# WHEN HOSPITALS OVERHEAT:

## Heat-related infrastructure failures and cancer-care resilience across Europe

european cancer SUMMIT 2026


Burcu Ulaş Kahya[1], Ayça Aydın[2], İmdat Eroğlu[3]

[1] Medical Oncology, Karaman Training and Research Hospital, Karaman, Türkiye
[2] ENT, University Hospital Southampton NHS Foundation Trust, Southampton, UK
[3] Medical Oncology, Gazi University Faculty of Medicine, Ankara, Türkiye


## STUDY AT A GLANCE

### WHY

Summer 2026 was Europe's third warmest on record and the warmest ever recorded in western Europe, with repeated and persistent heatwaves across the region.

Heat-related failures of cooling, power, digital and equipment systems may disrupt cancer-care pathways, but these events are not routinely characterised from an oncology perspective.

### DESIGN

Multicountry descriptive review across 38 European jurisdictions

1 Jun–31 Aug 2026 | Follow-up: 17 Oct 2026

### INCLUSION

- Identifiable healthcare facility
- Explicit heat linkage
- Infrastructure / equipment / operational failure
- Documented service consequence

### EVENT CODING

Reports from the same facility, episode and failure mechanism were consolidated. Operational disruption was confirmed by primary sources; heat attribution and oncology relevance were assessed separately.

### ONCOLOGY RELEVANCE



3 explicit — direct cancer-treatment relevance named
8 inferred — service used in cancer pathways
5 not established — no meaningful pathway link documented

### LIMITATION

Public reporting likely under-detects local or rapidly resolved events. Oncology relevance was often inferred; patient-level outcomes and pathway recovery were incompletely reported.

Not an estimate of burden or national resilience. This review captures reported operational disruptions only.

## WHAT WE FOUND

| 29 | 16 | 7 | 3 / 8 / 5 |
|---|---|---|---|
| candidates | included | countries | explicit / inferred / not established |

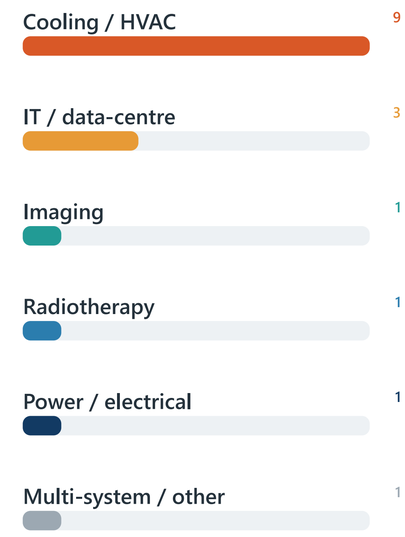



Bubble size/number = included events; locations are schematic country-level markers.

*Distribution of identified events*

### MAIN REPORTED FAILURE CATEGORY

One primary category per event




### ILLUSTRATIVE EVENT — NORFOLK & NORWICH

MRI cooling failure → 362 outpatient appointments cancelled → urgent investigations prioritised; mobile MRI supported continuity → scanners restored; rebooking underway.

Completion of all delayed examinations was not confirmed.

### SHARED DEPENDENCIES

Backup capacity may share the same point of failure.

Belgian reporting described externally hosted EPR disruption at two hospitals; a previous NHS heat incident disabled both primary and backup data centres. (2022 example: context only; not part of the 2026 dataset).

Assess shared cooling, power, digital and network dependencies.

## WHAT THIS MEANS FOR CANCER SERVICES

Established resilience approaches informing the proposed oncology framework

| ESTABLISHED APPROACH | EVIDENCE BASE | KEY CONTRIBUTION |
|---|---|---|
| Climate & quality | WHO · ACSQHC | Vulnerability assessment, governance and integration into routine quality and safety systems. |
| Engineering | WHO / IAEA | Equipment, utilities, maintainability and infrastructure planning. |
| Continuity & crisis care | NHS England · IOM | Service levels, indicators, triggers, escalation and alternative workflows. |
| Oncology risk management | AAPM · RCR | Radiotherapy risk analysis and management of unscheduled treatment interruptions. |

### FIVE OPERATIONAL PRIORITIES

Proposed oncology application of established resilience principles



**1 ANTICIPATE**
- Map critical dependencies and single points of failure
- Confirm cooling, power and backup arrangements
- Assess shared infrastructure and network dependencies

**2 MONITOR**
- Combine heat forecasts with operational indicators
- Monitor cooling performance and equipment warnings.
- Track reserve and network capacity

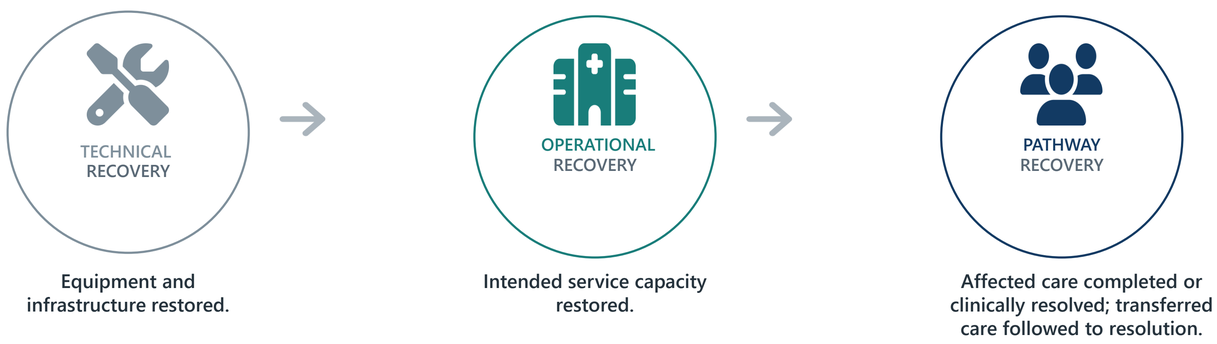
**3 ESCALATE**
- Predefine triggers, actions and decision authority
- Activate readiness measures when warnings occur
- Protect essential capacity and critical services

**4 ADAPT**
- Use alternative workflows, timing, sites or network capacity
- Prioritise time-sensitive treatments and urgent cases
- Treatment modification requires clinical review

**5 RECOVER**
- Track recovery of services and waiting lists
- Assess delayed care and pathway completion
- Identify lessons and update plans

### THREE LEVELS OF RECOVERY

Assess recovery across infrastructure, service capacity and affected care.




Equipment and infrastructure restored.

Intended service capacity restored.

Affected care completed or clinically resolved; transferred care followed to resolution.

### PATIENT COMMUNICATION DURING DISRUPTION

- Explain why care has changed
- Give the revised plan
- Set the next update time
- Provide a contact route

COVID-19 data offers transferable insights rather than direct evidence; heat-tailored communication models must therefore be prospectively tested.


### REFERENCES

1. WHO. Guidance for climate resilient and environmentally sustainable health care facilities. 2020.
2. WHO. Operational framework for building climate resilient and low carbon health systems. 2023.
3. ACSQHC. Healthcare Sustainability and Resilience Module. 2025.
4. WHO / IAEA. Technical specifications of radiotherapy equipment for cancer treatment. 2021.
5. NHS England. Business Continuity Management Toolkit. Version 2.0. 2023.
6. IOM. Crisis Standards of Care: A Toolkit for Indicators and Triggers. 2013. doi:10.17226/18338.
7. Huq MS, et al. Med Phys. 2016;43:4209–4262. doi:10.1118/1.4947547.
8. RCR. The timely delivery of radical radiotherapy: guidelines for management of unscheduled treatment interruptions. 4th ed. 2019.
9. NNUH. Media statement: update on MRI critical incident. Jun 2026
10. NNUH. NNUH MRI scanners critical incident stood down. Jun 2026
11. The Brussels Times with Belga. Heatwave causing hospital disruptions across Belgium. Jun 2026.
12. Guy's and St Thomas'. Review of the IT Critical Incident. Jan 2023.
13. Forner D, et al. Curr Oncol. 2021;28:1867–1878. doi:10.3390/curroncol28030173.
14. Street RL Jr, et al. Patient Educ Couns. 2022;105:2137–2144. doi:10.1016/j.pec.2022.03.029.

Full event sources, search strategy and extended references: supplementary material.


SUPPLEMENTARY DATA & METHODS


**Burcu Ulaş Kahya, MD**
ulasburcu@gmail.com
www.linkedin.com/in/burcu-ulaş-kahya
https://x.com/UlasKahyaB
https://orcid.org/0000-0003-3661-9852