

SCIENTIFIC SESSION I
Casale Monferrato: Lessons learned and the road ahead

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Casale Monferrato: Lessons learned and the road ahead

Christine Oliver^{1*}, *Daniela Degiovanni*², *Federica Grosso*³, *Alessandro Marinaccio*⁴,
*Barry Castleman*⁵

¹Dalla Lana School of Public Health, University of Toronto, Toronto Canada; ²VITAS NGO, Casale Monferrato, Italy; ³Mesothelioma Unit, Azienda Ospedaliera SS Antonio e Biagio e Cesare Arrigo, Alessandria, Italy; ⁴Occupational and Environmental Epidemiology Unit, INAIL, Rome, Italy; ⁵Environmental Consultant, Garrett Park, USA

Background: In 1992 the Italian Parliament approved a nationwide ban on asbestos. The ban was prompted in part by an epidemic of malignant pleural mesothelioma (MPM), a rare cancer caused by asbestos, in Casale Monferrato, a town of 40,000 in the Piedmont region of Italy. The source of asbestos was a plant owned and operated by Eternit, a multinational company that produced asbestos cement. Eternit established its principal Italian production plant in the Town of Casale Monferrato; the plant was in active production from 1907 to 1986. High mortality and incidence rates of MPM were observed among workers in the plant, their wives and family members, and residents of Casale Monferrato Town and Local Health Authority. Risk for MPM increased with increasing cumulative asbestos exposure (CE) determined on the basis of occupational, domestic, and environmental exposures, with increased risk observed a low-level CE: OR 4.4, 95% CI 1.7-11.3, CE < 1 f/ml-year (Ferrante et al. *Occup Environ Med* 2016). A sentinel marker for asbestos exposure, MPM has been the most carefully examined health outcome to date. There undoubtedly is an accompanying increase in related lung cancer, given the generally-accepted lung cancer/MPM ratio of 2 or greater.

Conclusions: Eternit brought unimaginable pain and suffering to the Community of Casale Monferrato. But the Phoenix has risen from the ashes. There are unique public health lessons to be learned from this catastrophe. Here to teach us those lessons are the participating panelists. Three have been on the front lines dealing with medical, psychosocial, and epidemiologic consequences. One has worked with Italian prosecutors and courts struggling to bring former Eternit owner-CEO Stephan Schmidheiny to justice and seek justice for asbestos victims. We must apply the lessons learned to nations and communities around the world facing similar risks from unregulated asbestos use.

* Presenting author profile:

L. Christine Oliver - E-mail: coliver@ohiinc.com

Dr. Oliver is Adjunct Professor in the Division of Occupational and Environmental Health at the Dalla Lana School of Public Health, University of Toronto. Previously she cared for patients, taught, and did research at MGH/Harvard Medical School in Boston, with a focus on occupational/environmental lung disease. She consults with Occupational Health Clinics for Ontario Workers. Dr. Oliver is on the Scientific Advisory Board of ADAO. She testifies on behalf of injured workers.

A community in need of a novel approach to cure and care

Daniela Degiovanni^{1*}, *Alma Kasa*², *Paola Ballarino*², *Paola Bude*², *Federica Grosso*³

¹VITAS NGO, Casale Monferrato, Italy; ²Palliative Care Unit, Casale Monferrato, Italy; ³Mesothelioma Unit SS Antonio e Biagio e Cesare Arrigo, Alessandria, Italy

Background: Casale Monferrato is sadly known in the world for the ongoing malignant mesothelioma (MM) epidemic due to the pollution caused by Eternit, one of the biggest plants of asbestos-cement that was in production from 1907 to 1986 with more than 4000 employees. MM affected workers but also their wives and children and citizens who had nothing to do with the plant and new cases continue to be diagnosed (about 50 new cases per year). MM is a very symptomatic tumor that also causes psychological suffering both in patients and their relatives.

Methods: To face this overwhelming burden of pain we defined a novel approach where cure and care were closely interconnected. Experts in palliative care work together with specialists involved in the diagnostic and therapeutic workflow assisting the patients from diagnosis to the last days of their life. Simultaneous/palliative care are offered to all newly diagnosed patients and psychological aid is also available to their families. A not-for-profit organization, VITAS, has been founded to support the continuous activity of the palliative care team, including physicians, nurses, and physiotherapists, both in the Hospital and in patient's home.

Results: In our experience this model is feasible and very well accepted by patients and families that never feel abandoned. It is also very well integrated with the assistance provided by the specialists working in the hospital.

Conclusion: A novel and efficient model of assistance based on the strong permeation between cure and care has been built to face the global pain of asbestos victims in Casale M., once more demonstrating the resilience of this population.

* Presenting author profile:

Daniela Degiovanni - E-mail: daniela.degiovanni@libero.it

Dr. Daniela Degiovanni received her degree in Medicine and Surgery in 1977 and her speciality in Oncology in 1982. Since 1978 she has been involved in assistance to patients with mesothelioma in Casale. She has been director of the Hospice and of the program of Home Palliative Care. She founded VITAS, a voluntary Association made up of doctors, nurses, psychologists and physiotherapists. For these activities in 2018 the President of the Italian Republic, Sergio Mattarella presented her the Ufficiale dell'Ordine al Merito award.

Focus on clinical and translational research in the mesothelioma unit of Alessandria and Casale Monferrato Hospitals

Federica Grosso^{1,2}, Michela Lia², Marinella Bertolotti², Francesca Ugo², Annalisa Roveta², Antonina De Angelis², Daniela Degiovanni³, Antonio Maconi^{1,2}*

¹University of Piemonte Orientale, Allessandria, Italy; ²Azienda Ospedaliera SS Antonio e Biagio e Cesare Arrigo, Alessandria, Italy;

³VITAS NGO, Casale, Italy

Background: Every year about 50 new cases of Malignant Pleural Mesothelioma (MPM) are diagnosed in Casale, the incidence being more than 20 times higher than in the rest of Italy. Globally it is classified among rare cancers, sharing their typical problems in research, decision making and quality of patient care. In their fight against asbestos, Casale victims asked also for research.

Approach: Since 2013 a mesothelioma unit (MU) has been in place in Casale and Alessandria hospitals, connected with the University of Turin, pursuing a strong link between patientcare and research. Alessandria has a MPM biobank and a clinical trial center. Local clinicians are expert in treating MPM, and work within a multi-professional frame covering the whole diagnostic/therapeutic steps, simultaneous/palliative-care and psychological support. The Istituto Superiore di Sanità funded two efforts; one aiming at exporting this model to other areas and the other at creating a network among Italian centers, based on a common data base, to facilitate research.

Results: Every year about 120 new patients are seen and more than 200 are cured or followed in the MU. More than 800 biological samples are stored in the biobank and almost 600 patients have been enrolled into clinical studies with more than 200 receiving experimental drugs. The MU also participates in many translational projects in collaboration with the University of Turin, of East Piedmont and with the Mario Negri Institute that will be discussed in brief during the presentation.

Conclusion: The MPM epidemic of Casale is well known worldwide as one of the greatest industrial pollution-related disasters. The resilient reaction of the local community stimulated the health professionals to create a dedicated unit in which MPM patients can be cured, cared for and participate in clinical and translational research to increase the knowledge about this rare disease.

* Presenting author profile:

Federica Grosso - E-mail: federica.grosso@ospedale.al.it

Dr. Grosso's clinical research focuses mainly on mesotheliomas and asbestos related cancers whereas her clinical activity includes the whole spectrum of rare cancers, above all mesothelioma, melanoma and sarcoma patients. She is contract professor at University of Piemonte Orientale where she teaches environmental diseases, consultant for the Association of Asbestos Victims and their relatives, (co)author of more than 60 papers in peer-reviewed medical journals.

Asbestos related diseases epidemiology and surveillance in Italy: Road ahead and still open questions

Alessandro Marinaccio^{1*}

¹Italian National Workers' Compensation Authority, Rome, Italy

Background: In Italy the legacy of asbestos mining, manufacture and use in a wide range of applications is a still open issue. Starting from the Casale Monferrato experience, the purpose of this presentation is to discuss two critical points about the asbestos related diseases epidemiology: cases of malignant mesothelioma (MM) due to non-occupational exposure and the magnitude of asbestos related lung cancer.

Methods: ReNaM is the Italian surveillance system for MM incident cases and acts as a network of regional registries collecting cases from health care institutions and evaluating the modalities of exposure. The magnitude of asbestos related lung cancer cases has been quantified as shown through epidemiological published papers and by the means of a previous ecological study.

Results: Among the 27,356 mesothelioma cases collected by ReNaM between 1993 and 2015, exposure to asbestos fibers was investigated for 21,387 (78.2%), identifying 1,047 (4.9%) with familial exposure and 939 (4.4%) with environmental exposure. Clusters of cases due to environmental exposure are mainly related to the presence of asbestos-cement industry plants, shipbuilding and soil contamination (Biancavilla in Sicily). The epidemiology of asbestos-related lung cancer (ARLC) cannot be investigated directly because cases are not clinically distinguishable from those due to other causes. Mesothelioma to ARLC ratio was estimated to be closer to 1:1 in ecological studies, but these findings must be evaluated with caution.

Conclusions: It is necessary to define policies for increasing prevention tools and for dealing with compensation rights for malignant mesothelioma cases that received non-occupational exposure to asbestos. The epidemiological knowledge of ARLC magnitude is inadequate and there is a need to define epidemiological methods to better estimate the extent at the population national level. The Italian experience of mesothelioma registration can be used for extending the surveillance system to all asbestos-related neoplasms.

*** Presenting author profile:**

Alessandro Marinaccio - E-mail: a.marinaccio@inail.it

Dr. Marinaccio is chair of the Unit of Occupational and Environmental Epidemiology at Italian National Workers' Compensation Authority and of the Italian Mesothelioma Register. His research activities are focused on occupational cancers surveillance and asbestos related diseases epidemiology.

Criminal prosecution of business executives for occupational cancer in Italy

Barry Castleman^{1*}

¹ Environmental Consultant, Garret Park, MD USA

Background: Law dating from 1930 in Italy establishes the responsibility of the employer's managers and doctors. A "negligent" crime is punishable by imprisonment, in the event of accident, occupational disease or death of one or more workers from management failure to take reasonable preventive measures. Since 1977, prosecutions have charged managers over bladder cancers in dye workers, liver angiosarcoma in vinyl chloride workers, and mesothelioma among asbestos workers.

Methods: The current status of the trials and the refusal (2013-2019) of Yale University to rescind an honorary Doctor of Humane Letters awarded to Schmidheiny (1996) will be discussed.

Results: In the case of asbestos, trials starting with Italian managers came to include longtime owner-CEO of the Swiss Eternit Group, multibillionaire Stephan Schmidheiny. Evidence showed that Schmidheiny directed a cover-up by his managers of the dangers in European countries, including Italy, from the time he took control of the global asbestos enterprise in 1976.

Discussion: Schmidheiny was convicted of creating an environmental disaster causing several thousand deaths of workers, their family members, and neighbors of Italian Eternit plants making asbestos-cement sheets and pipes. The conviction was upheld by the appeals court in 2013, sentencing Schmidheiny to 18 years in jail. This was overturned over a legal technicality in 2014 in the last appeal. That year, murder charges for over 250 deaths were filed by Turin prosecutors; this action was contested for 4 years by Schmidheiny's lawyers. Courts ordered that separate manslaughter trials be held in each of 4 regions of Italy where the deaths occurred. The first case, involving two deaths, was tried in Turin and resulted in conviction and a sentence of 4 years in jail in May, 2019. Schmidheiny never appeared in Italy during these trials, which began in 2009.

* Presenting author profile:

Barry Castleman - E-mail: barry.castleman@gmail.com

Dr. Castleman has investigated the public health and corporate history of the asbestos industry. At the request of the community of Casale Monferrato, where a giant asbestos factory had operated for 80 years, he testified as an expert witness in the original Eternit criminal trial in Turin, concerning Eternit owner-executive Stephan Schmidheiny.

