

## Clinic time required to manage remote monitoring of cardiac implantable electronic devices: impact of outsourcing initial data review and triage

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**Background:** Remote monitoring is guideline-recommended to manage cardiac implantable electronic device (CIED) patients. With the continuous growth of implanted patients, clinic workload to review transmissions is increasing. Outsourcing initial data review and triage to an external monitoring center could be a valuable option for more efficient allocation of staff time, as high-skilled healthcare professionals can focus on patients in need rather than non-actionable data.

**Purpose:** The objective was to estimate the potential clinic staff time saved when outsourcing part of remote transmission review.

**Methods:** A previous time and motion evaluation described workflow tasks and time required for remote transmission review (4 EU sites, 674 observations). From real-world experience with a third-party monitoring service, the steps that can be outsourced were determined considering existing clinic-driven protocols for triage and transmission escalation. Staff time required with and without the monitoring service was thus modeled and compared.

**Results:** Outsourcing to an external monitoring center can reduce clinic staff time between 77.4% and 84.7% depending on device type. Absolute time savings range from 32.7 to 82.6 hours per year per 100 patients for therapeutic devices, and 301.3 hours for insertable cardiac monitor (ICM) patients, due to the higher frequency of transmissions in diagnostic devices.

**Conclusion:** Time to review remote transmissions can become overwhelming for clinics as growing CIED population often outpaces available staffing resources. Outsourcing initial review and triage to an external monitoring center (ensuring quality and regulatory compliance) can be an efficient option to save dedicated staff and facility time for other crucial healthcare activities.

### Clinic Staff Time Savings Per Year

	Pacemaker	ICD	CRT	ICM
TRANSMISSIONS PER PATIENT PER YEAR				
Green (no further review required when outsourcing)	3.0	4.3	5.0	20.8
Yellow/Red (medical action/decision required)	0.6	0.8	0.9	3.8
ANNUAL STAFF TIME PER PATIENT, minutes				
No outsourcing	25.3	46.6	58.5	219.7
Outsourcing to monitoring center	5.7	7.7	8.9	38.9
ANNUAL STAFF TIME PER 100 PATIENTS, hours				
No outsourcing	42.2	77.6	97.4	366.2
Outsourcing to monitoring center	9.6	12.9	14.9	64.8
TIME SAVED PER 100 PATIENTS, hours (%)	32.7 (77.4%)	64.7 (83.4%)	82.6 (84.7%)	301.3 (82.3%)

Abstract Figure. Outsourcing Remote Transmission Review

