PulseGuard AI Clinical Performance Metrics

Pilot Measurement Framework for Emergency Department Result Follow-up

Core Performance Indicators

#	Metric	Definition	Target Ladder

1	**Closed-Loop Rate (Overall)**	Percentage of eligible results with documented follow-up plan AND verified outreach
		`Numerator: Results with documented plan + (order/referral OR patient/PCP message)`
		`Denominator: All eligible results detected (imaging incidentals + actionable labs)`
		`Exclusions: Duplicates, items marked "No action required"`
			Baseline: Measure
			Day 30: +5-10 pts
			Day 60: +10-15 pts
			Day 90: ≥95%

2a	**Culture Closure Within Threshold**	Positive cultures addressed within site-defined time windows
		`Numerator: Positive cultures with plan + outreach within threshold`
		`Denominator: All positive culture results`
		`Note: Site sets organism-specific thresholds (typically 48-72 hours)`
			Baseline: Measure
			Day 30: ≥90%
			Day 60: ≥93%
			Day 90: ≥95%

2b	**Incidental Closure Within Guideline**	Imaging incidental findings with documented follow-up within recommended timeframes
		`Numerator: Incidentals with plan within guideline window`
		`Denominator: All eligible incidentals`
		`SLA Examples: Urgent = 24h, Routine = 7-14d`
			Urgent (24h):
			D30: 90% → D60: 93% → D90: 95%
			Routine (7-14d):
			D30: 75% → D60: 85% → D90: 90%

3	**Documented Disclosure Rate**	Results with explicit disclosure to patient or primary care provider
		`Numerator: Results with disclosure in note or message`
		`Denominator: All eligible results detected`
		`Note: ICD-10 codes alone without narrative do not qualify`
			Baseline: Measure
			Day 30: ≥93%
			Day 60: ≥96%
			Day 90: ≥98%
			Yellow: 95-97%

4	**Unreviewed In-Visit Rate**	Critical results posted before discharge without acknowledgment
		`Numerator: Pre-discharge results with no acknowledgment`
		`Denominator: All results posted`
			Baseline: Measure
			Day 30: ≤2%
			Day 60: ≤1.5%
			Day 90: ≤1%
			Trend ↓ required

#	Metric	Definition	Target Ladder
		`before discharge` `Target: Minimize to near-zero`	

5	**Time to Antibiotic Adjustment**	Speed of clinical response to culture sensitivities
		`Calculation: Median hours from sensitivity final to antibiotic change`
		`Reporting: Median with interquartile range (IQR)`
		`Applies only when adjustment is clinically indicated`
			Baseline: Measure
			Day 30: ≤18 hrs
			Day 60: ≤15 hrs
			Day 90: ≤12 hrs

Measurement Framework

Performance Bands & Reporting

● **GREEN:** Meets target ● **YELLOW:** Within 5 points ● **RED:** >5 points off ↑↓ Trend arrows **Rolling 7-day** medians

Measurement Windows

- **Baseline Period:** 30-60 days pre-pilot (retrospective)
- **Pilot Duration:** 60-90 days continuous monitoring
- **Reporting Cadence:** Weekly KPI snapshots
- **Analysis Unit:** Result-level for KPIs 1-5

Data Sources (FHIR/HL7)

- **Imaging:** DiagnosticReport text + structured recommendations
- **Laboratory:** Observation & microbiology results
- **Clinical Notes:** Encounter documentation
- **Referrals:** ServiceRequest orders to specialty clinics
- **Task States:** PulseGuard rules engine status log
- **Actions:** PulseGuard audit log entries

Pilot Success Criteria

1. **Net improvement vs baseline by Day 90** on closed-loop rate and guideline adherence
2. **Documented safety:** Unreviewed rate down, disclosure trending to 98%
3. **System quality:** Coverage ≥85%, suppression accuracy ≥90%
4. **Variance reporting:** Cause codes for gaps (capture issues, staffing, referral delays)

Product KPIs: Pipeline Coverage, Suppression Accuracy
Clinical Ops KPIs: All others (reflect site operations + our assist)

Imaging Incidentals Performance Metrics

#	Metric	Definition & Target	Target Ladder

7	**Imaging Pipeline Coverage**
	PRODUCT KPI
		Percentage of imaging studies successfully parsed for eligible incidental findings
		`Formula: eligible_incidental_reports / total_imaging_reports`
		`Purpose: Validates system capture rate`
			Day 30: ≥80%
			Day 60: ≥83%
			Day 90: ≥85%

8	**Incidental Detection Yield**	Rate of incidental findings detected per imaging studies
		`Formula: incidentals_detected / total_imaging_reports`
		`Benchmark: Site-specific (typically 20-40%)`
		`Purpose: Sanity check vs. literature prevalence`
			Compare to literature
			20-40% typical
			No specific target

9	**Guideline Adherence by Urgency**	Tiered performance based on clinical urgency
		`Urgent (24h): plans_within_24h / urgent_incidentals`
		`Routine (7-14d): plans_within_window / routine_incidentals`
			Urgent:
			D30: 90% → D90: 95%
			Routine:
			D30: 75% → D90: 90%

10	**Task State Distribution**	Current status of all incidental finding tasks
		`States: NEW | KNOWN_STABLE | INTERVAL_CHANGE | DUE/OVERDUE | REFERRED`
		`Formula: count(state) / total_incidental_tasks`
			Goals:
			KNOWN_STABLE ↑
			DUE/OVERDUE ↓
			Week-over-week trend

11	**Suppression Accuracy**
	PRODUCT KPI
		False positive control for automated suppression rules
		`Formula: true_suppressions_confirmed / total_suppressed`
		`Includes: Known stable, duplicates, "no action required"`
			Month 1: ≥85%
			Month 2: ≥90%
			Month 3: ≥90%
			Show audit n=

12	**Referral Handoff Success**	Specialty referrals scheduled within SLA (e.g., Nodule Clinic)
		`Formula: referrals_scheduled_within_SLA / total_referrals_created`
		`SLA Example: 7-14 days for non-`	

#	Metric	Definition & Target	Target Ladder
		urgent Target: ≥ 90%	
13	**Incidental Disclosure Rate**	Imaging incidentals with documented patient/PCP communication Formula: incidentals_with_disclosure / total_incidentals Target: ≥ 98% Evidence: Note narrative or message confirmation	
14	**Overdue Recontact Latency**	Speed to address overdue incidentals Calculation: Median hours from guideline breach to first outreach Target: ≤ 24 hours and trending down Focus: Recovery velocity for missed windows	

Backlog Recovery Metrics (First 60 Days)

- **Backlog Found:** Historical incidentals identified
- **Backlog Actioned:** % with documented plan (Target ≥ 75%)

- **Backlog Scheduled:** % with appointments booked
- **Days to Closure:** Median time to resolve (trend ↓)

Important Note:

PulseGuard tracks and closes loops on documented findings only. We do not discover new radiological findings or make clinical recommendations. All guideline timing displays the site's chosen windows with documentation/evidence standards (plan + order/referral or message). Metrics focus on operational excellence in managing existing, documented results. Targets shown are examples; actual targets are defined by each facility based on their protocols and patient population.