

Diagnostic Yield of 24-Hour Holter vs 7-Day and 14-Day ePatch Extended Wear Holter

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BACKGROUND

While 24-hour Holter monitors have traditionally been prescribed for diagnosing cardiac arrhythmias, use of Extended Wear Holter (EWHs) for up to 14-days has become the more commonplace.

Purpose: To identify the diagnostic yield (DY) and distribution of clinically significant arrhythmias (CSA) on EWH wear times of 24-hour, 7-days, and 14-days.

METHODS

From October - December 2021, retrospective data was reviewed for the DY of CSA for patients wearing the ePatch® demonstrating 1-day, 7-day, and 14-days of analyzable data.

- Clinically significant arrhythmias were identified as Bradycardia < 40 BPM, Pause ≥ 3 seconds, ≥ 2nd Degree AV Block, AF/Flutter > 30 sec, SVT > 160 BPM for ≥ 3 beats, VT > 100 BPM for ≥ 3 beats, and Accelerated IdioVentricular Rhythm (AIVR, 60-100 BPM).
- Patients with chronic AF were excluded from this analysis.
- DY was calculated as the percentage of patients with a CSA during monitoring.

RESULTS

DY for any CSA with ePatch was:

- 25% on Day 1 (n= 21,505)
- 50% on Day 7 (n=9,252)
- 65% on Day 14 (n=11,269)

Statistical significance Days 1 vs 7, 1 vs 14, and 7 vs 14

- P<0.00001 for any CSA
- P<0.02 for occurrence of all individual CSA (p<0.02).

Bradyarrhythmias (bradycardia, pause, and AV block) were identified less frequently than tachyarrhythmias (AF, SVT, and VT).

Compared to Day 1, the DY at Day 7:

- 1.5-1.8x for bradyarrhythmias
- 2-4x for tachyarrhythmias.

Compared to Day 7, the DY at Day 14:

- 1.1-1.3x for bradyarrhythmias
- 1.5-1.6x for tachyarrhythmias.

CONCLUSION

Compared to 24-hour Holter, longer duration Philips ePatch EWH monitoring resulted in:

- 2x DY at Day 7
- >2.5x DY at Day 14 (all p<0.01).

A greater increase was seen for tachyarrhythmias than bradyarrhythmias when extending monitoring from 7 to 14 days.

2X Clinically Significant Arrhythmia detected with 7-day Philips ePatch Extended Wear Holter monitoring vs. 24-hour Holter (p<0.01)

- 2.5x AF detected
- 2x VT detected
- 4x SVT detected
- 1.5-1.8x bradyarrhythmia detected

More than 2.5X Clinically Significant Arrhythmia detected with 14-day Philips ePatch vs. 24-hour Holter (p<0.01)

- 4x AF detected
- 2.9x VT detected
- 6x SVT detected
- 2x bradyarrhythmia detected

DY for tachyarrhythmias was 50-60% greater when extending monitoring from 7 to 14 days.

For more information,



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DISCUSSION

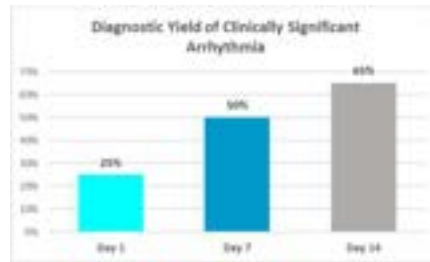
Benefits of longer duration monitoring are not always recognized. In our retrospective review, clinically significant arrhythmia were identified more frequently as monitoring duration increased. Overall, DY of CSA at 7-days was double that of 24-hour monitoring and more than 2.5X at Day 14.

Compared to Day 1:

- DY for bradyarrhythmias
 - 50-80% greater at Day 7
 - 100% greater at Day 14
- DY for tachyarrhythmias
 - 100-300% greater at Day 7
 - 190%-500% greater at Day 14

This analysis indicates that the DY for all arrhythmia increases when monitoring duration is extended from 24-hour to 7-days, with an additive benefit for tachyarrhythmias when extending from 7-day to 14-day.

FIGURE 1



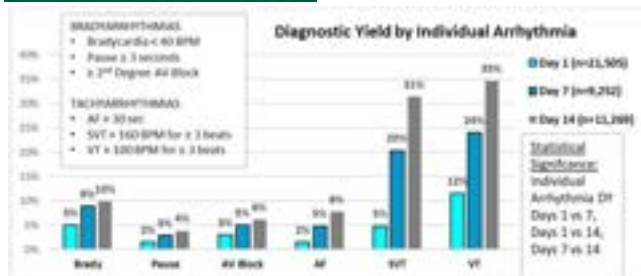
DY for any CSA with ePatch was:

- 25% on Day 1 (n= 21,505)
- 50% on Day 7 (n=9,252)
- 65% on Day 14 (n=11,269)

Statistical significance: Days 1 vs 7, 1 vs 14, and 7 vs 14

- P<0.00001 for any CSA

FIGURE 2



- VT and SVT were identified more often than AF, Bradycardia, Pause, and AV block.
- Compared to Day 1, the DY at Day 7:
 - 1.5-1.8x for bradyarrhythmias
 - 2-4x for tachyarrhythmias.
- Compared to Day 1, the DY at Day 14:
 - 2x for bradyarrhythmias
 - 2.9-6x for tachyarrhythmias.
- Compared to Day 7, the DY at Day 14 was 1.5-1.6x for tachyarrhythmias.

The difference in DY was statistically significant at Days 1 vs 7, 1 vs 14, and 7 vs 14 for occurrence of all individual CSA (p<0.02)

DISCLOSURE INFORMATION

Purvee Parikh, CJ Grigoriadis, Alexandria Dunn, Vincent Norlock, Grant Gilstrom, and Manish Wadhwa are all employed by Philips ECG Solutions.