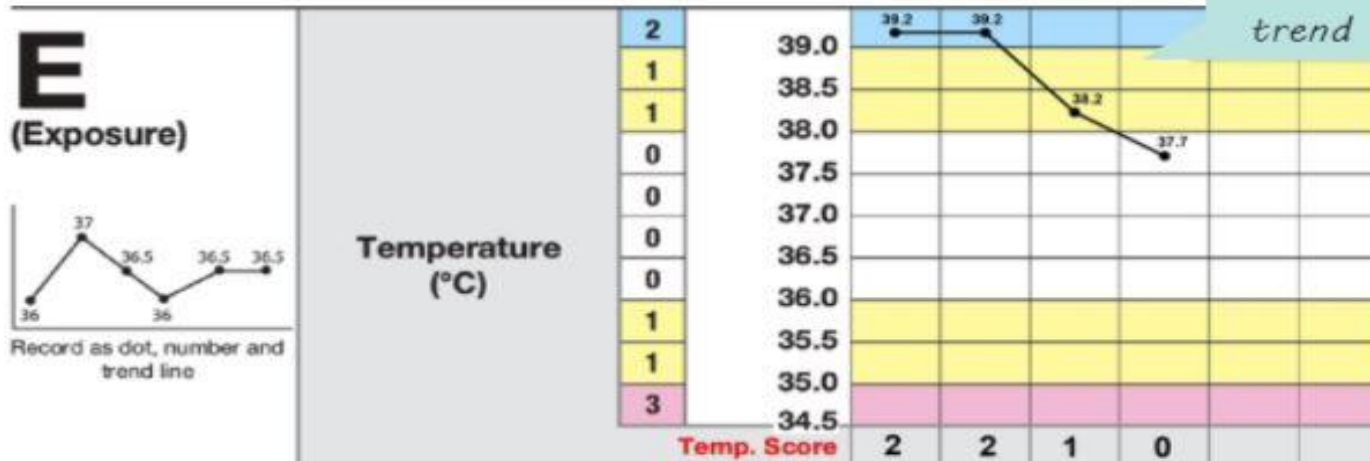
Temperature is recorded here.

INEWS temperature parameter ranges are as follows

- **Normal range** is 36.1°C - 38°C
- **Hypothermia:** Core temperature of <35°C
- **Hyperthermia** extends from low grade pyrexia (38.1°C) to hyperpyrexia (≥40°C)



Temperature



Apply temperature measurement, dot and trend line.

Apply INEWs score for temperature.

Temperatures should be recorded at the appropriate site (e.g tympanic, axillary etc) according to your local hospital/acute setting guidelines. Ideally the same site should be used to allow for comparison.



Urine Output

- Small window of opportunity to recognise Acute Kidney Injury (AKI) to prevent acute renal failure
- Monitor fluid balance accurately

Temperature (°C)

Record as dot, number and trend line

0	36.5
0	36.0
1	35.5
1	35.0
3	34.5

Temp. Score

INEWS Score

Consider Sepsis if INEWS ≥ 4 (or ≥ 5 on O₂)

Notify Doctor if urine output is < 0.5 mL/kg/hr

Reassess within (Mins./Hrs.)

Blood Glucose

Pain Score

Bowel Movement

Student/HCA Initials

RGN Initials

Calculating the INEWS SCORE

Review the parameters

Here are the parameters with the scores as shown for the four sets of observations used in the earlier slides.

	↓	↓	↓	↓
Resp.Score	0	0	2	0
SpO₂ Score	0	0	1	0
F_IO₂ Score	0	0	3	0
Heart Rate Score	0	0	0	0
Systolic BP Score	1	0	0	1
ACVPU Score	0	0	0	3
Temp. Score	2	2	1	0
INEWS Score	3	2	7	4

Add each column to calculate the INEWS score for each set of observations.



Calculating the INEWS SCORE

Add the score for each of the seven INEWs parameters to obtain INEWs Score

Enter the patient's INEWS score into the green 'INEWS Score' row

[illegible]

Single-score triggers:

Score of 3 in any single parameter or a score of 2 for heart rate ≤ 40 requires immediate escalation and increase in monitoring frequency

[illegible]

Reassess within (Mins/Hrs)

Frequency of patient monitoring is determined by:

- Patient's clinical condition
- Clinical judgement
- INEWS score

Document:

- When the next patient assessment is due

INEWS Score	3	2	7	4		
Reassess within (Mins./Hrs.)						
Blood Glucose						
Pain Score						
Bowel Movement						
Student/HCA Initials						
RGN Initials						

Knowledge Check

Which of the following statements are true?

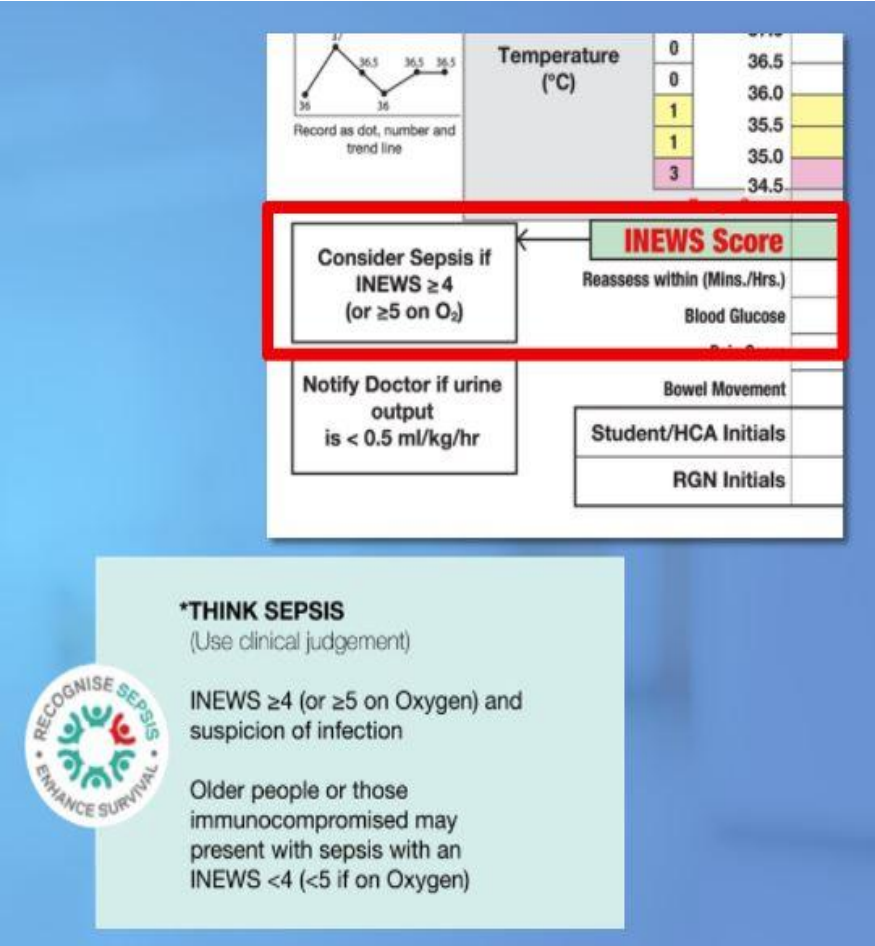
- a. Normal respiratory rate in adults as per INEWS is 12-20 breaths per minute
- b. Normal SpO₂ is $\geq 96\%$
- c. For FiO₂ if a patient is on any inspired oxygen, a score is inserted
- d. When measuring heart rate, count for 30 seconds
- e. If systolic BP is ≥ 200 mmHg, an urgent medical review required
- f. Normal temperature range is 36.1°C - 38°C



When to think Sepsis

Think sepsis if there is an INEWS score ≥ 4 (or ≥ 5 if on O_2) and a suspicion of infection

Use clinical judgement, particularly for older patients or immunocompromised patients as they can have sepsis despite an INEWS of <4 (or < 5 if on O_2)



The image displays the INEWS (National Early Warning Score) chart and a decision flowchart. The chart includes a temperature graph, a table for recording vital signs, and a decision box for when to consider sepsis.

Temperature Graph: A line graph showing temperature over time. The y-axis is labeled 'Temperature (°C)' and ranges from 36.0 to 37.5. The x-axis is labeled 'Time' and ranges from 0 to 4. The graph shows a peak at 1.5 hours (37.0°C) and a trough at 3 hours (36.0°C). The text 'Record as dot, number and trend line' is present.

Temperature Table:

Score	Temperature (°C)
0	36.5
0	36.0
1	35.5
1	35.0
3	34.5

INEWS Score Decision Box:

Consider Sepsis if INEWS ≥ 4 (or ≥ 5 on O_2)

Notify Doctor if urine output is < 0.5 ml/kg/hr

Reassess within (Mins./Hrs.)

Blood Glucose

Bowel Movement

Student/HCA Initials

RGN Initials

***THINK SEPSIS**
(Use clinical judgement)

INEWS ≥ 4 (or ≥ 5 on Oxygen) and suspicion of infection

Older people or those immunocompromised may present with sepsis with an INEWS <4 (<5 if on Oxygen)

When to think Sepsis

If infection is suspected, **THINK SEPSIS** and check for:

1. Risk of neutropenia **OR**
2. Clinically apparent new-onset organ failure as a result of infection;
OR
3. Systemic inflammatory response
(≥ 2 SIRS plus at least ≥ 1 co-morbidity)

Any 1 of the following clinical signs of Acute Organ Dysfunction

- Altered Mental State
- RR > 30
- O₂ Sat $< 90\%$
- SBP < 100
- HR > 130
- Pallor/mottling with prolonged capillary refill
- Non-blanching rash
- Oliguria or anuria
- Other organ dysfunction

Any ≥ 2 SIRS Criteria

- RR ≥ 20 breaths/min
- HR > 90 beats/min
- Temp $> 38.3^{\circ}\text{C}$. or $< 36^{\circ}\text{C}$
- BSL $> 7.7\text{mmol/l}$ (in non-diabetic patient)
- WCC < 4 or $> 12 \times 10^9/\text{L}$

Co-morbidities associated with increased mortality with Sepsis

- Age ≥ 75 yrs
- Frailty
- Diabetes Mellitus
- Cancer
- COPD
- Chronic kidney disease
- Chronic liver disease
- HIV/AIDS infection
- Immunosuppressed (due to meds/ disease)
- Major trauma/surgery in the last 6 weeks

When to think Sepsis

If infection is suspected,
THINK SEPSIS and check for

1. Risk of neutropenia **OR**
2. Clinically apparent new-onset organ failure as a result of infection; **OR**
3. Systemic inflammatory response (≥ 2 SIRS plus at least ≥ 1 co-morbidity)

If all of 1, 2 or 3 are **ABSENT...**

If ALL of 1, 2 or 3 are ABSENT follow usual management pathway and INEWs escalation protocol. However, if there is a deterioration in patient's clinical condition escalate for medical review.

If any of 1, 2 or 3 are **PRESENT...**

If any of 1, 2 or 3 are present, then suspect sepsis and start the sepsis pathway.

Escalate for medical review if...

Escalate for medical review if there is a deterioration in clinical condition due to an infection, regardless of the patient's INEWs score.

Screen for Sepsis

Combined Adult Sepsis Form
Start sepsis form if there is a suspicion of infection and screen to positive or awaiting clinical judgement.
There are separate sepsis checklists for maternity patients, and children

Section 1 Sepsis screen for Nursing Staff
AND
Patient presentation ☐ 1 or ☐ 2 or ☐ 3
(see Section 3 and Think Sepsis Poster / Adult In-Patient Management Algorithm)

Language/Disability
If unable to read/understand, ask for help from a family member or friend to help with the form.

Weak
If unable to read/understand, ask for help from a family member or friend to help with the form.

Date: _____ Triage Time: _____ Triage Category: _____
Date: _____ Time of NEWS: _____ NEWS: _____
Signature: _____ NMB PIN: _____

Section 2 Sepsis diagnosis for Medical Staff
Document site of suspected infection after medical review

☐ Respiratory Tract ☐ Intra-abdominal ☐ Urinary Tract
☐ Skin ☐ Catheter/Device Related ☐ Intra-articular/Joint
☐ Central Nervous System ☐ Unknown
☐ Other suspected site: _____

☐ No clinical suspicion of INFECTION: terminate form and sign at bottom.

Section 3 Who needs to get the "Sepsis 6" - infection plus any one of the following:

1. ☐ Patients at risk of neutropenia, due to bone marrow failure, autoimmune disorder or treatment including but not limited to, chemotherapy and radiotherapy, who present unwell.

2. ☐ Clinically apparent new onset organ failure, any one of the following:
☐ Acutely altered mental state ☐ RR > 30 ☐ O₂ sat < 90% ☐ HR > 130
☐ Oligo or anuria ☐ Pallor/mottling with prolonged capillary refill ☐ SBP < 100
☐ Non-blanching rash ☐ Other organ dysfunction

3. ☐ Patients with a systemic inflammatory response (≥ 2 SIRS) plus ≥ 1 co-morbidity.
SIRS criteria: Note - physiological changes should be sustained not transient.
☐ Respiratory rate ≥ 20 breaths/min ☐ WCC < 4 or > 12 x 10⁹/L ☐ Bilirubin > 7.7mmol/L (in the absence of Gilbert's syndrome)
☐ Heart rate > 90 beats/min ☐ Temperature < 36 or > 38.3°C

Co-morbidities associated with increased mortality in sepsis:
☐ COPD ☐ DM ☐ HIV/AIDS ☐ Chronic liver disease ☐ Cancer ☐ Chronic kidney disease
☐ Immunosuppressant medications ☐ Age > 75 years ☐ Frailty ☐ Recent surgery/major trauma

Section 4
☐ HYES after medical review to Section 2 PLUS 1, 2 or 3 in Section 3.
Start SEPSIS 6 (Section 6)
Time Zero: _____

Section 5
☐ IF NO to infection with a high-risk presentation (1, 2 or 3), tick NO and sign off. If infection and low-risk presentation, tick infection and continue usual treatment pathway. Review diagnosis if patient deteriorates.
☐ Infection
Antimicrobial given: _____

Has a decision been made to apply a relevant treatment limitation plan? ☐ Do not proceed with Sepsis pathway. Document limitations in clinical notes.

Doctor's Name: _____ Doctor's Signature: _____
MCN: _____ Date: _____ Time: _____

Page 1 of 2
Continue overleaf

Combined Adult Sepsis Form
ALWAYS USE CLINICAL JUDGEMENT

Treatment, Risk Stratification and Escalation

Page 2 of 2

Section 6 TAKE 3 SEPSIS 6 - aim to complete within 1 hour GIVE 3

☐ **BLOOD CULTURES:** Take blood cultures prior to giving antibiotics unless this leads to delay > 45 minutes. Other cultures as indicated by history and examination.

☐ **BLOOD TESTS:** Point of care lactate (venous or arterial), FBC, U&E, LFTs +/- Coag. Other tests and investigations as indicated.

☐ **URINE OUTPUT:** Assess urinary output as part of volume/perfusion status assessment. For patients with sepsis or septic shock start hourly urinary output measurement.

☐ **OXYGEN:** % Range 27% (SpO₂) to 100%. Treat to saturations of 94-98%, 88-92% in chronic lung disease.

☐ **FLUIDS:** Volume in 1st hour **mls.**
Patients who present with hypotension should receive 30ml/kg of a balanced salt solution within 1 hour of presentation. Start per protocol in patients who are fluid unresponsive. Patients with hypotension should receive fluid to restore perfusion using a bolus and reassess technique. 500ml boluses are recommended but may be amended based on clinical context. See fluid resuscitation algorithm.

☐ **ANTIBIOTICS:** Give antimicrobials as per local antimicrobial guideline based on the site of infection, community or healthcare acquired and the patient's allergy status. Assess requirement for source control.

Type: _____ Dose: _____ Time given: _____

Section 7 Look for signs of new organ dysfunction after the Sepsis 6 bundle has been given or from blood test results - any one is sufficient:

☐ Lactate ≥ 4 after 30ml/kg intravenous therapy

☐ Cardiovascular - Systolic BP < 90 or Mean Arterial Pressure (MAP) < 65 or Systolic BP more than 40 below patient's normal

☐ Respiratory - New need for oxygen to achieve saturation > 90% (note: this is a definition not the target)

☐ Renal - Creatinine > 170 micromol/L or Urine output < 30ml/kg/24hrs - despite adequate fluid resuscitation

☐ Liver - Bilirubin > 52 micromol/L

☐ Haematological - Platelets < 100 x 10⁹/L

☐ Central Nervous System - Acutely altered mental status

One or more new organ dysfunction due to infection:
☐ This is **SEPSIS**: Seek senior input as per local guidelines.

No new organ dysfunction due to infection:
☐ This is **NOT SEPSIS**: If infection is diagnosed proceed with usual treatment pathway for that infection.

Section 8 Look for signs of septic shock (following adequate initial fluid resuscitation, typically 2 litres in the first hour unless fluid intolerant)

☐ Requiring inotropes/pressors to maintain MAP ≥ 65

☐ **SEPTIC SHOCK**

☐ Inform Consultant
☐ Contact CRITICAL CARE

Practical Guidance
Re-assess the patient's clinical response frequently. Re-assess and repeat lactate, if the first is abnormal, by 3hrs. Achieve source control as soon as practicable. If the patient is deteriorating, despite appropriate treatment, seek senior assistance, re-assess antimicrobial therapy and the need for source control.

Pathway Modification
All Pathway modifications need to be agreed by the Hospital's Sepsis Committee and be in line with the National Clinical Guideline.

Section 9 Clinical Handover, Use ISBAR, Communication Tool
This section only applies when handover occurs before the form is completed and the form is then signed off by the receiving doctor.
Doctor's Name (PMB): _____ Doctor's Signature: _____ Doctor's Initials: _____
Patient care handed over to: _____ Time: _____ Section completed: _____

Form completed by
Doctor's Name: _____ Doctor's Signature: _____
MCN: _____ Date: _____ Time: _____


File this document in the patient notes - other aspects of patient management should be documented on the continuation sheets.
Page 2 of 2




INEWS Escalation and Response

Calculate INEWS score and escalate care as per the INEWS Escalation and Response Protocol

Alert Nurse in Charge of any escalation or concern






Place hospital logo here


Patient Name: _____
 Date of Birth: _____
 Healthcare Record No: _____

Irish National Early Warning System (INEWS)
ADULT PATIENT OBSERVATION CHART
 INEWS should be used as an aid to clinical judgement and decision making

INEWS Escalation & Response Protocol


	INEWS Score	Minimum Observation Frequency	Escalation	Response
Bedside Response	Healthcare worker / patient / family concern	As indicated by patient condition	Nurse at the bedside / Nurse in Charge (NIC)	• NIO to review if concern and escalate as appropriate
	0 – 1	6 hourly (first 24 hours following admission) then 12 hourly minimum	NIO	• NIO to review if new score 1
	2	6 hourly	NIO	• NIO to review
For INEWS scores of 0 – 2 an Urgent Response (SHO or ANP Service) can be called if there is clinical concern				
Urgent Response	3	4 hourly	NIO and Team / On-call SHO	• SHO or ANP service to review within 1 hour
	4 – 6 	1 hourly	NIO and Team / On-call SHO	• SHO or ANP service to review within ½ hour • Screen for Sepsis* • If no response to treatment within 1 hour, contact Registrar and/or ANP service • Consider continuous patient monitoring • Consider transfer to higher level of care
Emergency Response	≥ 7	½ hourly	NIO and Team / On-call Registrar Inform Team / On-call Consultant	• Registrar / Consultant / ANP service to review immediately • Continuous patient monitoring recommended • Plan to transfer to higher level of care • Activate Emergency Response System (as appropriate to hospital model)
	Score of 3 in any single parameter or Score of 2 for HR ≤ 40	½ hourly or as indicated by patient condition	NIO and Team / On-call SHO	• SHO or ANP service to review immediately • If no response to treatment or if still concerned, contact Registrar/Consultant • Consider activating Emergency Response System

If response does not occur as per protocol the ONM/NIO should contact the Registrar or Consultant



CUES FOR CAUTION

- ! Increasing O₂ requirements to maintain SpO₂ levels
- ! Patient located outside of specialist ward
- ! Patient receiving high-risk / unfamiliar therapies
- ! Communication concerns between staff and/or patient
- ! Nurse intuition / 'gut-feeling'



***THINK SEPSIS**
(Use clinical judgement)

INEWS ≥ 4 (or ≥ 5 on Oxygen) and suspicion of infection

Older people or those immunocompromised may present with sepsis with an INEWS < 4 (< 5 if on Oxygen)

Summary

- Healthcare worker/patient/family/carer concern is an important indicator of patient deterioration
- Early indicators of deterioration are changes in respiratory rate and new confusion/altered mental status/delirium
- An increasing requirement for supplemental oxygen to maintain target SpO₂ levels is a clear sign of deterioration and requires immediate medical review
- There is a small window of opportunity to recognise Acute Kidney Injury (AKI) to prevent acute renal failure; monitor urine output accurately
- Accurate measurement and calculation of the INEWS score are critical to improving patient outcomes

INEWS Escalation and Response





Deteriorating Patient Improvement Programme




You Are the Change Patient Safety & Wellbeing

Patient Name: _____
 Date of Birth: _____
 Healthcare Record No: _____

Irish National Early Warning System (INEWS) ADULT PATIENT OBSERVATION CHART

INEWS should be used as an aid to clinical judgement and decision making

INEWS Escalation & Response Protocol

	INEWS Score	Minimum Observation Frequency	Escalation	Response
Bedside Response	Healthcare worker / patient / family concern	As indicated by patient condition	Nurse at the bedside / Nurse in Charge (NiC)	• NiC to review if concern and escalate as appropriate
	0 – 1	6 hourly (first 24 hours following admission) then 12 hourly minimum	NiC	• NiC to review if new score 1
	2	6 hourly	NiC	• NiC to review
For INEWS scores of 0 – 2 an Urgent Response (SHO or ANP Service) can be called if there is clinical concern				
Urgent Response	3	4 hourly	NiC and Team / On-call SHO	• SHO or ANP service to review within 1 hour
	4 - 6  *THINK SEPSIS*	1 hourly	NiC and Team / On-call SHO	• SHO or ANP service to review within ½ hour • Screen for Sepsis* • If no response to treatment within 1 hour, contact Registrar and/or ANP service • Consider continuous patient monitoring • Consider transfer to higher level of care
Emergency Response	≥7	½ hourly	NiC and Team / On-call Registrar Inform Team / On-call Consultant	• Registrar / Consultant / ANP service to review immediately • Continuous patient monitoring recommended • Plan to transfer to higher level of care • Activate Emergency Response System (as appropriate to hospital model)
	Score of 3 in any single parameter or Score of 2 for HR ≤ 40	½ hourly or as indicated by patient condition	NiC and Team / On-call SHO	• SHO or ANP service to review immediately • If no response to treatment or if still concerned, contact Registrar/Consultant • Consider activating Emergency Response System

If response does not occur as per protocol the CNM/NiC should contact the Registrar or Consultant



CUES FOR CAUTION

- ! Increasing O₂ requirements to maintain SpO₂ levels
- ! Patient located outside of specialist ward
- ! Patient receiving high-risk / unfamiliar therapies
- ! Communication concerns between staff and/or patient
- ! Nurse intuition / 'gut-feeling'



THINK SEPSIS
(Use clinical judgement)



INEWS ≥4 (or ≥5 on Oxygen) and suspicion of infection

Older people or those immunocompromised may present with sepsis with an INEWS <4 (<5 if on Oxygen)

Determinants for escalating care:

- Clinical judgement
- Healthcare worker, patient or family concern
- Intuition/gut-feeling
- INEWS score
- Escalation and Response Protocol

INEWS Escalation & Response Protocol

INEWS Score		Minimum Observation Frequency	Escalation	Response
Bedside Response	Healthcare worker / patient / family concern	As indicated by patient condition	Nurse at the bedside / Nurse in Charge (NiC)	• NiC to review if concern and escalate as appropriate
	0 – 1	6 hourly (first 24 hours following admission) then 12 hourly minimum	NiC	• NiC to review if new score 1
	2	6 hourly	NiC	• NiC to review
Urgent Response	For INEWS scores of 0 – 2 an Urgent Response (SHO or ANP Service) can be called if there is clinical concern			
	3	4 hourly	NiC and Team / On-call SHO	• SHO or ANP service to review within 1 hour
	4 - 6  THINK SEPSIS*	1 hourly	NiC and Team / On-call SHO	<ul style="list-style-type: none"> • SHO or ANP service to review within ½ hour • Screen for Sepsis*  • If no response to treatment within 1 hour, contact Registrar and/or ANP service • Consider continuous patient monitoring • Consider transfer to higher level of care
Emergency Response	≥7	½ hourly	NiC and Team / On-call Registrar Inform Team / On-call Consultant	<ul style="list-style-type: none"> • Registrar / Consultant / ANP service to review immediately • Continuous patient monitoring recommended • Plan to transfer to higher level of care • Activate Emergency Response System (as appropriate to hospital model)
	Score of 3 in any single parameter or Score of 2 for HR ≤40	½ hourly or as indicated by patient condition	NiC and Team / On-call SHO	<ul style="list-style-type: none"> • SHO or ANP service to review immediately • If no response to treatment or if still concerned, contact Registrar/Consultant • Consider activating Emergency Response System

If response does not occur as per protocol the CNM/NiC should contact the Registrar or Consultant

Deferred escalation by an RGN

An RGN using their clinical judgement and working within their scope of professional practice may decide against immediate escalation...when they believe that immediate simple measures are likely to reduce the INEWS score over a short period of observation within or up to a maximum period of 30 minutes (Recommendation 11).

Deferred escalation should be followed by:

- Reassessment ≤ 30 minutes, escalating if no improvement
- Documentation of decision to defer escalation on the INEWS chart

Deferred Escalation (to be completed by Registered General Nurse (RGN))

Date/Time (use 24hr clock)	Rationale and Interventions	Review at 30 minutes	Nurse (Signature and NMBI PIN)
25 / 05 / 20 @ 0400	Imp: Decrease in SpO2 to 94% on 2L/min O2 via n/prongs, patient lying flat, stated they feel okay. Intervention: patient repositioned and n/prongs adjusted. Repeat observations and review decision at 30 minutes. NIC informed.	0430 hours: SpO2 back to 96% on 2 L/min O2, no need for escalation.	Nurse Brown (PIN 12345)
/ / @			
/ / @			
/ / @			

**Text within sections above is provided as example only - please write over the watermark*

ISBAR Communication Tool

Identify



Situation

Background

Assessment

Recommendation

INEWS Escalation & Response Protocol

INEWS Score		Minimum Observation Frequency	Escalation	Response
Bedside Response	Healthcare worker / patient / family concern	As indicated by patient condition	Nurse at the bedside / Nurse in Charge (NiC)	<ul style="list-style-type: none"> NiC to review if concern and escalate as appropriate
	0 – 1	6 hourly (first 24 hours following admission) then 12 hourly minimum	NiC	<ul style="list-style-type: none"> NiC to review if new score 1
	2	6 hourly	NiC	<ul style="list-style-type: none"> NiC to review
Urgent Response	For INEWS scores of 0 – 2 an Urgent Response (SHO or ANP Service) can be called if there is clinical concern			
	3	4 hourly	NiC and Team / On-call SHO	<ul style="list-style-type: none"> SHO or ANP service to review within 1 hour
	4 - 6  THINK SEPSIS*	1 hourly	NiC and Team / On-call SHO	<ul style="list-style-type: none"> SHO or ANP service to review within ½ hour Screen for Sepsis*  If no response to treatment within 1 hour, contact Registrar and/or ANP service Consider continuous patient monitoring Consider transfer to higher level of care
Emergency Response	≥7	½ hourly	NiC and Team / On-call Registrar Inform Team / On-call Consultant	<ul style="list-style-type: none"> Registrar / Consultant / ANP service to review immediately Continuous patient monitoring recommended Plan to transfer to higher level of care Activate Emergency Response System (as appropriate to hospital model)
	Score of 3 in any single parameter or Score of 2 for HR ≤40	½ hourly or as indicated by patient condition	NiC and Team / On-call SHO	<ul style="list-style-type: none"> SHO or ANP service to review immediately If no response to treatment or if still concerned, contact Registrar/Consultant Consider activating Emergency Response System

If response does not occur as per protocol the CNM/NiC should contact the Registrar or Consultant

Cycle of Clinical Futility

- A 'cycle of clinical futility' is when a patient is deteriorating and they are reviewed on a number of occasions but despite the patient not responding to interventions they are not escalated for senior medical review i.e. a lot of activity with no improvement - and even dis-improvement - in patient condition
- Hierarchical culture in hospitals can lead to reluctance of junior staff to escalate upwards to senior colleagues
- INEWS escalation and response protocol prompts escalation to Registrar or Consultant if patient does not respond to initial treatment

Modified Escalation and Response Protocol

Recommendation 7: A patient's INEWS score or the INEWS physiological parameter ranges must not be altered.

However, some patients' lived baseline observations will fall outside INEWS normal parameter ranges. To respond to these individuals' care needs INEWS V2 introduces the Modified Escalation and Response Protocol for use by a Consultant or Registrar once a patient has been admitted for 24 hours or longer ie has established a baseline observations trend.

Modified INEWS Escalation and Response Protocol – minimum content

- Rationale for modification of escalation and response
 - Timeframe for review of patient and modified response protocol (minimum 24 hourly review)
 - Information about further action(s) and/or escalation.
- (Note: For the majority of patients the standard Escalation and Response Protocol will be appropriate)*

Modified INEWS Escalation and Response Protocol (to be completed by Consultant or Registrar only)
Not for use within first 24 hours of admission

	Date Year: 2020	Time (use 24hr clock)	Rationale and Instructions/Interventions	Next medical review	Doctor (Signature and MCRN)
Start	05 / 03	1800	Imp: Chest infection, admitted > 24 hours ago Stable with RR 20, SpO2 96%, O2 2L/min via nasal cannulae (INEWS score 3) Escalate if change in RR or increased O2 requirement to maintain SpO2 treatment target of $\geq 96\%$ *	First thing tomorrow morning or earlier if patient condition deteriorates (increase in RR or if requires an increase in supplemental O2 to maintain target SpO2) or if clinical concern.	Dr. A, Medical Registrar MCRN 1234567
End	/				
Start	/				
End	06 / 03	1000			
Start	/				
End	/				
Start	06 / 03	1000	Reviewed. Discontinue O2. Seek review by Medical Registrar or Consultant if change in RR or if O2 required again.	24 hours or sooner if concern	Dr. A, Medical Registrar MCRN 1234567
End	07 / 03	1000			
Start	/				
End	/				

*Text within sections above is provided as example only - please write over the watermark

Example of the use of a Modified Escalation and Response Protocol



Sean was admitted 24 hours ago and his baseline observations trend is consistently outside normal parameters.



Sean responded to treatment and is stable. Baseline observations remain outside normal INEWS parameters. The Consultant or Registrar completes a modified INEWS escalation and response protocol and will review after 24 hours or sooner if Sean's condition changes or if there is clinical concern.



The Modified INEWS Escalation and Response Protocol is reviewed by the Registrar or Consultant every 24 hours or sooner if there is clinical concern to ensure that the patient's clinical condition is being managed appropriately.



Consultant or Registrar documents the rationale for the modification, timeframe for review of patient and modified response protocol (minimum every 24 hours), and information about further actions and/or escalation



Use 'ISBAR' to communicate

- **ISBAR** = Identify, Situation, Background, **A**ssessment and Recommendation
- It provides a means of structured communication between healthcare professionals
- Enables clarification of what should be communicated between team members
- Promotes a shared language to improve patient safety



Using ISBAR

Here is an example of how you might use ISBAR.

A patient was admitted to the Medical ward 24 hours ago with a presenting complaint of breathlessness. After measuring and recording observations, documenting them in the INEWS observation chart and repositioning the patient, the nurse on duty, Nurse Slattery noticed no improvement and so calls the SHO on duty, Dr. Murphy.

ISBAR communication tool

Example patient deterioration

ISBAR Communication Tool	Identify	Situation	Background	Assessment	Recommendation
I Identify	"Hello, this is Nurse Slattery on Medical Ward A. Is that Dr Murphy the medical SHO? I'm calling you about Mrs Mary Malone in Bed 4."				
S Situation	"Her INEWS score with O ₂ is 6. Respirations are 22. SpO ₂ is 94% on room air, BP 130/80, heart rate 90; temperature 37.0 and she is alert. I've commenced her on 2L/min O ₂ pending your review."				
B Background	"She was admitted with breathlessness yesterday. She is on antimicrobials and has been having Physiotherapy."				
A Assessment	"She is increasingly breathless and is deteriorating. Her husband is also worried about her increased breathlessness."				
R Recommendation	"Can you please review her within half an hour?"				

Summary

- Patient acuity must be clearly stated at the outset of the ISBAR conversation
- Patient monitoring must continue during escalation and review
- If response to escalation is not timely escalate to a more senior clinician
- RGN may defer escalation for up to 30 minutes if immediate measures are likely to improve a patient's condition
- Consultant or Registrar can document a Modified INEWS Escalation and Response Protocol for those small number of patients who's lived physiological observations baseline fall outside of INEWS normal parameter ranges



INEWS in practice

Meet the patient: Mrs. Mary Malone

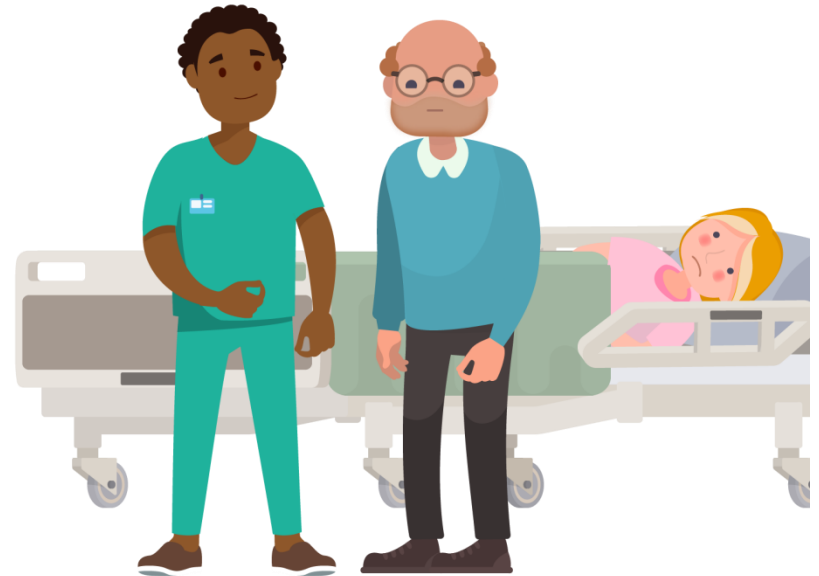
- 65 years old, admitted to a Medical ward 24 hours ago complaining of breathlessness
- Diagnosed with pneumonia, prescribed antimicrobial therapy and referred for physiotherapy
- Previous admissions for pneumonia.
No significant co-morbidities



Initial Assessment: 9:00AM

Mr Malone is concerned that his wife is more breathless

Nurse Slattery washes his hands, greets the patient, takes a brief history and notes that Mrs. Malone is breathless. He measures all the observations and documents them in the INEWS chart.



Nurse Slattery's actions

Nurse Slattery repositions the patient. He discusses his decision to defer escalation with the Nurse in Charge and will reassess the patient in 30 minutes.

The decision for deferral is documented on the INEWS observation chart by Nurse Slattery.



Deferred Escalation (to be completed by Registered General Nurse (RGN))

Date/Time (see side clock)	Rationale and Interventions	Review at 30 minutes	Nurse (Signature and Staff Pin)
25 / 05 / 20 @ 0400	Imp: Decrease in SpO ₂ to 94% on 2L/min O ₂ via n/prongs, patient lying flat, patient states they feel okay. Intervention: patient repositioned and n/prongs adjusted. Repeat observation and review decision at 30 minutes. NIC informed.*	0430 hours: SpO ₂ back up to 96% on 2L/min O ₂ . No need for escalation.	Nurse Brown (PIN 12345)
/ / @			
/ / @			
/ / @			

*Text within sections above is provided as example only - please write over the watermark



ISBAR Communication Tool

Identify Situation Background Assessment Recommendation



Deteriorating
Patient
Improvement
Programme

Rationale for not escalating immediately

Nurse Slattery noticed the patient was lying in a semi-recumbent position on initial assessment. He expects that repositioning her may improve her breathlessness, avoid further deterioration and provide him with a more accurate assessment of her status.

He reassures the patient and will repeat her INEWs observations in 30 minutes. He advises Mrs. Malone to call him if she feels unwell.



Next steps...

Nurse Slattery reassess the patient within 30 minutes

She remains breathless, her INEWs score remains 3...what should Nurse Slattery do next?

Administer 24% oxygen with a targeted SpO₂ of ≥96%. Then contact the SHO, requesting a review within half an hour as Mrs Malone's INEWs score has increased from 3 to 6.

Alert the Nurse in Charge and contact the SHO requesting a review within 1 hour, as Mrs Malone's SpO₂ is within the expected range and she does not require supplemental oxygen.

Wait until the consultant ward round to discuss the patient.

Nurse Slattery phones the SHO using ISBAR

ISBAR communication tool

Example patient deterioration

ISBAR Communication Tool

I Identify

S Situation

B Background

A Assessment

R Recommendation

I
Identify

"Hello, this is Nurse Slattery on Medical Ward A. Is that Dr Murphy the medical SHO? I'm calling you about Mrs Mary Malone in Bed 4."

S
Situation

"Her INEWs score with O₂ is 6. Respirations are 22. SpO₂ is 94% on room air, BP 130/80, heart rate 90; temperature 37.0 and she is alert. I've commenced her on 2L/min O₂ pending your review."

B
Background

"She was admitted with breathlessness yesterday. She is on antimicrobials and has been having Physiotherapy."

A
Assessment

"She is increasingly breathless and is deteriorating. Her husband is also worried about her increased breathlessness."

R
Recommendation

"Can you please review her within half an hour?"



The SHO arrives: 10:00

Dr. Murphy, arrives within half an hour.

She washes her hands and reviews Mrs Malone, prescribes a nebuliser and orders a chest x-ray, ECG and blood and sputum samples for analysis. She considers sepsis, acute coronary syndrome, pulmonary embolus and heart failure as other possible causes of deterioration.

As recommended by the INEWS Escalation & Response protocol, Nurse Slattery will repeat the observations in 1 hour or sooner if the patient's condition deteriorates.



No response to treatment: 12 noon

Nurse Slattery repeats the observations hourly. The observations are unchanged after 2 hours with an INEWS score of 6. The patient's condition has not improved. Using his clinical judgement and in view of a persistent INEWS score of 6, Nurse Slattery discusses Mrs. Malone's condition with the SHO.



What should Dr. Murphy do next?

Escalate to the Registrar or Consultant for review.

Tell Nurse Slattery to repeat the observations in 1 hour, and that she will review the patient after that.

Rationale for Escalation to Registrar

- Mrs. Malone has not responded to initial treatment. Her vital signs and INEWS score remain unchanged despite interventions.
- In consultation with the nurse and using her own clinical judgement Dr. Murphy decides that the patient is unlikely to improve with current treatment regime.
- Dr. Murphy recognises the need for senior medical review and therefore escalates to Medical Registrar.
- Failure to escalate would have put Mrs. Malone at risk and could have negative consequences for patient outcomes.

Modified Escalation and Response Protocol

Mrs Malone received a Registrar review and responded to treatment. She is continuing to trigger escalation due to an INEWS score of 3 for O₂ therapy.

The Registrar now considers it appropriate to modify the INEWS Escalation and Response Protocol. The patient was admitted >24 hours ago.



INEWS Patient Observation chart

Year _____ Ward: _____ Consultant: _____

Date	06/09	06/09	06/09	06/09	06/09	06/09
Time	9:00AM	9:30AM	10:00AM	11:00AM	12:00 NOON	6:00PM
Healthcare worker (HCW)/Patient(P)/Family(F) concern	F	F	F	F	F	F
AB (Airway & Breathing)						
Respiratory Rate (breaths per minute) Assess for 60 seconds	3 ≥ 25	22	22	22	22	22
Peripheral Oxygen Saturation (SpO ₂ %)	2 21-24	22	22	22	22	20
Mode of O ₂ delivery Room air (RA) Nasal Cannula (NC) Face mask (FM) Tracheostomy (T) HHF/Airvo (H) CPAP (C) / BiPAP (B)	0 12-20					
Room Air or Supplementary O ₂	1 9-11					
Device/Mode	3 ≤ 8					
F _i O ₂ Score	2 2	2	2	2	2	0
RA % or L/min	0 ≥ 96					96
SpO ₂ Score	1 94-95	94	94	94	94	94
RA % or L/min	2 92-93					
RA % or L/min	3 ≤ 91					
RA % or L/min	0 Room Air	24%	24%	24%	24%	24%
RA % or L/min	1 % or L/min					
RA % or L/min	2 % or L/min					
RA % or L/min	3 % or L/min					
RA % or L/min	0 0	3	3	3	3	3
RA % or L/min	1 180					
RA % or L/min	2 170					
RA % or L/min	3 160					
RA % or L/min	3 150					
RA % or L/min	3 140					
RA % or L/min	3 130					
RA % or L/min	3 120					
RA % or L/min	3 110					
RA % or L/min	3 100					
RA % or L/min	3 90					
RA % or L/min	3 80					
RA % or L/min	3 70					
RA % or L/min	3 60					
RA % or L/min	3 50					
RA % or L/min	3 40					
RA % or L/min	3 30					
RA % or L/min	0 0	0	0	0	0	0
RA % or L/min	1 90					
RA % or L/min	2 80					
RA % or L/min	3 70					
RA % or L/min	3 60					
RA % or L/min	3 50					
RA % or L/min	3 40					
RA % or L/min	3 30					
RA % or L/min	0 0	0	0	0	0	0

Blood Pressure (mmHg)
Score applies to Systolic BP

Systolic BP >200: check BP manually and Doctor to review

A 20% drop in Systolic Blood Pressure (SBP) for normally hypertensive patients requires a medical review

D (Disability)
If not Alert, consider GCS. Check blood glucose.

E (Exposure)
Temperature (°C)

INEWS Score

Reassess within (Mins./Hrs.): 30 mins, 30 mins, 1 hr, 1 hr, 1 hr, 1 hr

Blood Glucose

Pain Score

Bowel Movement

Student/HCA Initials

RGN Initials



Example of a Modified Escalation and Response Protocol

Modified INEWs Escalation and Response Protocol (to be completed by Consultant or Registrar only)
Not for use within first 24 hours of admission

	Date Year: 2020	Time (use 24hr clock)	Rationale and Instructions/Interventions	Next medical review	Doctor (Signature and MCRN)
Start	05 / 03	1800	Imp: Chest infection, admitted > 24 hours ago Stable with RR 20, SpO2 96%, O2 2L/min via nasal cannulae (INEWS score 3) Escalate if change in RR or increased O2 requirement to maintain SpO2 treatment target of $\geq 96\%$ *	First thing tomorrow morning or earlier if patient condition deteriorates (increase in RR or if requires an increase in supplemental O2 to maintain target SpO2) or if clinical concern.	Dr. A, Medical Registrar MCRN 1234567
End	/				
Start	/				
End	06 / 03	1000			
Start	/				
End	/				
Start	06 / 03	1000	Reviewed. Discontinue O2. Seek review by Medical Registrar or Consultant if change in RR or if O2 required again.	24 hours or sooner if concern	Dr. A, Medical Registrar MCRN 1234567
End	07 / 03	1000			
Start	/				
End	/				

**Text within sections above is provided as example only - please write over the watermark*



Modified Escalation and Response Protocol

Which of these statements in relation to the modified INEWS Escalation and Response protocol are correct?



The rationale for modification of the INEWS Escalation and Response Protocol must be documented.

Information about further action(s) and /or escalation must be detailed.

The fact that the patient is on a modified protocol should be included in ward clinical handovers and safety huddles.

There is no need to include a timeframe for review of the patient as the Modified INEWS Escalation and Response Protocol will be reviewed in 24 hours.

Nurse Slattery should use the information contained in the modified protocol to guide his nursing care and documentation.

While this modified INEWS Escalation & Response Protocol is still in place, there is no need to escalate the patient.

Summary

- INEWS is used to aid clinical judgement and clinical decision-making. If worried about a patient, escalate care regardless of the INEWS score
- When escalating care, use the ISBAR tool.
- Adhere to the INEWS Escalation & Response Protocol
- A Registered General Nurse may defer escalation for a short period if immediate simple measures are likely to resolve patient symptoms
- A Consultant or Registrar may decide to document a modified INEWS Escalation & Response Protocol



Extend My Learning

Useful resources and additional reading to help you apply what you have learned to your practice



NCEC NCG No. 1 Irish National Early Warning System (INEWS) 2020 available at :

<https://www.gov.ie/en/collection/c9fa9a-national-clinical-guidelines/?referrer=/national-patient-safety-office/ncec/national-clinical-guidelines/#national-early-warning-score-news>

NCEC NCG No. 4 Irish Maternity Early Warning System (IMEWS) V2 available at:

<https://www.gov.ie/en/collection/517f60-irish-maternity-early-warning-system-imews-version-2/>

NCEC NCG No. 6 Sepsis Management 2020 available at:

<https://www.gov.ie/en/collection/c9fa9a-national-clinical-guidelines/?referrer=/national-patient-safety-office/ncec/national-clinical-guidelines/#sepsis-management>

NCEC NCG No. 11 Communication (Clinical Handover) in Acute and Children's Hospital Services available at:

<https://www.gov.ie/en/collection/006e63-clinical-handover-in-acute-and-childrens-hospital-services/>

NCEC NCG No. 12 Paediatric Early Warning System (PEWS) available at:

<https://www.gov.ie/en/collection/f14e5c-paediatric-early-warning-system-pews/>

NCEC NCG No. 18 Emergency Medicine Early Warning System (EMEWS) available at:

<https://www.gov.ie/en/collection/bd79b1-emergency-medicine-early-warning-system-emews/>

Additional reading



INEWS Systematic review of the literature (2019) HRB- CICER

<https://assets.gov.ie/87924/6c2bcd02-9abc-4a29-b0dc-033423a36e81.pdf>

Nurse worry/concern

- Douw, G., van Zanten, A.R., van der Hoeven, J.G. and Schoonhoven, L., 2016. Nurses worry as predictor of deteriorating surgical ward patients: a prospective cohort study of the Dutch-Early-Nurse-Worry-Indicator-Score. *International journal of nursing studies*, 59, pp.134-140.
- Romero-Brufau, S., Gaines, K., Nicolas, C.T., Johnson, M.G., Hickman, J. and Huddleston, J.M., 2019. The fifth vital sign? Nurse worry predicts inpatient deterioration within 24 hours. *JAMIA Open*.

Additional reading



Nursing Times series of six articles on **Respiratory Rate**:

- Kelly C (2018) Respiratory rate 1: why accurate measurement and recording are crucial. *Nursing Times* **114**: 4, 23-24.
- Hartley, J. (2018) Respiratory rate 2: the anatomy and physiology of breathing. *Nursing Times [Online]* **104**;6, 43-44.
- Wheatley, I. (2018) Respiratory rate 3: how to take an accurate measurement. *Nursing Times [Online]* **114**; 7, 21-22
- Wheatley, I. (2018) Respiratory rate 4: breathing rhythm and chest movement. *Nursing Times [Online]* **114**; 9, 49-50
- Wheatley, I. (2018) Respiratory rate 5: using this vital sign to detect deterioration. *Nursing Times [Online]* **114**; 10, 45-46
- Dix, A. (2018) Respiratory rate 6: the benefits of continuous monitoring. *Nursing Times [Online]* **114**; 11, 36-37

Additional reading



Quality Improvement & Patient Safety

- Brady, P.W., Muething, S., Kotagal, U., Ashby, M., Gallagher, R., Hall, D., Goodfriend, M., White, C., Bracke, T.M., DeCastro, V. and Geiser, M., 2013. Improving situation awareness to reduce unrecognized clinical deterioration and serious safety events. *Pediatrics*, 131(1), pp.e298-e308.
- Fitzsimons, J. and Pentony, M., 2019. Paediatric Early Warning Systems in 2019: What We Know and What We've Yet to Learn. *Current Treatment Options in Pediatrics*, 5(4), pp.315-325.

Oxygen administration

- Irish Guidelines on the Administration of Oxygen Therapy in the Acute Clinical Setting in Adults 2017

Situation Awareness

- Team STEPPS: <https://www.ahrq.gov/teamstepps/index.html>

INEWS Resources

Education & Training Resources include

- INEWS National Clinical Guideline <https://www.gov.ie/en/collection/cc5faa-national-early-warning-score-news/>
- HRB-CICER systematic review of the literature for INEWS V2 <https://assets.gov.ie/87924/6c2bcd02-9abc-4a29-b0dc-033423a36e81.pdf>
- INEWS e-learning programme www.hseland.ie (located within the Clinical Skills catalogue)
- The revised INEWS patient observation chart <https://www.hse.ie/eng/about/who/cspd/ncps/deteriorating-patient-improvement-programme/inews-patient-observation-chart.pdf>
- Guidance on completing the INEWS patient observation chart <https://www.hse.ie/eng/about/who/cspd/ncps/deteriorating-patient-improvement-programme/how-to-use-the-inews-patient-observation-chart.pdf>
- INEWS/COMPASS User Manual <https://www.hse.ie/eng/about/who/cspd/deteriorating-patient-improvement-programme/inews-education-compress-training-manual.pdf>
- QI Tools and resources
- Facilitators slide-deck for local use
- The DPIP Team dpip.1@hse.ie or
 - Avilene.casey1@hse.ie National Lead DPIP
 - Miriam.bell@hse.ie Project Lead Guideline Revision
 - serena.Brophy@hse.ie Project Lead Service Improvement

