5. Asylum experiments

Threatened by his last sigh
between blankets, with spasms and in sorrow,
rests the poor invalid; his errant pupils
no longer drink the light of the sun!

I approach this languishing patient
with the piety given to me by God.
My blood flows into his veins
and with my blood I give him life.

Thus wrote the Italian professor, Lorenzo Laguzzi, in the local newspaper, *Avvisatore Alessandria*, to poetically depict (from the lamb's point of view!) a remarkable operation that had recently taken place at the city's mental hospital.[1] It was one of many trials in asylums across northern Italy with the blood of lamb to cure the mentally ill. The attempts started in Reggio Emilia in March 1874; hospitals in Alessandria, Imola, Pavia, Pesaro and Brescia soon followed suit. During the next two years, some two hundred lamb blood transfusions were performed in Italy on the insane. Such transfusions to mental patients were something unique; there would be only one or two attempts elsewhere.[2] They were tentative and experimental, criticized but also supported by health authorities and leading psychiatrists.

To me, this was a highly intriguing phenomenon. Why make lamb blood transfusions to mentally ill patients? The idea itself seemed insane. I travelled to northern Italy, visited archives, studied accounts in journals, newspapers and case reports. Gradually a picture emerged; it told of overcrowded asylums and worried psychiatrists.[3] Where to find remedies to soothe their patients' misery, help them recover and return home? The need was particularly urgent in certain parts of Italy. A mysterious disease, pellagra, ravaged the country-

side. It was the main cause of insanity in the northern provinces of Lombardy, Veneto and Emilia, covering most of the plains and the Po valley, and claiming thousands of lives each year. Lamb blood transfusion was one of the remedies tested by concerned psychiatrists in the hope that it would help their pellagra patients regain health. More than half of those transfused suffered from this physically and mentally devastating disease.[4]

When I now depict this situation in some detail, I do so for three reasons. The first is to show how lamb blood transfusion functioned in a different medical setting than those I have described earlier in this book. The Italian transfusions almost exclusively took place in asylums. Secondly, they were backed up by institutional forces: lamb blood transfusion was a social, even a political, project. As such, it reflected power relations and power struggles within Italian medical and scientific circles. The disputes even reached the public sphere and the popular press. Thirdly, and relatedly, lamb blood transfusions were here clearly seen as experimental, as something to be evaluated, discussed and perhaps discarded. Thus, the Italian experience opens up, for the next part of the book, the controversy – how could one know if a lamb blood transfusion worked or not, and was it worth the pain and the complications?

To better grasp the particular Italian situation, I will start with the disease itself, the one that the Italian psychiatrists (then often called alienists) hoped could be cured with a lamb blood transfusion.

Pellagrous conditions

In the 19th century, pellagra was an almost unknown affliction outside Italy and parts of southern France. In 1879, up to twelve per cent of the population in Lombardy and Veneto, and slightly less in Emilia were affected by the condition.[5] It was the chief cause of insanity in northern Italy (followed by 'hereditary factors' and 'alcoholism') and it was on the rise.[6] Families and local authorities were unable to cope, and so had to send sufferers to the regional insane asylums. As a result, asylums in areas where pellagra was widely-spread were overwhelmed with cases of 'pellagrous mania'. Still, many were left unattended to at home.[7]

The disease would start innocently enough:

> Every year, 'around the time the sun comes into the sign of Aries' […] the farmer notices a round, dark red, pruriginous spot on the back of his hand that gradually fades and disappears, leaving a patch of gleaming skin. The following year, when the fine weather returns, the patch is larger and the pigmentation darker. These marks then spread to the legs and feet while the hand skin scales off and the small fissures become cracks. The disorder then spreads to the mouth: gums bleed, teeth go black, break, and fall out. The farmer weakens, is taken with nausea, has no appetite. His pulse slackens, head spins, his mind becomes confused. He grows delirious and death ensues.[8]

The first stage of pellagra was skin disease. Physicians adopted the disease's popular label in the Bergamo dialect, *pelle agra*, meaning 'rough skin', after its primary symptom. Terrible headaches and fevers followed. The patient got weaker, sight and hearing were impaired. After the first D – dermatitis – three more stages would follow: diarrhoea, dementia, and, if untreated, death.[9]

Mentally affected pellagrous patients were classified in various ways: they were said to suffer from 'pellagrous frenzy', 'pellagrous melancholia', 'mania due to pellagra' or 'pellagrous monomania', attesting to the inadequacy of the psycho-pathological categories of the time.[10] Some patients would become violent, suffer from delusions, try to chew their tongues off and shout monotonously for hours. Others would be inert with 'no will, no conscience, no word.'[11]

Here is Professor Cesare Lombroso, who would later become the founder of the Italian school of criminal anthropology; he was also a prominent researcher of pellagra. He is quoted in the British *Journal of Mental Science* of 1876. Patients suffering from 'pellagrous insanity', he informs, are easily swayed by their emotions:

> A slight insult, the threatening of some trivial danger completely carries them away although they, perhaps, appeared before to be of sound mind. For example, a woman believes herself to be lost because she has missed mass; another person is in despair and goes mad because he has lent a pistol to a friend who will not return it. A woman hears her companions laughing at her dress and becomes insane from grief; another, merely because her husband, a fisherman, is a few minutes late, breaks out into violent mania.[12]

Lombroso had a theory about the origin of the disease: the maize that the peasants lived on was contaminated by a poisonous fungus or mould. This

toxin hypothesis was widely accepted by Italian administrative authorities, partly for strategic reasons – in that way the disease would become an ordinary case of food poisoning for which the farmers themselves, and not the state, were responsible.[13] In fact, corn bread or corn-wheat bread, a common food of many poor peasants, was prepared only once a week because many could not afford a daily fire. Huge two-kilogram flat loaves were cooked at high temperature to create a crust, but the inside remained damp and was quickly overtaken by mould and bacteria.[14]

Still, Lombroso was wrong. The main cause of pellagra was structural: it was the inequality, poverty and exploitation in the Italian countryside that caused severe malnutrition, a situation aggravated by damp and insalubrious dwellings. By the 1870s, maize had become the primary crop in six provinces of the newly united Italy. Its increased cultivation brought with it a structural shift in the Italian countryside where large landowners took over most of the land and speculated on what to grow and what to sell. Peasants became labourers working for a (meagre) wage, vegetable plots disappeared, and maize polenta became more than a staple; it became the only food consumed during winter and spring by large sectors of the rural poor. Thus, most sufferers were peasants, day labourers or share croppers. This structural malnutrition hypothesis was indeed suggested by some observers in the mid-19th century but to little effect.[15] That pellagra was caused also by a severe vitamin B3 (niacin) deficiency, caused by the way that maize was prepared for cooking in Italy, would not be convincingly established until 1937.[16]

Pellagra was a disease of the working people. Children normally did not (yet) suffer from pellagra and poor peasants did not live long lives. Pellagra struck women harder than men. For social and biological reasons, linked to the miserable condition of women in the northern Italian countryside, women were more susceptible to the disease than men of the same age. They worked more hours in the field though for less than half the income earned by the men in the family. They did all the household chores, and many had to supplement their income with acting as wet-nurses to more affluent families. Still, they got less to eat than the men, since access to food was strictly hierarchical. The head of the household was served first, then the other working men, and finally the women and children. Thus, many women's dietary intake of the necessary vitamins was inadequate or nil. In addition, the high oestrogen production in women of fertile age induced an even higher risk of pellagra.[17]

In the 19th century, physicians were largely at a loss about how to treat the increasing number of patients. In the early stages of the disease, some

curative means were useful. The most common were, according to Dr Brocca in Milan, a meat diet combined with wine, but always in moderate doses given that poor patients were not accustomed to such stimuli. Intestinal flows could be helped by *nux vomica* in increasing doses, sometimes also by arsenic but not by potassium chlorate which some of his colleagues had advocated. Hot baths could help calm the brain of the patients and improve their intelligence, motility and cutaneous sensitivity while cold baths might invoke a terrible terror in the pellagrous insane.[18]

When the patient had reached the third stage of pellagra – dementia, or insanity – most physicians considered the disease incurable.

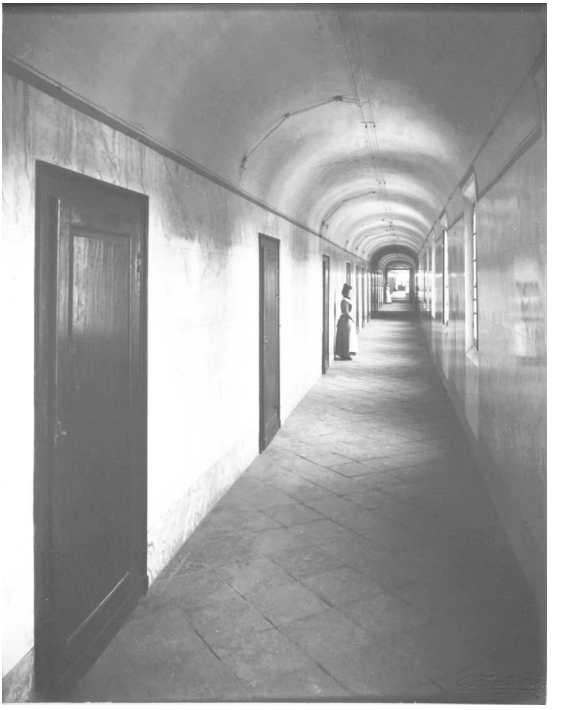


Figure 16. A corridor in the women's department, San Lazzaro Asylum, Reggio Emilia, in the 19th century. (Courtesy of San Lazzaro Asylum Archive, Reggio Emilia. Album A6 photo n.33 Comparto donne – Galleria Livi.)

Testing transfusion

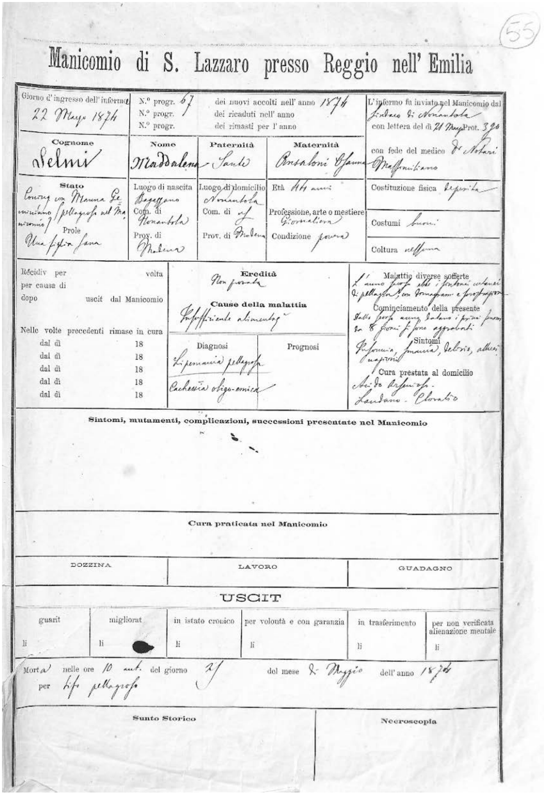
Then in 1874, news reached Italy of Hasse's good results with lamb blood transfusion for various diseases. So did that of a transfusion (with human blood) in January 1874 conducted by professors Leidesdorf and Neudörfer in Vienna to a severely ill mental patient. It was a success and may well have inspired the Italian alienists.[19]

Here is an account of their very first attempt at lamb blood transfusion on a pellagrous patient: [20]

> Maddalena Selmi, a 44-year old patient, suffering from pellagra, was admitted to the Reggio asylum in the province of Emilia in northern Italy on March 22nd, 1874. She had been sick for over a year and had now reached a state of almost complete decline. She was insomniac, had delusions, spoke nonsense, was maniac. Her skin was yellow, her pulse rapid, she was anaemic and feverish, had no appetite but abundant diarrhoea. The hospital administered treatments and tonics but to no effect. The situation seemed beyond hope.
>
> The young doctor, Augusto Tamburini, then suggested a transfusion to provide nourishment to her organs and help revive her dwindling forces. The asylum director, Professor Carlo Livi, agreed. A first transfusion of 60 grams of lamb's blood took place on April 9th and the patient felt better. A few days later, a second transfusion brought clear improvements. Maddalena now turned lively and gay, regained her appetite and reasoning, could sit up in bed, and showed herself willing and eager for a third operation. This took place on May 3rd and brought an even more significant improvement in her condition. Unfortunately, this was only of short duration, and on May 21st, a fourth transfusion of 60 grams of arterial blood took place. But the symptoms returned, Maddalena got weaker, and on May 25th, the patient died.

Still, the Reggio psychiatrists did not despair; they would try the therapy again. Their next attempts proved more successful and were soon imitated by other asylums in northern Italy.

I see these actions by interested psychiatrists as part of a more general response to medical and societal challenges in Italian society at large. Two events are indicative of their concerns and of the remedies proposed. The first is the First Congress of the Italian Psychiatric Society in September 1874; its published proceedings make it possible to follow the hope and the scepticism expressed about the benefits of lamb blood transfusion. The second is a com-


Manicomio di S. Lazzaro presso Reggio nell' Emilia

Giorno d' ingresso dell' infermo 22 Maggio 1874
N.° progr. 67 dei nuovi accolti nell' anno 1874
N.° progr. dei ricaduti nell' anno
N.° progr. dei rimasti per l' anno
L' infermo fu inviato nel Manicomio dal Sindaco di Nonantola con lettera del dì 21 Maggio Prot. 390 con fede del medico Dr Notari Massimiliano

Cognome Selmi
Nome Maddalena
Paternità Sante
Maternità [illegible]
Stato [illegible]
Prole Una figlia sana
Luogo di nascita [illegible] Com. di Nonantola Prov. di Modena
Luogo di domicilio Nonantola Com. di id. Prov. di Modena
Età 44 anni
Professione, arte o mestiere Giornaliera
Condizione povera
Costituzione fisica deperita
Costumi buoni
Coltura nessuna

Recidiv per volta per causa di dopo uscit dal Manicomio
Nelle volte precedenti rimase in cura dal dì 18 / dal dì 18 / dal dì 18 / dal dì 18 / dal dì 18
Eredità Non provata
Cause della malattia Insufficiente alimentaz.
Diagnosi Lipemania pellagrosa / Cachessia oligo-emica
Prognosi
Malattie diverse sofferte [illegible]
Cominciamento della presente [illegible]
Sintomi [illegible]
Cura prestata al domicilio [illegible]

Sintomi, mutamenti, complicazioni, successioni presentate nel Manicomio

Cura praticata nel Manicomio

DOZZINA | LAVORO | GUADAGNO

USCIT
guarit lì | migliorat lì | in istato cronico lì | per volontà e con garanzia lì | in trasferimento lì | per non verificata alienazione mentale lì

Morta nelle ore 10 ant. del giorno 21 del mese di Maggio dell' anno 1874
per tifo pellagroso

Sunto Storico | Necroscopia

Figure 17. Front page of patient register for Maddalena Selmi, San Lazzaro Asylum, Reggio Emilia, 1874. (Courtesy of San Lazzaro Asylum Archive, Reggio Emilia.)

petition issued by a renowned scientific academy for studies about the value of blood transfusion in general; its deadline was in February 1875.

I start with the Congress. On its agenda was an assessment of the first attempts at lamb blood transfusion in Italian asylums.

Transfusion and the Risorgimento of Italian science

On the morning of September 24, 1874, a number of prominent Italian psychiatrists gathered at the then newly constructed mental hospital in the small town of Imola near Bologna in northern Italy. They were to witness a transfusion experiment with lamb's blood performed on three emaciated and highly depressed pellagra patients, two men and one woman. The transfusions were made by three psychiatrists using an instrument designed by one of them. They lasted some five minutes each and left the patients momentarily very red in their faces, necks and upper chests. No immediate change in their intellectual functioning was observed by the assembled psychiatrists.[21]

The psychiatrists then reassembled. They were attending the First Congress of *La Società Freniatrica Italiana* (the Italian Phreniatric Society), which was to discuss the use of animal blood transfusion in cases of severe mental illness. As one of its members phrased it, 'the subject of transfusion is, so to speak, of throbbing current concern'.[22] The mayor of Imola, who inaugurated the conference, was particularly excited about this feature. He saw blood transfusion as 'a daring attempt to return to society many of those unfortunate beings it had rejected' – an urgent and humanitarian task.[23]

There was a sense of excitement about this new endeavour, one of those present reported in the *L'Independente* newspaper: 'The conviction of everyone at the Sunday meeting was that Italy should march proudly because of this new discovery that other nations will applaud.'[24] Italy seemed, after so many years, to again be at the forefront of medical science. Lamb blood transfusion was, thus, no odd or individual initiative. Rather, it should be seen as part of the renaissance of Italian society and culture, and as an expression of the materialistic and anti-religious sentiment of its leading scientists.

Italian resurgence, or *risorgimento*, was the political and social movement that had consolidated the different Italian states into a single nation, the Kingdom of Italy. It started in 1815 and continued through upheavals and wars, such as the 1859 and 1866 wars of liberation against Austria. Unification was completed in 1871 when Rome became the nation's capital. The term Risorgimento also designates the cultural, political and social movement that promoted unification. Thus, the Imola Congress reflected a number of ambitions within some Italian elites at the time: to promote the social and mental health of the new nation, to advance the status of Italian medicine and science, to strengthen the position of scientific psychiatry against superstitions of all kinds.

One aspect of this striving for medical and scientific modernization was a renewed interest in blood transfusion. Italy had, after all, taken an important part in the history of this medical intervention, but one that, Italian scientists lamented, was not sufficiently recognized outside its borders. Was not the Italian doctor, Riva, among the first to do a lamb blood transfusion in the 17th century, yet seldom mentioned beside Denis in France and King in England? Not to forget Andrea Cesalpino who already in the 16th century, according to some, had prefigured Harvey as the discoverer of the circulation of blood, and Michele Rosa who, allegedly, in the late 18th century and before Blundell, had resurrected transfusion.[25] More recently, in 1872, and one year before Hasse and Gesellius, had not professor Albini in Naples re-introduced lamb blood transfusion, while those Germans had got the international credit for it! It was time to reclaim Italy's rightful place in the history, as well as in the present era, of transfusion.[26]

But why use transfusion – and, specifically, lamb blood transfusion – in the treatment of *mental* disease?

The Italian, French and English physicians, who in the 1660s had carried out animal blood transfusions, thought that they would thereby transfer beneficial psychic traits to the recipient. Blood from the docile lamb might calm a violent and mentally deranged patient.[27] Two hundred years later, Italian alienists used different arguments. To them, science, not superstition, should guide the care and cure of the mentally ill. They were positivists; they believed in the power of science to meet pressing social and political needs. Also, they were no political innocents. Several had been involved in the struggle for independence and some would seek political leadership. Now they wanted to use their knowledge of human behaviour, emotions and intelligence to influence social policies, achieve legal and political reform – and wrest the control of madness from religious authorities.[28] They were strong advocates of a humane treatment of the insane: manual work, education and cultural experiences were organized in the asylums to improve the patients' condition. But they also looked for more immediate, medical solutions to the bizarre and desperate condition of the insane. The challenge, as they phrased it, was to revive the mental, moral and social capacities of the mentally ill and help them return to society.[29]

Lamb blood transfusion promised one way ahead. Still, the Italian psychiatrists did not merely look at the clinical results obtained elsewhere. They wanted *scientific* justifications for using lamb blood to cure the insane. Some did animal experiments. Others referred to results by, most notably, the En-

glish physiologist, Henry Sutherland. He had shown that mental patients had a large excess of white blood cells at the expense of the red blood cells, and that their red blood cells frequently did not arrange themselves into rouleaux. Such a deterioration of the blood would lead to a very low degree of vitality in mental patients.[30] From this insight, several Italian psychiatrists inferred that a transfusion of fresh blood might have a vitalising effect on the nerves of those who had turned violent or catatonic, dumb or inert.[31]

The choice of a lamb rather than a human donor was, it seems, primarily a practical matter. A lamb was easier to obtain, it was thought to have no transmittable diseases, and it might better support the noise and disorder of a lunatic asylum. In addition, the cutting up of a human donor's vein was seen as an invasive operation that should be avoided. And since the blood cells of a lamb were small enough to pass through the veins of a human recipient and then presumably work just as well as human blood, the choice seemed medically safe.

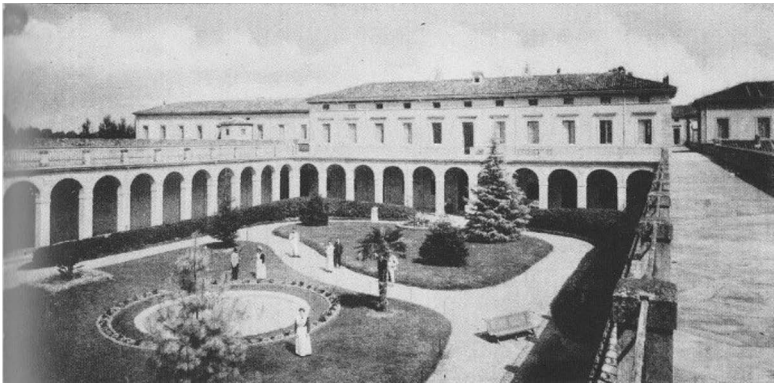


Figure 18. The Imola Asylum at the end of the 19th century (https://it.wikipedia.org/wiki/File:Cortile_manicomio_ImolaImola.jpg).

First experiences

With these considerations in mind, we re-join the assembled alienists at the Imola Congress. We are to listen to three psychiatrists who have already tried

out lamb blood transfusion. Their accounts tell of the patients' agony and of their own bewilderment but also hope for the intervention.

The first case was reported by Professor Carlo Livi from Modena, chief psychiatrist at the asylum in nearby Reggio Emilia and a leading figure within Italian psychiatry. He had been involved in the lamb blood transfusions to Maddalena Sebbi that did not end well. He now could report about some later, more successful, cases. One of them was Andrea Caretti, a thirty-five-year-old man from Modena.[32]

> [He is]an unmarried, timid man, short of understanding who can barely read or write. Four years earlier he had started to work in a billiard hall and although he did not have any bad habits himself, it seems that he, in this infectious atmosphere of smoke and blasphemy, had turned more and more melancholy and morbid; so much so that he often hinted at a desire to kill himself. The death of his mother whom he loved tenderly seems to have increased the sadness of his soul. He locked himself up in his house, became more and more apathetic, dumb and misanthropic, spent hours in bed or crouched in a corner of the house, was filthy, barely eating or talking.
>
> In May [1874], he started to refuse food. Then on one day he tried to stick a spoon in his throat and on another to throw himself from a window. He was taken to the local hospital, and then, on May 30th, to the mental hospital. He was pale, exhausted, extremely thin, unable to stand up, emitted only faint and inarticulate sounds. He had to be fed with a tube. Treatments with cod oil, iron-rich wine, meat etc. had very little effect, and therefore, on June 20th, we resorted to a blood transfusion. He was given a greater dose than usual, about 80 grams of blood, that, however, did not seem to have much effect. Still, on the very same day, he began to eat by himself and with much appetite; he looked less sad and more alert. He started to get up, walk around, talk. His appetite was voracious; his paleness was disappearing.
>
> On July 13, a new and more copious transfusion was made, which lasted twenty seconds. This time, the patient's face became cyanotic, his chest and arms took on a reddish colour, his breath became laboured. He complained of a headache, and of a pain in the back and the stomach. A certain excitement persisted into the evening, but he had no fever. He is afraid of dying but eats with good appetite. From this second transfusion the improvement is even more pronounced, both physically and morally. He answers questions, has no more delusional ideas, nor suicidal tendencies; on the contrary, he

> says that he loves life very much, that he desires to return to his family and that he can take care of himself.

Livi was not altogether certain that his patient had been cured by the transfusion:

> Earlier, he was mute, inert, depressed; today he is a man who moves, smiles, works, talks and reasons. He eats but he also eats too much and after the meal he is hungrier than before. He eats dung and grass and stares at the sun. There is something morbid, a darkness underneath, that makes us suspicious.

Despite these question marks, Livi found the result encouraging. Transfusion, he argued, merited further study and experiments.

The next case presented in Imola had been performed in the Alessandria asylum by its chief psychiatrist, G. L. Ponza. It was his endeavours that Laguzzi celebrated in the poem reproduced above.

> Francesco Zunino of Malvicino, a farmer, thirty years old and a father of two healthy children, was admitted to the hospital in Alessandria on June 28, 1873 for pellagra lipemania. He suffered from pellagra-induced diarrhoea; he was thin, sickly, sad, gloomy, silent, without appetite, slept very little, had the tendency to suicide that is almost always present in pellagra patients. All possible remedies had been tried, but in vain.
>
> In desperation, it was decided to perform a blood transfusion. It took place on June 21, 1874, that is, one year after the patient had entered the asylum. It was inspired by the cases in Reggio, was performed by Dr Ponza in the presence of twenty-five other doctors, used the instruments invented by Dr Caselli who was among those present, and done according to the procedure invented by Professor Albini of Naples. As a safety procedure, Dr Ponza first bled the patient of 100 grams of blood. The patient then for twenty seconds received 65 grams of blood from the carotid of a lamb into a vein in his right arm. Two minutes later, he had some trouble breathing, some dry coughs, his face blushed, there were beads of sweat on his forehead, his pulse, which was barely 58 beats before the operation now increased to 75. Ten to twelve minutes later, everything had returned to order and the patient was carried to his room. The very same day he got up and ate. The diarrhoea decreased.
>
> Nine days later, on June 30, another doctor at the asylum, Dr Pacchiotti, performed a second transfusion using the same procedure; the patient received 75 grams of arterial blood into a vein in his left arm. This time he was

not bled in advance. The effect was now stronger: the redness of his face more intense, almost livid, the perspiration more abundant, the breathing a little more troubled; it was feared that he was going to faint. A few minutes later, he returned to his normal state.

Since then, the patient's appetite has reappeared, the diarrhoea has completely stopped, and his forces have returned. Before the transfusion, the patient weighed 61 kilograms; he now weighs 68. The pulse has increased […] His morale is better, and he is almost cheerful. On July 28, he left the asylum, accompanied by his mother. [33]

Ponza's report included detailed instructions on how to position the patient and the lamb, how to cut open the vein and the artery and how to, with the help of assistants, carry out the transfusion. An accompanying drawing depicts how the patient – Francesco Zunino? – should be seated in a comfortable bed. The lamb, in turn, is less comfortably affixed upside down in a kind of wooden cradle.

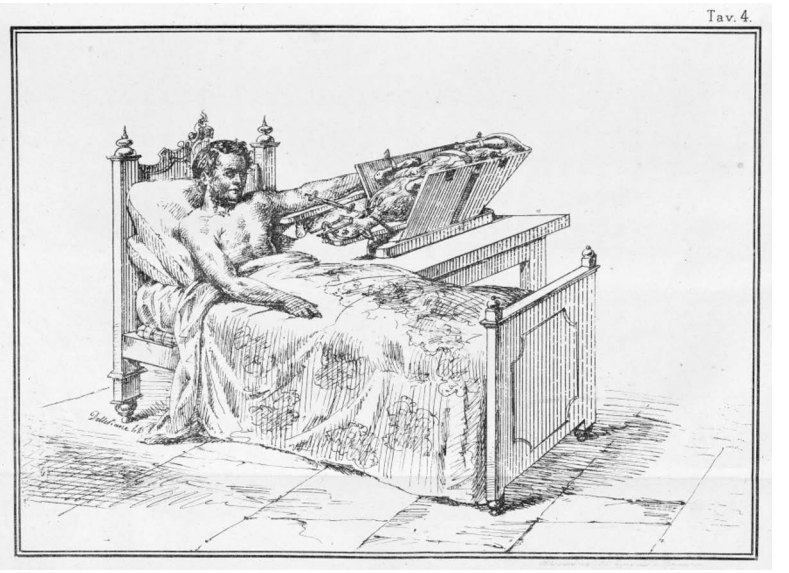


Figure 19. A lamb blood transfusion at the Alessandria asylum (Ponza 1875, between pages 56 and 57).

The third transfusion described at Imola was made by Dr Blessich in Pesaro and reported by his colleague Antonio Michetti. [34] It concerned a forty-six-year-old peasant, Lucia Paglierani. She had been taken to the asylum on May 25, 1874 for pellagra with suicidal delirium. From having been a happy and outward-going person, she had become sad and inward bound, was paranoid and suicidal. Diarrhoea and a lack of appetite had left her emaciated, looking like 'a skeleton covered with thin skin'. On August 12, Dr Blessich transfused 15 grams of arterial lamb blood with no visible side effects. On the following day, the patient said she would like some food, was much less introvert and spoke in a good-natured way. While she had been completely passive during the operation, she now prayed that it should not be repeated. She felt better and wanted to be left in peace. Two weeks later, she left her bed and seemed to be in such good condition that the doctors no longer despaired of her physical and mental recovery.

After these reports and a slightly contentious debate, the assembled alienists agreed on a resolution. It stated that:

> [G]iven that transfusion of blood from the artery of a lamb to the vein of a lunatic patient is neither difficult nor dangerous, and may be performed with ease and certainty, the Congress believes that the efforts of those who have initiated this new form of therapy should be encouraged, provided the treatment is accompanied by a great deal of prudence and, above all, by an attentive study of the indications for and against it.[35]

The resolution was passed unanimously.

The Imola discussion and the reported case histories tell us several things. First, that the patients before the transfusion were seriously ill with delusions and suicidal tendencies. Some had already spent a long time at the asylum but no previous treatment seemed to help. Secondly, and in contrast to how the phthisis patients were treated, the Italian alienists preferred moving quite small amounts of blood into their patients; they also performed several transfusions with some time lapse in between. Thirdly, we learn that, even when the patient seemed to get better, the psychiatrists suspected that this was only a partial or temporary success. Pellagra patients tended to relapse, and an early improvement was often followed by decline. The physicians also realized that part of the recovery might be due to the patients' getting better food and care in the asylum than was possible in their poor homes. Thus, they recognized that lamb blood transfusion, while interesting, was an experimental therapy with uncertain effects.

A transfusion competition

In 1872, the venerable *Istituto Lombardo Accademia di Scienze e Lettere* in Milan issued a competition for the best study of transfusion as a useful medical therapy. At this time only human blood was considered relevant.[36] The competition was initiated by the doyen of Italian medical chemistry, Giovanni Polli, who as early as 1852 had published a transfusion study based on animal experiments. The idea was supported by Professor Andrea Verga in Milan, one of the initiators of the Italian Phreniatric Society.[37] The deadline for the competition was set to early 1875, proving that the issue was of acute concern at the time of the Imola Congress. By then, the possible advantage of animal blood transfusion had also entered the agenda.

The results were announced in August 1875. There were five anonymous contestants. They had made quite different recommendations for how to best perform a transfusion (which the committee called 'a blood graft'): with defibrinated human blood in one case, with animal blood in some others, for mental patients in some proposals, but absolutely not in others. Thus, the contributions reflected the experimental and contested nature of transfusion at the time.

A first prize was not awarded. The prize committee had found faults in most proposals. Instead, a perhaps slightly disappointed committee decided to give three rewards of 500 lire each, 'as an encouragement', to professor Cesare Lombroso of Pavia, Dr Malachia de Cristoforis of Milan, and Drs Rodolfo Rodolfi and Giovanni Battista Manzini of Brescia.[38] Lombroso and de Cristoforis had written lengthy historical overviews with special attention to Italian contributions to 17th and 18th century transfusion history. They also discussed various techniques and indications. De Cristoforis added a report on his six transfusions performed between 1867 and 1873, all with human blood and for both somatic and psychic disorders. Lombroso gave a detailed account of his forty-one transfusions given to eighteen patients at the mental hospital in Pavia between 1869 and 1874. Eight transfusions had been with blood from lamb.[39] These reports, while interesting, will not be discussed here. But the third entry, by Manzini and Rodolfi, is worth a special analysis, since the authors presented their transfusions as a clinical experiment.

Manzini and Rodolfi saw themselves as experimentalists. To them, medical progress depended on experiments and experiment should precede theory.[40] They skipped the lengthy historical exposé, so dear to Italian transfusionists at the time, as well as the discussion of indications and techniques, to

focus on their own transfusions made between August 1874 and August 1875. About these, they gave detailed information, first on the choice of patients to transfuse, then on the procedure and the results, and finally they discussed conclusions and recommendations for further experimentation.[41] Thus, their account, though somewhat wordy, is in principle not very different from a latter-day clinical study report.

The Brescia experiment

Giovanni Batista Manzini, born in 1814, was since 1857 chief psychiatrist at the local asylum. He was well-known in Brescia, having received awards for his medical assistance in the 1859 war. He had also acted as psychiatric expert in some highly publicized murder trials.[42]

Manzini's younger colleague, Rodolfo Rodolfi, born in 1827, came from a well-to-do local family; his father was a doctor. Rodolfi himself had, at the early age of twenty-seven, been appointed head of the City hospital. He participated in the wars against Austria, got involved in local politics and was a driving force behind several public health initiatives. Rodolfi was well-known for his dexterity as a surgeon involving some 'innovative and courageous experimentations', as a portrait in a local paper phrased it.[43] These experiments included injecting laudanum, strychnine, alcohol solutions or hydrogen peroxide into animal veins. He also, in one case, injected alcohol subcutaneously into an almost dead cholera patient; the patient first felt better, then died. [44] This experiment led to a conflict with a colleague who claimed that it was without proper scientific value since the cause of cholera was not known.[45]

Rodolfi's and Manzini's experimental venture into lamb blood transfusion was also controversial, something they were well aware of. Given the considerable scepticism among their colleagues, they were quite nervous before conducting their first transfusion:

> We cannot conceal the true trepidation with which we did our first experiments, especially for the one among us [Manzini] who, because of his position as a psychiatrist, had the more direct and serious responsibility. [46]

Interestingly, Manzini and Rodolfi took care to have magistrates witness the transfusion. One may wonder why – to show that the patients were treated well? That no fraud was involved? To give an official stamp of approval? One can only speculate.

The choice of a mental hospital as the site of a transfusion experiment was to them logical for several reasons. First, it had a large enough number of patients – in Brescia about 200 – with symptoms likely to benefit from a transfusion. Patients to be transfused, they argued, should have an illness of long duration and with serious effects on their nervous system, motor and intellectual functioning. A series of treatments should have been in vain. Of the 51 patients chosen for transfusion (that is, a quarter of those at the asylum), more than half had pellagra.[47] They suffered from dementia, hallucinations, suicidal tendencies and some had tuberculosis. Non-pellagra patients were diagnosed with dementia, hysteria, violent mania or alcohol-related insanity. Most patients were highly depressed and intellectually impaired, many were emaciated and more or less depleted by persistent diarrhoea. Blood counts showed them having too few red blood cells or too many white blood cells. This was something that, according to Manzini and Rodolfi, could account for their poor condition but also something that might be improved by a transfusion.[48]

Secondly, a mental hospital had the added advantage of a simple hierarchy. The chief psychiatrist, in this case Manzini, was in charge, and most patients were in no position to protest; they were poor, illiterate and, of course, very sick. With 'so much deficiency of reason', the doctors argued, the director had the responsibility to think and decide for all.[49]

Still, the patient must be willing to participate:

> The operator must persuade the patient of the great utility to be had by a blood transfusion, which is especially important when the patient has not been helped by any other kind of treatment. For our mental patients, words were less effective to achieve their submission and passive assent than were delicacies or some gifts. For this reason, some of them, after the first experiment, spontaneously asked for a repetition of the operation.[50]

Given the fragile condition of the patients, careful clinical preparations had to be made, Manzini and Rodolfi informed. A physician should ascertain that the patient had no circulatory problems or breathing disorders, and no tendency to apoplexy. The patient should be calm and not in convulsions or nervous agitation. Physical preparations also meant that the patient's bowels should have been emptied the same or the previous day. But the stomach should not be completely empty, therefore the patient should receive a light soup, coffee or a broth two hours before the operation. These measures ensured that, in

case of vomiting, no unnecessary obstruction would occur and cause distress, and complicate the unfolding of the operation.[51]

During the transfusion, the patient was seated on a chair next to a table where the lamb was positioned. The preferred procedure was to give several transfusions with small amounts (4-40 grams each) since this would lead to a less violent reaction. Still, several patients suffered from cyanosis, fever, involuntary defecation, vomiting or strong chills. Some of them, nevertheless, wanted a repeat of the operation, perhaps to get more treats. Others refused, having suffered 'the onslaught of vomit and the anguish of a threatening asphyxiation'.[52]

All in all, Manzini and Rodolfi made 164 transfusions on forty-nine patients: thirty-two women and seventeen men; two women chosen for transfusion did not get any because their veins were too small. Twelve transfusions were made with human blood. Some patients got both human and lamb blood, and most got several – up to twelve – transfusions. The doctors tried both venous and arterial lamb's blood, coming out in favour of the first for both practical and medical reasons.[53] They devised an instrument of their own, which they claimed was simpler to use than other techniques and did not scare the patients. It had a simple cannula and a pump to help move the blood from the lamb into the patient.[54]

So, was the experiment a success?

Of the forty-nine patients transfused, eighteen were reported cured, six improved, fifteen stationary, five were still under treatment, and five had died.[55] None of the deaths could be attributed to the transfusion, Manzini and Rodolfi argued. Instead, tuberculosis, intestinal troubles and brain lesions were cited as the cause of death.[56]

One of the cured patients was Pasuqua Ransanigo, a thirty-four-year-old peasant woman, deeply melancholic, who insisted on lying on the floor, had to be fed and did not respond to touch nor speech. No other remedies had worked. In September and October 1874, she received three small transfusions from a lamb's vein and was reported healthy also one year later.[57] Another cured patient was Domenica Ruffini, twenty-one years old, who had been taken to the hospital with pellagra. She suffered from suicidal tendencies, looked like a skeleton, had diarrhoea and tuberculosis. She received four transfusions of venous lamb blood of 5 to 8 grams each, after which she started to work and eat. After a second set of transfusions, this time with arterial lamb blood, she felt so well that she could leave the asylum with her parents.[58]

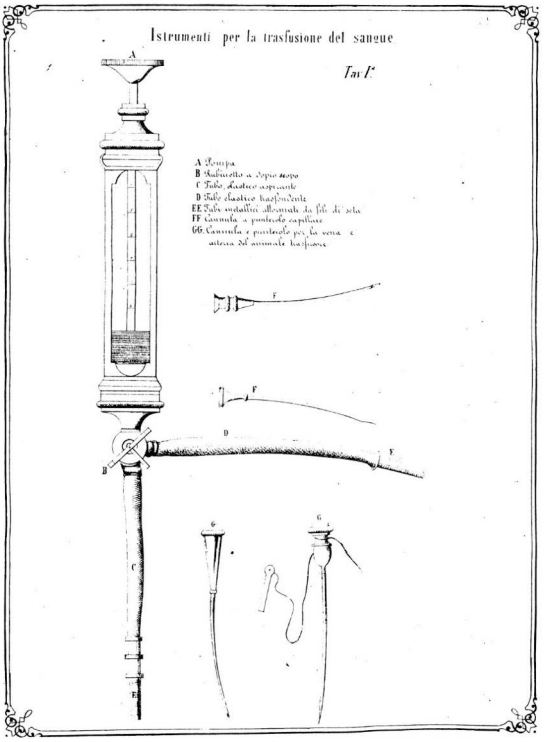


Figure 20. The instrument used in Brescia by Manzini and Rodolfi (Manzini & Rodolfi 1876, 113).

Understanding improvement

How did Manzini and Rodolfi explain such positive outcomes after quite minor transfusions of lamb blood?

Could it be that the very experience of undergoing such an imposing – and even terrifying – procedure had awakened the, until then, drowsy or paralyzed mental faculties of the patients? This 'shock argument' was not uncommon at the time, as analysed later by a medical historian:

> In the first few decades of the 19th century, physicians taking a moral approach frequently implemented an additional method to combat diseased modes of thinking. If they believed that a patient could not be rationally convinced of the error of their ways, it was sometimes necessary to shock them into comprehension through a significant emotional experience. These shocks typically took on one of three forms: they could be physical and involve cold showers or some other stimuli; aesthetic and arise from an emotional response stimulated by music or other art; or they could be psychic and involve the staging of an event that resolved a patient's obsession without their knowledge. The latter were enthusiastically undertaken at numerous mental asylums and reported in medical treatises and journals.[59]

Manzini and Rodolfi dismissed this hypothesis. Their patients had, during their often long stays in the asylum, taken part of many, both pleasant and terrifying experiences. They had taken walks in the countryside, had attended music sessions, had witnessed or participated in fights among patients. They had been subject to a series of therapies whose emotional impact, while not equal to that of a transfusion, was quite substantial, for instance, from the suction cups, the scarified cups or the shower. Still, none of this had made them any better while, the doctors underlined, a considerable proportion of those experiencing a transfusion had been cured.[60]

But if it was not the transfusion shock in itself that had cured the patients, what had? Manzini and Rodolfi put forward a *physiological* argument. The transfused blood must have had a stimulating effect on the patients' own blood and thereby on their nervous system and blood circulation.[61] Manzini and Rodolfi were not alone in this suggestion. It was a favourite hypothesis among Italian psychiatrist at the time, rivalling an alternative idea that transfusion was to be seen as a *mechanical* means of adding blood to blood, and thus restoring the patient's blood pressure to a normal level.[62] Both ideas squared well with the prevailing positivist and strongly organicist orientation of Italian psychiatry where, according to Carlo Livi in 1875, 'the so-called mental diseases, those called 'frenopati' or 'frenosi', should be studied only as diseases of the cerebral organ, or of the whole nervous system'.[63] This meant that the transfused blood could be seen as a kind of medicine, like quinine or digitalis, for the nervous system, to be taken in small doses and on a number of occasions. A single transfusion, Manzini and Rodolfi insisted, could not have the desired vital effects.

Given the result of their experiment, what were Manzini's and Rodolfi's recommendations? They concluded their positive report with several interesting caveats. Lamb blood transfusion to mentally ill patients should only be performed, they argued: [64]

- if transfusion was as simple to apply as other remedies, such as laparacentesis, bleeding, electricity, gagging, showering, subcutaneous injections, etc.
- if it did not demand a well-trained surgeon as well as assistants;
- if the transfusion, though not difficult in itself, did not require a myriad of minute and measured attentions and actions, where missing only one at the appropriate time would make the transfusion dangerous, fatal or in vain, so that one had to abort it and start again, either at once or on another day;
- if the apparatus did not have a forbidding effect on the sick patient –even if, as they noted, their mentally ill patients generally had suffered its use with indifference.

Assessing experiments

The Italian lamb blood transfusions to mental patients were controversial. As Manzini and Rodolfi phrased it, there were, on the one side, 'fanatical apostles who endorse [it] as a panacea and a miraculous resource, perhaps without even having tried it', and on the other, 'adversaries that condemn it… [with] derisive sarcasm'.[65]

Let's go back to the declaration from the Imola Congress in September 1874. At first glance, it seems to endorse lamb blood transfusion: it was easy to perform, not dangerous, and those who wanted to do it should be encouraged. But also: there should be a great deal of prudence and, above all, an attentive study of the indications for and against it. This was later interpreted as a 'very reserved and circumspect' decree.[66] Still, psychiatrists in asylums across northern Italy felt encouraged to perform a lamb blood transfusion on a large number of occasions. Others were sceptical. Already at the Congress, some delegates found the procedure too hazardous to be tried out.[67] The debate continued during the next two year, in medical journals, newspapers and the popular press.

Much of the agitation concerned the experience in Alessandria. Here, doctor Ponza and his colleagues had performed about a dozen lamb blood transfusions in the spring of 1874 and some later. Ponza himself was eager to defend his transfusions. He wrote polemical articles and he enrolled illustrious colleagues to witness and to perform transfusions in his asylum. He was supported by the directorate, who paid for a visit to Paris where Ponza did animal experiments together with such luminaries as Malassez and Claude Bernard. Hence, he had enough scientific credentials to gain the confidence of many colleagues but he was also vehemently attacked by other colleagues as well as by the church and the popular press.[68] Some supporters interpreted the polemics against Ponza as a war on scientific progress and a return to dark and obscurantist ages; others saw it as a sign of envy from less prominent colleagues.[69]

Still, similar to the experience of lamb blood transfusion against tuberculosis, those who with some enthusiasm had tried the operation were uncertain, too. Their verdict was contradictory: the intervention was easy but also difficult to perform, it was beneficial but perhaps not so in its effects.[70] Manzini and Rodolfi, being those with the most extensive experience of moving blood from lamb to mentally sick patients, were, as seen above, circumspect despite their positive results. But, just as in the case of lamb blood transfusion against phthisis, they, and others, hoped that further experiments – made 'in the spirit of the new times'– would lead to a breakthrough in the treatment of psychiatric disorders. So far, their trials had shown that lamb blood transfusion *could* be beneficial, if done 'with prudence'.

As professor Carlo Livi, the pioneer of lamb blood transfusion to the insane, expressed it:

> Mind you, we do not believe that we have discovered the wonderful secret of healing such serious forms of frenopathy as pellagra and stupid lipemania. We are used to seeing illusions and hallucinations all day, and therefore know how to guard against introducing them into our own practice. In science we belong to the ranks of sceptics rather than to those of faithful followers and believers. We intend only to try, to experiment. Being certain that science cannot progress or benefit humanity if we do not follow the simple but true canon of that great legislator of human knowledge, Galileo, that is, to try and to try again.[71]