15+ YEARS OF ONCOTHERMIA TREATMENTS IN ITALY

PRESENTATION FROM "ONCOTHERM IN ITALY" CONFERENCE 2025.04.02.

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CITATION

Fiorentini, G. (2025) 15+ years of Oncothermia treatment results in Italy – Oncotherm in Italy, 2025.04.02.

https://www.youtube.com/watch?v=oph8_i84BBU&list=PLEaAiXVgvMsGMMHSufONT8E7zYBSSDNO4

Oncothermia Journal 37, September 2025., 24-45.

https://oncotherm.com/FiorentiniG_2025_Oncotherm_in_Italy_20250402

EMBASSY OF HUNGARY IN ROME 2ND APRIL 2025

15+ YEARS OF ONCOTHERMIA TREATMENT RESULTS IN ITALY

(STUDI CLINICI E ATTIVITA' DELLA SOCIETA' ITALIANA IPERTERMIA ONCOLOGICA-SIIO)

Prof. Giammaria Fiorentini

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AGENDA

- ONCOTHERM DEVELOPMENT IN ITALY
- LIMITATIONS TO THE DEVELOPMENT OF HYPERTHEMRIA IN EUROPE AND ITALY
- FOUNDATION OF A NEW SCIENTIFIC SOCIETY DEDICATED TO HYPERTHERMIA
- LATEST NEWS

Development of Oncothermia in Italy (2004-2025)



2003 Prof Andras Szasz visiting professor at San Giuseppe Hospital, Empoli, Florence



2004 April, first Oncotherm 2000 device activated at Empoli-Florence, Italy



2005 May, second Oncotherm 2000 device activated at Massa Carrara Hospital, Italy

ONCOTHERM 2000 DEVICES IN ITALY (2005-2025)

- 1. San Giuseppe Hospital, Empoli, Florence (oncotherm 2000, active since 2004)
- 2. Apuane Regional Hospital, Massa Carrara (oncotherm 2000, active since 2005)
- 3. Istituto Tumori "Giovanni Paolo II" I.R.C.C.S. Bari (since 2007), actually with 2 devices: 2000 plus and new 2030
- 4. Casa di Cura Salaria , dott Carlo Pastore, Roma (oncotherm 3010 ML, active since 2012-22, ceased)
- 5. Centro Aktis, Napoli (oncotherm 2000, active since 2008)
- 6. Casa Di Cura M. Tommasini , Dott Astara, Jerzu, Sardegna, (oncotherm 2000, active from 2004 to 2008, ceased)
- 7. Clinica Demetra then Clinica Bellessere, dott Ballerini, Terni (oncotherm 2000, active since 2011)
- 8. ARTOI , Roma , prof Bonucci $\,$ (oncotherm 2000, active since 2019) *
- 9. Department of Oncology, San Salvatore Hospital, Pesaro (oncotherm2000 plus active from 2016 to 2024, ceased) #
- 10. Integrative Oncology, IHF Out-patient Clinic, Bologna (oncotherm2000, active from 2021 to 2024, ceased)
- 11. Oncologia, Spedali Civili di Brescia (oncotherm 2000, active from 2008 to 2019, actually suspended),
- 12. Ospedale Poliambulanza , Brescia (oncotherm 2000, active from 2006 to 2012, ceased) #
- 13. Servizi Medici Avanzati, Republic of San Marino (active from 2012 to 2017,ceased) *

INTERNATIONAL CLINICAL HYPERTHERMIA SOCIETY – ITALIAN NETWORK



(ICHS-IT)

About us

ICHS-IT is a working group dedicated to the use and development of modulated Electro Hypertermia (mEHT)

Our Protocols and Projects

ICHS-IT programs are oriented to treat any type of tumor with mEHT alone or in association with Chemo and/or radiotherapy

ICHS-IT is planning to activate several studies on mEHT for the treatment of brain, ovary, pancreatic, lung and kidney cancer and melanoma, in order to improve patients' care.

34th ANNUAL CONFERENCE OF THE INTERNATIONAL CLINICAL **HYPERTHERMIA SOCIETY**

International Training Workshop on Clinical Application of Local Hyperthermia
- Moderate and Extreme Whole Body









Programme: 34th ANNUAL CONFERENCE OF THE INTERNATIONAL CLINICAL HYPERTHERMIA SOCIETY (ICHS)

Thursday 22nd September 2016

Topic: Biological basics, experimental and technical studies of hyperthermia

Chairman: S. Roussakow, G. Fiorentini

- 8.00 Technique of Whole-Body Hyperthermia and Fibromyalgia Syndrome
- 8.20 Critical Issues in the use of double antennas in superficial hyperthermia treatment. A. Di Dia 11.20 Hypertermia combined with radiation in 8.40 Local hyperthermia in combination with
- traditional chinese medicine C. Pang 9.00 Place and role of clinical hyperthermia in the system of thermotherapy in oncology: let's define what we are doing

Topic: Clinical evidences of increasing survival adopting hyperthermia alone or in combination with anti-cancer methods

Chairman: C. Pang, M. Hussein

Sergey Roussakow

- 9.30 Hypertermia combined with conventional and complementary anticancer treatment
- 9.50 Colorectal cancer and the effect of the

10.50 Quo vadis oncological Hyperthermia:Update

11.10-11.20 coffee break

Session 3

Topic: Results and perspective of hyperthermia associated with radiotherapy and chemotherapy Chairman: S. Dall'Oglio, F. I

- cervical cancer C. Min
- 11.40 World-wide status of Hyperthermia S. Maluta
- 12.00 Combination of hyperthermia and radiotherapy in pancreatic cancer P. Gabrie
- 12.20 Prostate cancer: integration of radiotherapy and hyperthermia S. Dall'Oglio
- 12.40 Superficial Hyperthermia in association with Radiotherapy: toxicity and outcome in metastatic lesions. G. Cattari

1.00-1.30 pm LUNCH

Topic: Workshop section Chairman: P. Gabriele, S. Maluta

- 3.00 p.m. Extreme hyperthermia in lung lesions C. Gada
- 3.20 p. m. Microwave ablation of large HCC by

multiple synchronous antenne:

technique, results and long term follow-up

Session 6

Topic: Peritoneal surface malignancies treated with Cytoreductive Surgery (CRS) and hyperthermic intraperitonea

chemotherapy(HIPEC) -PART I Chairman: M. Deraco, S

3.40 p.m. HIPEC: state of the art

4.00 p.m. Ovarian Cancer I M. De Simone 4.20 p.m. Ovarian cancer II P. Sammarting

4.40 p.m. Use of C-Parp inhibitors in ovarian cancer F. Graz

Tonic: Peritoneal surface malignancies treated with Cytoreductive Surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) -PART II

Chairman: C. Milandri. G. De Manzoni

Centro	Città	periodo	pz trattati	sedute ese	H pubblicc
INT Bari	Bari	gen-set 24	75	766	si
		2018-23	625	9997	si
H Carrara	MS	3/23-6/24	90	627	si
H Pesaro	Pesaro	2016-19	560	6720	si
H Pesaro	Pesaro	1/20-8/24	420	3870	si
IHF Bologn	Bologna	1/22-5/24	145	1312	no
H Empoli	Empoli	2004-2011	560	6000	si

Villa Salaria, Roma, 2012-2022, dr Pastore, Oncotherm 3010 ML 5000 patients treated, 60.000 sessions delivered

ONCOTHERMIA IN THE TREATMENT OF PANCREATIC CANCER AND GLIOMA:RECENTE ARTICLES

- Fiorentini G, et Al. Modulated electro-hyperthermia in stage III and IV pancreatic cancer: Results of an observational study on 158 patients. World J Clin Oncol. 2021
 Nov 24;12(11):1064-1071. doi: 10.5306/wjco.v12.i11.1064. PMID: 34909400; PMCID: PMC8641006. (IF 2.7)
- Fiorentini C, Sarti D, Guadagni S, Fiorentini G. Immune response and locoregional treatments for peritoneal carcinomatosis. Int Rev Cell Mol Biol. 2022;371:97-116. doi: 10.1016/bs.ircmb. Epub 2022 Jul 8. (IF 6.4)
- Fiorentini G, et Al. Hyperthermia combined with chemotherapy vs chemotherapy in patients with advanced pancreatic cancer: A multicenter retrospective observational comparative study. World J Clin Oncol. 2023 Jun 24;14(6):215-226. doi: 10.5306/wjco.v14.i6.215. PMID: 37398545; PMCID: PMC10311475. (IF 2.7)

ONCOTHERMIA IN THE TREATMENT OF PANCREATIC CANCER AND GLIOMA: RECENTE ARTICLES

- **Fiorentini G**, et Al. Modulated Electrohyperthermia in Integrative Cancer Treatment for Relapsed Malignant Glioblastoma and Astrocytoma: Retrospective Multicenter Controlled Study. Integr Cancer Ther. 2019 Jan-Dec;18:1534735418812691. doi: 10.1177/1534735418812691. Epub **2018 Dec 22**. PMID: 30580645; **(IF 3)**
- Fiorentini G et Al. Modulated Electro-Hyperthermia as Palliative Treatment for Pancreatic Cancer: A
 Retrospective Observational Study on 106 Patients. Integr Cancer Ther. 2019 JanDec;18:1534735419878505. doi: 10.1177/1534735419878505. PMID: 31561722; PMCID:
 PMC6767725. (IF 3)
- Fiorentini G et Al. A Narrative Review of Regional Hyperthermia: Updates From 2010 to 2019. Integr Cancer Ther. 2020 Jan-Dec;19:1534735420932648. doi: 10.1177/1534735420932648. PMID: 33054425 (IF 3)
- Lee SY, Fiorentini G, Szasz AM, Szigeti G, Szasz A, Minnaar CA. Quo Vadis Oncological Hyperthermia (2020)? Front Oncol. 2020 Sep 4;10:1690. doi: 10.3389/fonc.2020.01690. PMID: 33014841; PMCID: PMC7499808. (IF 6.24)



Papers by Integrated Oncology Unit, Dr G. Ranieri, IRCCS Giovanni Paolo II Bari

- Gadaleta-Caldarola G, Infusino S, Galise I, Ranieri G, et Al.Sorafenib and locoregional deep electro-hyperthermia in advanced hepatocellular carcinoma: A phase II study. Oncol Lett. 2014 Oct;8(4):1783-1787. doi: 10.3892/ol.2014.2376. Epub 2014 Jul 24. PMID: 25202410; PMCID: PMC4156230. (IF 2)
- Ranieri G, et Al. Bevacizumab-Based Chemotherapy Combined with Regional Deep Capacitive Hyperthermia in Metastatic Cancer Patients: A Pilot Study. Int J Mol Sci. 2017 Jul 6;18(7):1458. doi: 10.3390/ijms18071458. PMID: 28684680; PMCID: PMC5535949. (IF 5)
- Ranieri G,et Al. Bevacizumab Plus FOLFOX-4 Combined With Deep Electro-Hyperthermia as First-line Therapy in Metastatic Colon Cancer: A Pilot Study. Front Oncol. 2020 Nov 3;10:590707. doi: 10.3389/fonc.2020.590707. Erratum in: Front Oncol. 2021 Feb 05;10:637880. doi: 10.3389/fonc.2020.637880. PMID: 33224885; PMCID: PMC7670056. (IF 5.7)

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MAJOR OBSTACLES TO THE SPREAD OF HYPERTHERMIA IN ITALY and EUROPE - 2025

In the studies reported in this last decade, HT confirms a general trend of improvement in clinical outcomes as can be observed in similar previous studies and reviews. Experts, who use HT daily, believe that the reasons for the low acceptance by doctors and diffusion between patients are not the poor efficacy of the method, but

- 1) the limited diffusion of qualified hyperthermia centers in Europe and Italy
- 2) the lack of guidelines to maintain temperature monitoring and poor quality of treatment schedules.
- 4) the hyperthermic centers don't have network and adopt heterogeneous practices and not easily reproducible everywhere
- 5) the lack of government funding and nothing from the non-interested pharmaceutical industry.
- 6) many hyperthermic centers have outdated technologies and devices that induce poor tolerance of patients

MAJOR OBSTACLES TO THE SPREAD OF HYPERTHERMIA IN ITALY and EUROPE - 2025

- 7) The lack of clear info given by Public Institutions and media that limits information access for patients, their families and doctors
- 8) the paucity of university teaching and training courses, specially in Italy
- 9)the competition with radiotherapy devices and the wrong idea that it is wasted time warming up a patient

In future the research should focus more on new devices and detecting these parameters: patients' acceptability, increased quality of life, tumor response, local control rates, time to progression, overall survival when HT is adjunct to classical therapies. Standardized equipments and treatments needed

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WHY SIIO IS NECESSARY IN ITALY AND EUROPE?

Since 2018 randomized studies, with increased OS and PFS, have been published in Local Advanced Cancer of the Cervix (LACC), cancer of rectum and anus, soft tissues sarcoma, breast chest recurrences, prostatic cancer, gliomas and cancer of head and neck.

In 2022 AIRO and AIOM have accepted the ESTRO and ESMO guidelines, including hyperthermia in the thoracic recurrences from breast cancer and in not operable or borderline operable soft tissue sarcomas, both after major evidence from large randomized studies.

It seems essential to develop an official network of hyperthermia in Italy where patients can be treated with competence in the context of shared decisions in multidisciplinary groups

HYPERTHERMIC TREATMENTS IN ITALY: NUMBER OF PATIENTS

More than <u>3000 patients</u> were treated with hyperthermia every year in Italy, <u>86% in private clinics and 14% in public Hospitals</u>, all patients are in the metastatic phase relapsing after chemotherapy and radiotherapy with a life expectancy ranging from 3 months to 24 months. It is estimated by default that at least <u>28,000 sessions of hyperthermia are administered every year in Italy</u>.

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HYPERTHERMIC TREATMENTS IN ITALY:

No patients are currently enrolled in research phase III studies. All patients are treated in a palliative way following experience and personalized protocols present in each individual centre and dictated by the experience of the physicians, expert in hyperthermia. Each patient received eleven hyperthermia sessions (range 3-28). The median duration of hyperthermia session was 55 minutes (range 50 -110), 2-3 weekly sessions were administered on alternate days,

HYPERTHERMIC TREATMENTS IN ITALY

The patients treated with hyperthermia concurrently received single chemotherapy at personalized doses and 90% of them received integrative and supportive therapies.

Consideration and attention in SIIO centres were given to evaluate the improvement in patients' quality of life and compliance using the ESAS scale, ECOG performance status scale and electronic self-report assessment.

Different brands of hyperthermia devices are currently adopted in Italy: Andromedic, Alba, BSD, Celsius, Oncotherm, Syncrotherm.

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FOUNDATION of SIIO

- The Italian Society of Oncological Hyperthermia (Società Italiana di Ipertermia Oncologica - SIIO) was founded in September 2023 and became operative in January 2024 with the election of president, treasurer, secretary and councilors
- to promote oncological hyperthermia in Italy
- to better cure and serve cancer patients
- to give correct data to the Italian Ministry of Health and Regional Health Departments
- to reintroduce hyperthermia into the care services of the National Health System, cancelled on 31 December 2024 rot doler amet



SOCIETA' ITALIANA DI IPERTERMIA ONCOLOGICA MOTTO

In the past, present and future...

...clinical experience and multidisciplinary together

RATIONALE and PURPOSES of SIIO

- To encourage the advancement of hyperthermia in all areas of medical sciences.
- To organize a national database regarding tumours treated with hyperthermia: defining histology, genetics, stage, line of therapy, therapeutic results, calculation of the duration of OS and response, and toxicities.

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RATIONALE and PURPOSES of SIIO

- 3. **To define new phase II and III protocols** of chemo-hyperthermia, radio-hyperthermia, immuno-hyperthermia, magnetic hyperthermia, palliative medicine-hyperthermia.
- 4. **To develop Health Technology Assessment** (HTA) in hyperthermia as a multidisciplinary evaluation process that aims to determine the economic value of hyperthermia technologies and interventions to inform decision-making to promote an equitable, efficient and high-quality in NHS.
- 5. **To introduce the HYPERTHERMIA** medical service provided Italian NHS for oncological patients (free for oncological patients).

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CONCLUSIONS

SIIO wants to expand hyperthermia following the national and international guidelines through the increase the number of centres and the training of doctors, medical engineers, medical physics, nurses and technicians. SIIO is open to the participation of groups of patients and their families and to all interested professionals and stakeholders.

SIIO intends to collaborate constantly with the Agency for Regional Healthcare Services (AGENAS), chapter of Italian Ministry of Health, with all medical associations to provide truthful and real information on the use of hyperthermia to obtain the best results, lower costs for HS and facilitate the access of patients to hyperthermic treatments in Italy.

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EDUCATIONAL EVENTS

Società Italiana di Ipertermia Oncologica

Data: Aprile - Giugno 2025

Master Universitario II Livello "Oncologia Integrata Prevenzione, Terapie Tradizionali, Innovative e di precisione "VII Edizione. Corso Universitario di Alta Formazione: "Ipertermia applicazioni specialistiche" Education provider: Consorzio Inter-Universitario Humanitas, Roma

European Thermotherapy School 2025

Date: Monday, April 14-16, 2025

Education provider: Erasmus MC Cancer Institute, Amsterdam.

This 3-day European thermotherapy school aims to teach radiation oncologists, (clinical) physicists, radiation therapists, other medical specialists, and researchers the knowledge to perform high quality hyperthermia treatments.





ASSOCIATIONS OF CANCER PATIENTS SUSTAINIG SIIO

- Volto della Speranza, Massa Carrara, Toscana
- ASTRO, Empoli-Firenze, Toscana
- Il Giornale di Mirella Morigia, Roma
- ANVOLT, Regione Trentino Alto Adige
- Salute Donna, Siracusa, Sicilia

REINTRODUCTION OF HYPERTHERMIA IN THE ESSENTIAL LEVEL OF CARE

To make hyperthermia present in the services of the National Health Service, free of charge to cancer patients, SIIO submitted an application to the Ministry of Health in March and November 2024 and had three meetings at the highest level with the most important Italian Authorities

PER SOSTENERE INTRODUZIONE DI IPERTERMIA NEI LEA 29/9/24 INCONTRO CON DOTT. MANTOAN, DIRETTORE AGENAS







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27/3/25 INCONTRO CON IL VICE-MINISTRO DEL MINISTERO DELLA SALUTE DOTT MARCELLO GEMMATO DI Dr. GIROLAMO RANIERI E Ing. DILETTA TRALDI





LATEST NEWS.....

Yesterday 1st April 2025, the Spanish Ministry of Health has accepted the request of the SEOR (Sociedad Española de Oncología Radioterápica) and has included hyperthermia in the national handbook of therapeutic services for cancer patients. Each hyperthermia session will be paid to the hospital that provides it 270 Euros.

.....but also in Italy something is changing..

Please Ing Diletta Traldi tell us your story

BUT... SOMETHING HAPPENED



MY EXPERIENCE WITH HYPERTHERMIA

My father has a metastatic colon cancer.

That led me to:

- Get close to HT
- See its deep efficacy



One year after surgery and adjuvant therapy metastases at lungs, liver and peritoneum, here particularly widespread

- Dad had to start with chemotherapy (1st line Folfox+Bevacizumab)
- I started to look for some additional therapy to boost chemotherapy and after reading several papers I found HT
- Dad started also with HT with Dr Ranieri at Istituto Tumori "Giovanni Paolo II" I.R.C.C.S. Bari

MY EXPERIENCE WITH HYPERTHERMIA

6 months later

complete response in abdominal area treated with HT and results at 1 year perfectly fit in a Pilot study led by Dr. Ranieri:

PFS in patients treated with Folfox+bevacizumab+HT was 2.7 months longer (median 12.1 months) than patients only treated with same 1st line without HT



Dr Ranieri told me about SIIO and I was more than convinced to support. Dr Fiorentini accepted me as PRP (Public Relations Person)

My will is to assist SIIO in:

- Encouraging use of HT through conferences and events
- Making cancer patients aware HT exists and is effective without any relevant side effect
- HT back in LEA soon (covered by NHS) as since January 1st it has been excluded

DOUBLE ACTION: REGIONAL AND NATIONAL LEVEL

Since January 1st 2025 HT is not in LEA anymore, it meant interruption of care with NHS in Italy

1. We worked with Puglia administrators to the resumption of HT in Bari (hub also for patients coming from outside the region)





DELIBERA

- di approvare i pacchetti di day-service valutati positivamente nella riunione del Tavolo tecnico regionale "day-service" nella riunione del 12 marzo 2025, dettagliati nell'Allegato A, parte integrante e sostanziale del presente provvedimento, di seguito elencati:
 - . CHEMIO/IMMUNOTERAPIA PER NEOPLASIE MALIGNE ED ONCOEMATOLOGICHE;
 - CHEMIO/IMMUNOTERAPIA PER NEOPLASIE MALIGNE ED ONCOEMATOLOGICHE IN COMBINAZIONE CON TRASFUSIONE;
 - CHEMIO/IMMUNOTERAPIA PER NEOPLASIE MALIGNE IN COMBINAZIONE CON IPERTERMIA LOCOREGIONALE ESTERNA;

DOUBLE ACTION: REGIONAL AND NATIONAL LEVEL

Since January 1st 2025 HT is not in LEA anymore, it meant interruption of care with NHS in Italy

We are working at the national level to push forward the formal request already submitted by SIIO represented by Dr Fiorentini



we met Deputy Minister of Health (Dr Marcello Germato) to highlight the current discrepancy.

we met Deputy Minister of Health (Dr Marcello Gemmato) to highlight the current discrepancy: HT can be requested in an inpatient setting (as outlined in ICD-9) but cannot be provided in an outpatient setting

