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Aluminations FROM THE RCH ALUMNI

October 2021 | In this issue: Turning points in paediatrics

Photo: Abstract image (Gigi Williams)



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Credits

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The 2021 RCH Alumni Executive

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Greetings from the President

Ruth Wraith OAM

The Covid 19 pandemic has continued for a much longer period than we had anticipated eighteen months ago and we remain on this journey, but now with a 'Road Map Out of Lockdown' leading us to the future described as 'living with covid'.

During this time the experiences for everyone have been highly personalised depending on individual circumstances, demands and life events. Challenges have presented, some being more difficult than others to manage and to live with.

As 2021 moves to a close the Alumni have the two final events for this year scheduled. The conjoint RCH Alumni / Children's Rights International Seminar will be held on Thursday 21st October via Zoom. Recently the flyer was sent to you by email and as a reminder, information is on page 28 of this edition of Aluminations.

The Annual General Meeting will be held in the evening of Tuesday 9th November. We are delighted and also honoured that Professor Sharon Goldfeld will join us and also address us on the challenging topic 'Radical pragmatism - can we address the inequities in child health and development in a generation?' Details are on page 4.



For the second year we will meet via Zoom for the AGM and sadly forgo our Annual Dinner and jovial evening of socialising. Hopefully 2022 will enable us to gather in person once again.

As our newsletter, Aluminations has been a vital link during covid isolation and as always most enjoyable.

Warm wishes to everyone.





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Invitation to the annual general meeting

Tuesday 9th November 2021, 6.30pm | Followed by an address at 7.00pm

Radical Pragmatism – can we address the inequities in child health and development in a generation?

With Professor Sharon Goldfeld

Director of the Centre for Community Child Health at The Royal Children's Hospital Melbourne and Theme Director Population Health and Co-Group Leader of Policy and Equity at the Murdoch Children's Research Institute.

Professor Sharon Goldfeld holds a unique position within Australian child health research. She is a Melbourne-trained paediatrician and a public health clinician scientist with a decade of experience as a senior State Government policymaker in health and education. She became the Director of the Centre for Community Child Health at the Royal Children's Hospital in August 2019, and is Theme Director, Population Health at Murdoch Children's Research Institute.

Sharon's research has evaluated and implemented policies to eliminate inequities in the health and development of Australian children, including their general health, mental health, language development and literacy.

These large-scale collaborative population studies have attracted almost 90 million dollars of national and international funding, and she has received prestigious personal awards for her work.

This presentation will be of interest to a wide range of our members, with its focus on "big picture" aspects of child health and how health professionals can influence public policy.



Register to attend at <u>tinyurl.com/AGMSharonGoldfeld</u>

The Alum-inar will be presented via Zoom (details provided upon registration.)

The architects, engineers and builders of the Roman Empire – the greatest ever.

Jim Keipert

My proposition is that the architects, engineers and builders of the Roman Empire created many extraordinary structures for their time in the form of roads, bridges, aqueducts, homes, villas, churches, theatres, arenas, stadiums, forums, triumphal arches, temples, baths and obelisks.

They were far in advance of the achievements of any contemporary civilization. Taking into account the materials, facilities and technology available at the time, I think the architects, engineers and builders of the Roman Empire were the greatest ever.

Just a little history. The Roman Republic commenced about the 5th century BC, and became firmly established when the common people or plebeians were able to more equally share power with the nobility or patricians.

This allowed them to defeat the Etruscans in the north, the Samnites in central Italy, and at the beginning of the 3rd century BC, the Greeks in southern Italy.

When in 146 BC Rome defeated its mighty rival Carthage on the coast of North Africa, large areas of Spain, Western Sicily, Sardinia and Corsica came under its rule. And by the late 1st century BC, the eastern Mediterranean from Greece to Asia Minor, the whole of Spain and upper Italy were under Roman dominion.

However, civil wars, conspiracies and slave revolts undermined the state culminating in the assassination of Julius Caesar in 44 BC. Caesar's nephew Octavian inherited 17 years of civil war, but finally restored peace. He established Imperial Rome – or the Roman Empire – with him as emperor with the title Augustus. During his 41 years of rule, he laid the foundations for the government of the capital and its empire (Fig 1) over the next 3 centuries, leading to the extraordinary extent of the Empire by the 2nd century AD.

Under the Republic, Rome's population had increased to half a million, and the Romans had extended the road network, constructed aqueducts to ensure a water supply and erected utilitarian buildings.

However, they had few magnificent buildings or imposing squares, and the layout of the city and the housing reflected the stark contrast between the rich and poor.



Compared with the great centres of the Greek-speaking world, with their ordered civic spaces and elegantly appointed public buildings, Rome was an immature architectural and also cultural, artistic and literary state.

Under and following Augustus, taxes and trade from the Roman provinces brought great wealth to Rome which became extensively adorned with great buildings and multiple facilities as successive emperors tried to outdo each other.

The visual and sculptural arts proliferated as did scholarship and literature.

The greatest achievements of the Roman Empire occurred in the 1st and 2nd centuries AD so we'll be largely concentrating on that period, mainly in Rome but sometimes elsewhere.





The Romans were great road builders. The Via Appia Antica was laid out by the Censor Appius Claudius in 312 BC and is one of the best preserved and most important roads of ancient Rome. It starts at the Circus Maximus and exits Rome at the Porta San Sebastiano in the Aurelian Wall, proceeding almost in a straight line to Brindisi as a link to the coast for the export of goods to Athens and the East.

The Domine Quo Vadis is erected on the site where the Apostle Peter, fleeing from Rome, met his Lord who asked him "Quo vadis?" whereupon Peter was moved to return to Rome and suffer martyrdom, being crucified on the site of Bramante's lovely temple the Tempietto and buried at the site of St Peter's.



Burials inside Rome were banned in 450 BC, so roads outside Rome were lined with tombs, sepulchres, catacombs and mausoleums. The catacombs could be quite large as we see here and the mausoleums even larger, as was that of Caecilia Metella, beloved wife of Crassus who made his money buying the burnt out properties of the poor – I hope he didn't start the fires as well. The Appian Way was paved with large blocks of basalt and was significantly curved to allow free drainage of water. It is lined with cypress and pine trees as in Roman days.

The Romans were also great bridge builders. This is the remains of the Ponte Rotta joining the Isola Tiberina to the city. It was the first stone bridge built on the Tiber in the 2nd century BC.

Here is the 2nd oldest bridge in Rome built by Fabricius in 62 BC.

The Ponte Cestio joining the other side of the Tiber Island to Trastavere was restored in 370 AD.

The Ponte

Sant'Angelo is one of the finest ancient bridges in Rome, with its five great arches. It was built by the Emperor Hadrian in 134 AD, to provide a triumphal access to his magnificent mausoleum, Castel Sant'Angelo.

Bernini replaced the balustrade and added 10 figures of angels for Pope Clement IX in the 17th century.

The emperors didn't hold back when building a mausoleum. Emperor











Hadrian's Castel Sant'Angelo is a massive cylinder, with a diameter of 65 metres and height of 21 metres, sitting on a square of travertine blocks with sides 86 metres long.

It became a fortified castle, a prison, and was then converted to magnificently furnished papal apartments and finally became a museum.

It was connected to St Peter's by an enclosed passage which was of great benefit to the popes at times of insurrection against the papacy.

Skilled civil engineers maintained the prosperity of Rome by building aqueducts to bring water from the surrounding hills when the wells of the city were not providing sufficient water. Some were 80 km in length.



This is the remains of the Aqueduct of Claudius started in AD 38 as seen from the Appian Way. It's fallen into disrepair.

The carretos del vino with the horse with the fancy headgear of feathers were special carts for collecting wines from the vineyards of the Alban Hills

In order to build up pressure and ensure a satisfactory flow, water was collected from a spring with a reservoir.

The aqueduct was supported on arches over low lying land, and went in a tunnel through hills to maintain a constant gradient of 1 in 1000.

But to see aqueducts at their glorious best we need to go to other countries occupied at the time by Rome, as here with the Pont du Gard at Avignon seen from the ground and air with its three great levels.

It is 800 feet long and 155 feet high and was built without mortar. It took water to Nimes.

And here at the lovely town of Segovia in Spain is this gloriously high two-arched aqueduct. I said to my darling wife that the snow on the mountains is in the Sierra Nevada range after which the range in California is named.

I was doing this from the goodness of my heart to improve her general knowledge.

She said "You bear of little brain, the Sierra Nevada range is outside Granada".

I remonstrated.

As quick as a flash, she said "Do you want any money on it?"

I was silly enough to say yes and before you could say Jack Robinson I'd lost my hard-earned cash, as she's right and this is the Sierra de Guadamarra range. In 1961 we tried to drive up to the snow to have a ski but it was a steep gradient and our radiator nearly boiled before we got to the snow.







The Romans were very advanced in the development of sewerage systems which commenced in 600 BC in the reign of King Tarquinius Priscus.

Streams running off the seven hills of Rome were channelled underground into subsidiary streams, the largest of which was big enough for a man to travel in a small boat.

These merged into the main drain the Cloaca Maxima which ran beneath the Forum and discharged into the Tiber through a massive orifice 12 feet in diameter – as Pliny put it, large enough to allow the passage of a wagon fully loaded with hay. The opening is still visible just below Tiber Island.

The tunnel was formed with massive blocks of volcanic stone 5×3 feet joined without mortar or cement.

Regarding housing the majority of the population were housed in multi-storied tenement buildings with often narrow alley ways between. The higher up you were the less optimal the conditions. A lot of these were slum dwellings. In the least optimal, the rooms were mainly for sleeping and residents had to go out for obtaining water, eating and bathing & toileting. Wealthier citizens often added a second one- or twostoreyed house onto the tablinium with rooms opening onto a colonnaded garden replete with fountains, statues and mosaics.

The social system hasn't changed much in over 2000 years.

The bedrooms contained a stone or marble shelf projecting from the wall or a moveable bed with a mattress, elegant Oriental bed covers and cushions. A cupboard, small table, stool, frescoes and wall paintings were usually present. Floors were tiled or with mosaics and under-floor heating was often present.

In the dining room guests reclined on couches on 3 sides of the table.

The kitchen had a stove, oven and sink with a drain.

Baths were like public baths on a much smaller scale.

Latrines with drains were either in a corner of the kitchen or some other recess – I'd fervently hope it was the latter.

Country villas. Hadrian's villa built at Tivoli in AD 124 was a true emperor's villa with a vast complex covering 7 square miles and containing his palace with colonnades, courts, terraces, baths, theatres, pavilions, gardens, trees and sculptures.



The better off lived in houses which were relatively sophisticated for the period.

The atrium was a rectangular space with a sloping roof draining water through a hole into a bath below (the impluvium). Opening from the sides of the atrium were the bed- and other rooms (cubiculae), and at the end was the study and reception room (tablinium) of the head of the family. Adjacent to this was the dining room or triclinium.



The most famous non-imperial villa is the Villa del Casale part of the 3rd to 4th century estate near Piazza Armerina, deep in the countryside of south eastern Sicily. It was buried in mud by a landslide from nearby Monte Margone – on whose slopes it lies – in the 12th century and not then discovered until the 19th century allowing preservation of the most exceptional Roman mosaics in the world.

We enter into the colonnaded courtyard or atrium and go from the sauna or calidonium to the tepidarium, to the frigidarium decorated with mosaics depicting mythical sea creatures, tritons and cherubs.

The circus hall is decorated with mosaics depicting a chariot race.

The living apartments open onto the colonnaded peristyle with its gardens and pool.

The long hall contains splendid mosaics representing wild game hunting. And in the colonnaded semicircular atrium leading to the hall you'll all be relieved to hear that Arion, threated by sailors, was saved by a dolphin.

The dining room features mythological subjects.

In the hall of the female gymnasts they are portrayed in bikinis – there's nothing new in the world.

These are photos of the mosaics taken when we visited the villa – a chariot race and game hunting.









(Susceptible men, I suggest close your eyes. Left, the female gymnasts.)

The villa was surrounded by parks and gardens and fountains with statuary. It perhaps doesn't quite rival the Packer Estate at Ellerston in the Hunter Valley which we

visited once, with 7 polo fields, stables for 100 horses, an 18-hole golf course, grand homes with a lake and lovely gardens, but considering it was built 1900 years ago, I think the villa wins.



Christian churches were built in the later period of the Roman Empire, after an edict was issued by the Emperor Constantine in 313 AD granting freedom of worship to Christians.

It might be presumed that the Emperor had suddenly seen the light in a manner analogous to that of St Paul on

the road to Damascus, but the pragmatic Constantine had actually seen conversion to Christianity as his only hope of winning a very important battle that he otherwise seemed destined to lose.



The circular church of Santa Constanza has its dome and drum, supported on 12 great pairs of granite columns forming a circular arcade surrounded by a circular ambulatory with vaulted ceilings decorated with 4th century mosaics of charming scenes of a grape harvest with flora and fauna.

Constantia was the daughter of Emperor Constantine. The sanctity of Constantia is debatable as the historian Marcellinius described her as a fury incarnate, constantly goading to violence her equally unpleasant husband Hannibalianus.

Confusion with a saintly nun of the same name probably resulted in the mistaken canonization.

Early in the 4th century AD the prominent Laterani family was disgraced when one of them was accused of conspiring against Nero (sounds like modern day Russia). Their



land was confiscated by Emperor Constantine to build Rome's first Christian Basilica, San Giovanni in Laterano, which for many Catholics is the mother of all churches ranking higher than St Peter's.

This is the baptistery attached to the end of the church. The octagonal drum of this elegant structure rests on an architrave supported by pillars of porphyry and leads to a beautifully decorated dome.

St Stefano Rotondo was built by Emperor Valentinian III. The inner circle of columns supports the entire dome. The church was probably intended to resemble the rotunda of the Church of the Holy Sepulchre in Jerusalem.





San Clemente is a 12th century church dedicated to St Clement, the 4th pope, who was exiled to the Crimea and martyred by being tied to an anchor and drowned. Beneath the church is a 4th century Christian church (above) and below that is the Temple of Mithras, a barrel vaulted room with benches down the side, and in the centre an altar with a relief showing the sun god slaying the primaeval bull – a sacrifice repeated by the god's followers as a ritual act.

Mithraism was imported from Persia in the 1st century BC as that entirely sensible religion – an all-male fertility cult.

During the 2nd and 3rd centuries AD it was more popular than Christianity and might have dominated had not Constantine proclaimed Christianity as the state religion. Had Constantine not acted as he did, Mithraism may have been the world's main religion at the present time.



It is well sited in Piazza della Rotonda. A layer of steps leads to the enormous portico built on the foundations of Agrippa's Temple. In the front are 8 monolithic granite columns with Corinthian marble capitals. These are reproduced in the 2nd and 3rd row to produce a 3-aisled porch of great grandeur with 24 columns.



The earliest surviving ecclesiastical buildings of the Roman Empire were temples for worshipping pagan gods and the greatest of these by a long shot is the Pantheon which is basically now as it was when it was constructed by the Emperor Hadrian between AD 118 to 125. For its age it is one of the greatest architectural and building achievements ever.

The main round building has a basic masonry wall 20 feet thick. It has arched buttresses built into it to relieve the weight of the enormous dome.

The roof of the dome was originally covered with bronze tiles which were taken to Constantinople in 663. The roof was covered in lead by Gregory III in 1735.

Even famous architects can make mistakes.

Bernini added these two belfries in the 17th century as shown in this 1880 photo. The "ass's ears", as they became known, were removed in 1883.





A mighty bronze door gives entry to the circular interior which is 43.2 metres or 142 feet in diameter, with the height exactly the same as the width. If the line of the dome was continued down to form a sphere it would fit exactly into the cylinder of the lower part.

The walls of the lower zone have niches with 2 columns in front (some of which are altars) alternating with aedicules surmounted by triangular pediments usually containing a statue, the most famous of which is the statue of the Madonna on the tomb of Raphael.



The dome is made of concrete and has 5 concentric circles, each composed of 28 partly hollowed out decorative coffers to reduce the weight. Light enters only through the oculus, a circular opening 9 metres (30 feet) wide in the top of the dome.

For nearly 1800 years it was the largest dome ever built – being 3 feet wider than St Peter's

- confirming the ancient Romans as extraordinary architects and builders.

Roman temples were mainly created in the Republican era.





The Temple of Hercules was built in the 2nd century BC by a Greek architect, and is surrounded by 20 Corinthian columns. In this 1865 photo the square surrounding the fountain was used as a cattle market. The building on the right was removed by Mussolini to make a road to the Mediterranean and the area cleared as seen in this recent colour photo (bottom left). Hercules was often called Olivarius because he was the protector of the olive oil producers. The temple was erected by Marcus Octavius Herreaus who was, not surprisingly, an olive oil merchant.

The Fountain of Tritons was created by Bizzacheri in 1715.



The Temple of Fortuna Virila is another Republican era temple. The church in the right background is Santa

Maria in Cosmedin in whose vestibule is the Bocca della Verita – the mouth of Truth – in the face of the River God. It was used in the Middle Ages to test the truth in commercial transactions. If a trader put his hand in after telling a lie the River God bit it off.



A woman was taken

there to test her fidelity to her husband – whose suspicion was justified as she was having an affair. During the trip to the Mouth of Truth, her lover, acting like a madman jumped into the cart and kissed her. So when she faced the River God she could truly say that only her husband and the insane man from the crowd had ever kissed her.

Ah, if we mere males could ever be granted the subtlety of women, think how far we could go.



Roman amphitheatres survive in Nimes, Arles, Verona, El Djem and here as shown in Aspendos.

You also get a bonus showing the entrance to the peristyle in the House of the Vettii, Pompeii and part of the Forum at Pompeii.



The greatest amphitheatre is the Colosseum which still stands despite episodes of fire, flood, earthquakes and pillaging. It was probably named after the Colossus of Nero – a huge gilt bronze statue 66 feet high standing nearby. It was built by the Emperor Vespasian in AD 72 on the site of an artificial lake in the grounds of Nero's palace.

The elliptical building measures 188 metres long, 156 metres wide and 50 metres high. It has 4 storeys. The outer walls are built entirely of travertine. Each of the 3 lower consists of 80 arcades with half columns on the outside – Doric 1st floor, lonic the 2nd and Corinthian on the 3rd. The 4th floor was divided into 80 sections by Corinthian pilasters.



The auditorium was divided into 5 circles. Seating was according to rank with the Emperor and cohorts at the bottom.

I regret to advise that the level reserved for women was at the top but perhaps this was to shield them from the gorier sights and have the benefits of more

shade, and wooden seats whereas all other seats were stone.

Inside, barrel vaulted passages ran around the building with flights of steps and ramps radiating from them.

These were all numbered. On entrance spectators were given a token with numbers showing which numbered arcade, passage or stairs



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they needed to take to allow easy access to their seat. The aim was to have 70,000 spectators seated within 10 minutes of arrival.



The basement below the arena was a labyrinth of passages, rooms for dressing and storage, stage machinery, cages for housing wild beasts and tackle to winch gladiators and beasts into the arena.

The Colosseum was a practical building erected by the rulers for entertainment and especially to keep the citizens happy.

It was also a great architectural achievement and it is remarkable that a structure built nearly 2000 years ago can hold over two thirds of the number that can be accommodated at the Melbourne Cricket Ground with the Romans getting to their seats and out of the amphitheatre in no more time than at the MCG.

The Forum is situated between the Capitoline Hill and the Palatine. From 600 BC it was the centre of political, religious, judicial, commercial and social life. When it became too crowded in the Imperial phase some emperors built their own fora elsewhere.

Most of the remains of the Forum are only very partial remnants of their previous glory, but because of its past importance, we'll take a short tour starting with the West Forum.

This photo to the right was taken from the site of the Basilica Amelia, which was a very large basilica serving as both a market and a law court.

The pink building on the right is the restored Curia, which was the meeting house of the Senate which exercised rights of all that went on in the state.

The domed church behind is Santi Luca e Martina, an early mediaeval church rebuilt in the 17th century. Behind that is the top of the Victor Emmanuel monument.

Below is the arch of Septimus Severus through which goes the Via Sacra.

The darker base of the building at the back with the arcaded gallery on the 3rd floor is the Tabularium built in 78 BC. It held the archives of Rome.

The Senatorial Palace was built on top of the Tabularium and faces the other way onto the Piazza del Campidoglio.

The 8 columns are the remains of the Temple of Saturn originally built in 470 BC but here dating from 42 BC.

As the mythical god king of Rome, Saturn was said to have presided over a prosperous and peaceful golden age from which crime, war, private property and slavery were absent. What a utopia.

Between 17th and 23rd of December each year, Saturn's reign was remembered with a week of feasting and sacrifices known as Saturnalia, during which the normal social order was reversed with the nobles catering to the serfs.

Many of the rituals and much of the spirit of the festival have been preserved in the more modern celebration of Christmas – and we do have examples of the richer members of society looking after the poor at Xmas.

The 3 columns of the Temple of Vespasian are obscured by those two columns.

Beside them is the fluted column of Phocas continually standing since 600 AD. Behind it is Rostra – the platform used for public oratory in the Forum.





Looking to the east from the foot of the Capitoline Hill just adjacent to the Temple of Saturn, on the left are the 10 columns of the porch of the Temple of Antoninus and Faustina, dedicated in AD 141 by the Emperor Antoninus to his late wife Faustina.

In 1601 these columns were incorporated as the porch of San Lorenzo in Miranda, erected on the place where San Lorenzo was martyred.

The cupola on the round roof is on the Temple of Romulus, which survived since the 4th century AD by acting as the vestibule for the church of Santi Cosma e Damiano.

Not visible further on is the Basilica of Constantine and Maxentius.

Beyond the belltower of Santa Francesca Romana is the Colosseum.

On the right is the Arch of Titus and the ruins of the palaces on the Palatine Hill.

The Temple of Vesta dating from the 4th century BC was originally a circular building surrounded by a ring of 20 fine fluted columns.

Six vestal virgins were required to keep aloft the sacred flame of Vesta. During their 30-year tenure they had to remain virgins.

You'd think that the supreme ruling body might be tolerant about the occasional slip from virtue, but the penalty for transgression was to be burnt alive.

The three columns are the remains of the Temple of Castor and Pollux, dedicated in 484 BC in honour of the mythical twins and patrons of horsemanship.

Basilica Julia was begun by Julius Caesar in 54 BC and completed by his great-nephew Augustus. At 101 by 49 metres it was immense, and consisted of a central 3-story hall with 2 aisles each side. It was the seat of 180 magistrates who tried civil law cases and again things change but not always that much. The Basilica of Constantine and Maxentius was the largest building in the Forum being erected in 308 AD. The three vast coffered barrel vaults seen in this 1865 photo only form one side aisle. The central hall was much larger. The entrance



dates to the Renaissance. The basilica has been an inspiration for a variety of artists, including Michelangelo when he designed the new St Peter's.



And here is the lovely lady Lois Lillian inviting all and sundry to join her guided tour of the Emperor's palaces on the Palatine Hill at the eastern end of the Forum.

There were numerous theatres in Rome, the most notable

being the theatres of Balbo, Pompey and Marcellus.

The Theatre of Marcellus was begun under Julius Caesar and completed by Augustus in 13 BC. The travertine semicircular building has two arcaded



storeys and an attic reaching a height of 33 metres. It held 15,000 spectators.

Theatres had gradually dropping rows of seats leading to a raised stage behind which was an elegant wall with several rows of columns and niches containing statues, marble facings and mosaics.

Perfect acoustics were due to an aggregate of subtle architectural features.

Most performances were tragedies or comedies, but theatres were also used for lottery draws, competitions and the distribution of food and money.

Noble families used it as a fortress and later a palace with gardens extending to the nearby Tiber River. The lower arches were occupied by humble dwellings and workshops.

The three columns and frieze are remains of the Temple of Apollo.



Emperors were dab hands at erecting arches, mostly dedicated to themselves. The Arch of Constantine celebrates his victory over his rival Maxentius.

Legend has it that before the battle a cross appeared to Constantine and the voice of God told him "With this you will win".

Constantine decorated the shields of his army with crosses, attacked Maxentius – and wouldn't you know – won.



There are no crosses on the arch, because the legend was invented later, when Rome became a Christian city.

The Arch of Titus celebrates the victory of Titus and Vespasian in Judaea. Bas reliefs inside the arch show Roman soldiers carrying the spoils from the Temple of Jerusalem. The Arch of Augustus was erected in Rimini in 27 BC in honour of the Emperor and his road building. The Pont d'Augusto is seen crossing the River Marecchia.

The Arch of Trajan was erected in AD 114. It is the most elaborately ornamented arch to survive, with bas reliefs depicting scenes from the Emperor's life.



And I show this not for the side view of the Arch of Constantine but because of the ruins of the apse of the Temple of Venus & Rome, planned by Emperor Adrian – starts with A and not H – who fancied himself as an architect. Apollodorus the official architect of the previous emperor Trajan, was harsh in his criticism of the shape of Adrian's Temple. Not one to take criticism lightly, Adrian had Apollodorus's head lopped off.





The Arch of Septimus Serverus on the Sacred Way in the Forum. Originally, the inscription on the top of the arch was to Septimus and his two sons Caracalla and Geta. After Septimus died Caracalla murdered Geta and had his name removed. The resulting depression in the stone can still be seen. The three arches of the Temple of Vespasian are seen, and the Temple of Saturn and the Column of Phocas. many offices. State storehouses provided food for the poor – good social attitudes for those times.

The Torre delle Milizie was built for defence purposes. Legend had it that Nero was fiddling in the tower while Rome was burning, but this was hard to substantiate as the tower was built about 1000 years after Nero died.





Trajan's Markets were the Ancient Roman equivalent of the modern shopping centre – they were 2000 years ahead of their time. This huge complex was built by the Emperor Trajan and his later unlucky architect Apollodorus of Damascus in the early 2nd century AD.

The semicircular building has six terraced floors containing over 150 shops (selling all sorts of goods) and offices, and contained an internal huge market hall over two storeys in height.

Foods such as fruit, vegetables, meat, fish and spices were sold on the lower terrace, with oils and wine in the upper. More special goods were sold in the great hall and other shops in the upper terraces which also housed And if you want to see the powers of restoration, this is the market in a 1911 photo, and that's the lower terrace.



The Roman baths could be considered wonders of their age, because of their splendid size and architecture and the wide spectrum of activities they provided for the citizens of Rome. The huge complex of the Baths of Caracalla was opened in AD 217 and occupied a site of 11 hectares. The halls were huge. This is just a very small segment of the baths so you can imagine their enormous size.



In the central part was the monumental bath house, surrounded by rooms appropriate for other activities associated with bathing. The fittings were luxurious. The walls were covered with marble, mosaics and frescoes and adorned with fine paintings and sculpture.

Water was held in huge cisterns containing 2 million US gallons – 8000 cubic metres – and the technical facilities were in the cellars.

A typical session started with a Turkish bath or calidarium – a huge hot room with pools of water to provide humidity. Next was the luke-warm tepidarium, and then time in the frigidarium, a large central meeting place for relaxation and conversation, followed by a dip in the natation – an open air swimming pool – and possibly a massage with a scented woollen cloth.

There were many other facilities – gymnasium, sports areas, boxing and wrestling centres, massage facilities, medical centres, concert and lecture rooms, shops, offices, inns, Latin and Greek libraries, art galleries, gardens and even a shrine to Mithras – a complete leisure centre and place for social intercourse, and far in advance of anything we have today. Sixteen hundred bathers could be accommodated at one time and entrance was free.

The Baths of Diocletian (below) were built between AD 298 and 306 and surpassed all other baths in magnificence and extent. They could accommodate 3000 bathers at a time. This is a rear view where we see the domed tepidarium and basilica.





The domed tepidarium is on the right, the frigidarium at the back of the very tall central basilica with cross-vaulted ceilings and mosaic decorations and the natation on the left.

They had the same extra facilities as the Baths of Caracalla plus the pragmatic addition of a brothel.

When Pius IV gave the site to the monks of the St Crose Michelangelo converted the central basilica together with the side buildings into the church Santa Maria degli Angeli with the form of a Greek cross.





The nave is long so the transepts are longer than in most churches. It has impressive red granite columns and groined vaulting, and I found it to be a memorable church – quite apart from its origins.





The Aurelian Wall was one of the most impressive structures of Ancient Rome and also of Europe at that time in 270 AD. It is still mainly intact.

It was 6 metres (20 feet) in height rising to 33 feet in places. At intervals of 30 metres 381 towers projected from the wall. Eighteen gates allowed entry to the city.

The wall enclosed the 7 hills of Rome and the entire suburbs in the 3rd century. It continued as Rome's main defence against marauding barbarians until 1870 when troops of the Kingdom of Italy breached the walls and took Rome.

The Porta San Sebastiano is the largest, most impressive and bestpreserved gate in the wall. It was named in 395 AD because the Appian Way exits from the gate and leads to the popular place of pilgrimage – the Basilica and Catacombs of San Sebastiano.



The Porta San Paolo is so named because St Paul walked through it on the way to his execution.

The Pyramid is the tomb of Caius Cestius, a wealthy magistrate. It is 118 feet high and was built before the Aurelian Wall but was incorporated into it. By its side is a cemetery with the tombs of Keats and Shelley.



Beside the Porta Latina is the small octagonal Chapel of San Giovanni in Oleo – St John in Oil – commemorating the place where the Emperor Domitian plunged the disciple into a cauldron of boiling oil. Before you all go into deep mourning, there's a happy ending. As St John emerged unscathed the emperor recognized his magical powers and banished him to the Isle of Patmos.

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The emperors were not hesitant about whipping up a column surmounted by a statue of themselves, or purloining an obelisk from Egypt.

In front of St Maria Maggiore – regarded as the greatest of Roman churches dedicated to the Virgin Mary – is the only surviving example of a series of columns built to adorn the Basilica of Maxentius in the Roman Forum.



And not to be outdone at the rear of the church is an Egyptian obelisk moved here from the Mausoleum of Augustus.



The column erected for the victories of Marcus Aurelius in AD 180 in the Piazza Colonna which some time ago was the café centre of Rome and the only place in the city where coffee was roasted. As often happened, the statue of the emperor on his finely carved column with spiral relief decoration was replaced by the Pope with a statue of St Paul in 1587. A staircase of 190 steps is inside the column.



The Quirinal Palace sits atop the highest hill in Rome. It is the residence of the Italian President so the occupant is frequently changed.

The obelisk was taken from the Mausoleum of Octavian

Augustus. The statues on either side of the obelisk are Castor and Pollux.

In the Republican era there was a widespread practice of copying the excellent Greek original sculptures brought back to Rome by the conquerors.

This is a 2nd century BC example in white marble of the terrible struggle of the Trojan priest Laocoon and his two sons against the two serpents who are crushing them to death.

However the Romans could do excellent work as seen in this bronze statue of Brutus Capitolinus from the 3rd to 4th century BC. It is





the only extant portrait of a Roman from the middle of the Republican period.



And here is a copy of the bronze equestrian statue of Marcus Aurelius in the centre of the Campidoglio on the Capitoline Hill. The original is now in the Piazza Nuovo.



The Marforio fountain statue of a river god from the 1st century AD.

VISITORS' CHECKLIST

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The twisted torso was part of a Greek statue of a discus thrower. An 18th-century French sculptor, Monnot, made the additions that turned him into a wounded warrior.

> Red Faun Found at Tivoli, the famous red marble yr is a 2nd-century AD version of a Greek original – an example of Hadrian's fondness or all this s Groot

* Dying Galatian reat compassion is conveyed in this Roman copy of an original Greek work of the 3rd

The Discobolus, originally a discus thrower, later converted to a wounded warrior. Red Faun and Dying Galation are all Roman copies of Greek originals.

Whereas the Portrait of a Flavian Lady, the statue of Marcus Aurelius and Alexander Severus proudly holding up the head of Medusa the Gorgon after he had killed her in her sleep are Roman originals from the 1st to 3rd centuries respectively, Alexander Severus was not exactly the gentleman warrior.

Circus of Flamini Circus Maximus Domitian's odeu Balbo's theatre Theatre of Marcellus Pompey's theatre Domus Augustana Tiberius's palace Peace forum Trajau's forum Trajau's forum Temple of Serapis Temple of Divus Claudius Constantine's baths Caracalla's baths Flavian amphithe Titus's baths Trajan's baths Diocletian's baths



Circuses or stadiums were an integral part of Imperial Rome as they kept the citizens entertained, and therefore docile. In this restored model at the top left hand third of the diagram is Domitian's Stadium. Just below it are the Odium and Circus of Flaminus. Below this are Pompey's Theatre, Balbos Theatre and the Theatre of Marcellus.

At the top of the middle third is Constantine's Baths and below it the adjoining Forum of Trajan and the Peace Forum. Below that is Tiberius's Palace adjacent to the much larger Domus Augustus with its rooms and balcony overlooking the massive Circus Maximus.

At the top of the right third is the Baths of Caracalla. Below it is Trajan's Baths adjacent to Titus's Baths which are just above the Colosseum with the massive Temple of Serapsis below.

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The Circus Maximus in its heyday. It was 650 metres long and 170 metres wide and could seat 300,000 people. The arena was faced in marble.

The two metre high spina ran down the centre of the arena. A chariot race consisted of seven circuits of the arena.





A chariot race from Roman times – I know I can't fool you – it's from the 1959 film Ben Hur.



An aerial view of the Piazza Navona built on the site of Domitian's Stadium which in the 1st century AD could seat 33,000 people.

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In the centre is Bernini's 17th century Fontana dei Quattro – Fiumi with the pyramid rock formation supporting the Egyptian obelisk and the four great rivers of the world represented by four giants at the base.

Opposite is the church of St Agnese in Angona, on the site where the young St Agnese was martyred.

In an attempt to humiliate her and convert her from her faith, she was stripped naked before a crowd – some even say in a brothel – but by a marvellous miracle her hair immediately grew down to her ankles covering her body and preserving her modesty.

The great building achievements of the Ancient Romans were due to a number of factors.

A succession of emperors were patrons of architecture – Augustus, Nero, Vespasian, Trajan, Septimus Severus, Caracalla and Diocletian.

The main architectural factor was the development of the semicircular arch made possible by the use of wedgeshaped or tapering stones forming an arc. This led to the construction of barrel vaults, and where they intersected, groined vaults. Then followed the development of the semicircular and then the circular dome and enclosure of increasing spaces under the dome.

Also fundamental was an increasing understanding of the use of concrete in building, coupled with an abundant supply of lime, sand and labour.

By the mid-1st century AD the Romans had mastered the use of pazzolana, a reddish volcanic sand which made a hardy, light, strongly setting concrete for vaults and domes.

In the latter stages of the Empire brick tended to replace stone as the preferred building material.

The Romans' great engineering skills allowed them to construct comparatively enormous buildings with apparent ease. They used lifting devices such as winches, tackles and levers to move heavy materials into place much more easily than previously. Specially trained workers made for more efficiency.

Buildings and monuments, both secular and religious, were part of a planned composition in the public space of the Roman Forum. The houses and dwellings were arranged around the Forum in a grid like a military camp.

The architecture of the Roman Empire was a dramatic change from that of previous civilizations.

The Romans discovered that organization of internal space could be as important as the external appearance of a building. Their predecessors the Greeks, Minoans and Egyptians, focused much more on external appearance. This was mainly because their architecture was based on a rectilinear layout (i.e bounded or characterised by straight lines) with mainly horizontal roofs. The roofs mainly consisted of stone slabs, but these were of limited length so that the rows of columns supporting them had to be close together, preventing the development of internal spaces.

This is well illustrated in the magnificent complex of the Egyptian Temple of Amon at Luxor started in 1530 BC.

One enters between two enormous stone pylons, which look like solid stone walls, the larger of which is 113 metres wide by 43 metres high, leading to the Great Court with a colonnade of massive columns on its left wall. This leads to the great Hypostyle Hall.

The central passage of the Hypostyle Hall is lined by 16 huge columns on each side, with a further 8 columns extending outwards from each of the 16 on both sides, creating a building of 144 massive columns in rows. This creates one of the greatest religious monuments ever built, covering 5500 square metres. This is large enough to fit in both St Paul's in London and St Peter's in Rome – but without any meaningful internal space. And this is only a small part of the entire complex which is 500 metres by 500 metres in size. The same principle applies in a lesser degree to the Luxor Temple, the Temple of Horus at Edfa, the Temple of Kom Ombo, The Temple of Isis on the Island of Philae, and in a different way to the Temple of Hat Shep Sut dramatically situated at the foot of the Theban Cliffs.

The most dramatic expression of Egyptian building was the Pyramids, especially as they were built over 4,500 years ago, and remained the tallest man-made structure in the world until the 19th century AD.

These were giant tombs whose primary aim was to impress with their magnificent external appearance, but they were also made for permanence and concealment of a grave never meant to be seen by mortal man. They were the greatest mausoleums ever built.

For their time and with the facilities available the Egyptian architects, engineers and builders were magnificent and come a close 2nd to those of the Roman Empire who win because of their immense spread of activities.

During the 15th century BC the Minoans from Crete culturally dominated the whole Aegean area. However, the massive eruption of Santorini in 1470 BC ended the Minoan dominance and destroyed most of their architecture.

Mainly from 500 BC the Greeks – or Hellenic Civilization – built temples with one row of columns around the periphery and much decoration of the frieze. Inside was a rectangular stone structure – the cella – containing an altar, a statue and the treasury, but minimal ornamentation. So their main aesthetic attraction was their external appearance. Compare this with the Pantheon whose exterior – apart from the immense portico – has minimal external decoration, but whose interior has unique aesthetic and functional attractions.

One thousand years on from the Romans, and largely due to the mediaeval warm period on earth, the greatest flowering of ecclesiastical architecture in the history of mankind took place, but I don't think they compare with the achievements of the Romans. Now, a further 800 years on, enormous gains have been made in a multiplicity of fields, but taking into account the incredible advances that have been made in a wide variety of scientific fields to allow these gains, I think the Romans easily take the prize.

I am profoundly grateful to Garry Warne for typing and editing of this and previous essays.



Photo by Garry Warne

Lessons around my teachers and mentors

Samuel Menahem

How does one apportion the contribution of those that help mould your professional development and subsequent practice? We all have benefited from the many teachers, mentors and role models dating back to childhood, school, university and postgraduate training as we evolve from student to clinician, ultimately joining the ranks of our proud profession whether as a general practitioner or specialist – in my case that of paediatrics. It may nevertheless still be reasonable to focus on one or more individuals who have been especially meaningful in our development and who have had an ongoing impact on our professional life.

At a personal level three come to mind – Professor Vernon L Collins, the Foundation Professor of Paediatrics at the University of Melbourne, Dr Alexander W Venables, the first Director of Cardiology at the Royal Children's Hospital (RCH) Melbourne, and Professor Arthur L Clark, the Foundation Professor of Paediatrics at Monash University. How does one weigh their contribution and influence to do justice to them, while at the same time recognizing others who may also have made important contributions?

Professor Vernon Collins

Professor Collins helped shape the development of many young graduates who then went on to train





as paediatricians, attracted to the specialty by his association with them. His dignified, concerned and caring manner provided an important role model to emulate. In the then environment where clinical teaching focused on the medical (somatic) aspects of diagnosis and management, Professor Collins was one of the first to emphasize the importance of understanding child development with all its implications. He emphasized the relevance of the child within the context of the family as well as highlighting the important role of the mother. How did he influence my development?

Professor Collins encouraged an open and enquiring mind to explore these important psychosocial issues, still a gap in my then knowledge and experience. To address these gaps I sought out additional lectures, courses, workshops etc. which further explored these issues self-directed lifelong learning, the quintessential goal of medical education. Clinical experience was achieved by attending the Department of Psychiatry at the RCH with appropriate supervision. That experience was further enhanced by undertaking training as a child and adolescent psychotherapist over the next several years again with appropriate supervision. The aims were to better communicate with the child or adolescent and to acquire a greater understanding of family dynamics. The experience and the insights gained by this long term supervision translated to my daily clinical work, as I evolved into a psychologically orientated paediatrician and subsequently to a psychologically orientated cardiologist, as documented in multiple publications.

Initially working in an ambulatory setting I struggled in managing the so-called crying or "colicky" baby. I questioned the then construct of it being caused by abdominal "colic" best treated with Atropine and Phenobarbitone. My first paper on the subject was dedicated to Professor Collins who introduced me to the concept of an active alert baby who was more likely to cry, in contrast to a quiet placid infant who rarely cried. I also began to explore the role of the consultant paediatrician, the ongoing care needed by those with chronic illness, and made additional observations on such important issues as recognizing the non-presenting problem in clinical practice, seeking out the hidden agenda or second diagnosis which needed to be addressed to improve outcomes, while trying to understand why some parents remain noncompliant despite being offered good advice and sound recommendations.

Professor Collins' relationship with his students was unique. That was epitomized by him addressing each by his or her name on his very first contact with them. That caring approach has permeated my own dealings with students, whether teaching at the bedside, mentoring, or undertaking supervision of their research endeavours. Such a commitment to students and post-graduate trainees remains only second to the commitment to one's patients.

Dr Alexander W. Venables

Dr Venables was an astute clinician. He maintained his general paediatric skills while pioneering paediatric cardiology in Australia and establishing the Paediatric Cardiology Department at the RCH. He was selective as to whom he would train and demanded and expected the highest standards which at times extended beyond his



fellows to colleagues. From Dr Venables one learnt the importance of developing an honest awareness of what one knew together with what one still needed to know. That again fostered a lifelong learning imperative to acquire new knowledge and skills in an ever-changing and evolving subspecialty of paediatric cardiology, one of medicine's success stories. The role model he displayed helped ensure the highest clinical standards which extended to any academic endeavours pursued, as was reflected in the multiple revisions undertaken before submitting papers arising from my MD thesis. The latter approach has persisted to this day.

The exposure to an apprentice-type teaching experience that Dr Venables provided has extended to my dealings with students, trainees and even colleagues, being mindful as each struggles with new knowledge and skills. Like him I maintained my general paediatric skills so as to achieve a better understanding of each patient seen, though seeking help from others for issues beyond my expertise or their cardiac problem. Dr Venables considered that much of what was published in cardiology related more to an audit of the everchanging current practice. He respected and applauded the few who made significant contributions towards the understanding of a subspecialty which still carries a significant morbidity and appreciable mortality.

Meticulous with his clinical signs and the physiological data he acquired as a master in cardiac catheterization, Dr Venables also recognized the importance of the psychosocial issues affecting his patients. He ensured that every child admitted into his Department was seen by the Senior Medical Social Worker attached to it. At the RCH Centenary Scientific Meeting in 1970 she reported that almost a third of the parents she interviewed separated after having an infant or child with a serious heart abnormality. That experience together with my background in paediatrics influenced my subsequent direction to further explore the psychosocial and ethical issues related to congenital heart disease which formed the basis of my Higher Doctorate. The multidisciplinary studies that were developed allowed for an ongoing appreciation of the important contributions to these issues by the allied professionals involved, issues that have become increasingly important following the substantial improvement in clinical outcomes arising from significant advances in medical and surgical interventions.

Professor Arthur L. Clark

Professor Clark had the important task of setting up a second academic unit of Paediatrics at Monash University while being cognisant of the reputation of the well-established and internationally recognized RCH. In addition to that almost overwhelming task, he had to ensure that the clinical service provided was of a comparable standard.

In his wisdom he concentrated on developing the neonatal services as they were complementary to the obstetric services already provided at the then Queen Victoria Hospital and its subsequent relocation to the Monash Medical Centre. He also appreciated the continued importance



of the general paediatricians in a setting of increasing sub-specialization, recognizing that most referrals to the subspecialties arose from them in their day-to-day care of infants, children and adolescents.

The sterling research output from the newborn services prevails to this day, with spin offs into basic research and related fields.

Professor Clark with his all-embracing, polite and understanding approach, was able to create an inclusive and co-operative environment in which to work.

In addition to his area of specialization in paediatric haematology and oncology, he too adopted a holistic approach to patient care, further reinforcing the influence of my earlier examples and which continue to guide my own practice.

He had a way of getting the most out of those working with him, being generous in his praise of any achievements made.

He fostered close co-operation between the various members of his staff, which has resonated in my own dealings with junior and senior colleagues.

That experience has also resulted in me working closely with others from multiple subspecialties, in addition to continuing to engage with allied professionals in ongoing studies, learning from them and reflected in multiple publications.

Prof Clark's quiet and unassuming manner whether towards students, junior staff or senior colleagues has continued to have a profound influence on my own clinical practice and professional dealings.

Despite his retirement, he has continued as a mentor to me and others and provides a role model for all to emulate. To quote the late Rabbi Lord Jonathan Sacks, "Good leaders create followers. Great leaders create leaders."

Concluding Remarks

Some may consider that writing this tribute may be an indulgence. For those still navigating through the early stages of their professional career, acquiring the skills as a generalist or consultant, and for those who have been in practice for some time, the opportunities in medicine and in my own discipline of paediatrics are immense and all engaging. The directions one can take are varied and exciting, each potentially able to enrich one's professional life and counter against the not infrequent "burnout" seen at times among our peers. It may be helpful to reflect on one's own past experiences and the influence it has on one's development to-date. Professor Collins emphasized the importance of understanding children in the context of their families. That in turn encouraged acquiring an increasing self-awareness to achieve the best therapeutic outcomes. Dr Venables demonstrated the need for rigour and competence in one's field of sub-specialization, fostering a lifelong pursuit to acquire new knowledge and skills. "Remember your failures and not your successes" if you wish to improve your performance - counselled a famed cardiac surgeon. Professor Clark's cooperative approach and respect for his colleagues helped achieve the best from each while at the same time focusing on the needs of the child patient.

The importance of supporting, mentoring and being mindful of the difficulties experienced by one's students and young graduates remains paramount. That virtue was emphasized by all three of my teachers and mentors highlighted. To again quote Rabbi Sacks, "The good we do lives on in others and it is one of the most important things it does".

Acknowledgements: Dr Kevin Collins, Ms Prue Venables, and Professor Arthur Clark kindly shared with me their thoughts and insights.

Viewing medical care for trans youth through a child rights lens Where are we currently at in Australia?

ONLINE MEDICO-LEGAL SEMINAR



Thursday, 21 October 2021, 5.30pm – 7.30pm

Co-chairs: The Hon Alastair Nicholson AO RFD QC, Chair of CRI and Ruth Wraith OAM, President, RCH Alumni

Associate Professor Michelle Telfer is a Paediatrician, Adolescent Medicine Physician and Director of the Department of Adolescent Medicine at The RCH Melbourne. She is the Director of the RCH Gender Service, being instrumental in the development and expansion of clinical and research programs for trans-medicine in children and adolescents. An advocate for improved access to medical treatment, Michelle was central to the achievement of federal legal reform in 2017, increasing access to hormone and surgical treatment without the need for authorisation of the Family Court of Australia. She led the development of Australian Standards of Care and Treatment Guidelines for trans and gender diverse children and adolescents.

Justine Raczkowski is a lawyer with 25 years of legal experience both in private practice, at the Victorian Bar, and since 2007 in-house in private and public health settings. Her interest in Children's Rights began while studying the subject as part of her Master of Laws at the University of Melbourne under Professor John Tobin and led to her successfully submitting a minor thesis examining the relevance of the Convention on the Rights of the Child to medical procedures involving children. She currently works as Legal Counsel at The RCH while she and her husband raise their two children, aged 15 and 12, who both inform and inspire her passion for Children's Rights.

Professor John Tobin holds the Francine V McNiff Chair in International Human Rights Law at the Melbourne Law School where is he the Co-Director of the Human Rights Program. He has published widely on the right to health and children's rights and is the editor of The UN Convention on the Rights of the Child: A Commentary (OUP 2019).

Dr Anja Ravine works at The Children's Hospital at Westmead as a genetic pathologist. Anja is transgender and several RCH alumni (1984-1993) will recall Anja as David, a post- graduate trainee in paediatrics and later in clinical genetics. Anja offers the following brief commentary, particularly for old friends and colleagues who may be in the audience: Similar to the experiences of many others, my innate sense of gender and associated discord with the biological reality has been a longstanding source of unease. Self-recognition and later self-acceptance took years, particularly in a world where the social cost arising from personal honesty can be so high. Looking back, it's apparent that too much time and energy was spent hoping that it would all go away. Now I see it as a personal strength and a more sanguine Anja continues on.

Register at tinyurl.com/CRI-TransYouth

The number of participants is strictly limited to 100 and places will be allocated on a first in, first served basis. Contact for information: Honorary Secretary, RCH Alumni – <u>rch.alumni@rch.org.au</u>











Something to sing about!

Christine Rodda



By way of introduction, although my husband, Elsdon Storey and I met during our medical course, it was our shared love of singing that brought us together.

Some of you may remember an article I wrote for this Newsletter in 2017 about my first experience of singing in an opera chorus, for Melbourne Opera's production of Wagner's "Lohengrin".

Having stepped down as Unit Head of Paediatric Endocrinology at Monash Medical Centre several years previously, and moving to a less demanding position at Sunshine Hospital, for the first time in many years I had the time to be involved in such a venture, and it was an inspirational experience.

Following "Lohengrin", I sang in the chorus for another of Melbourne Opera's Wagnerian operas "The Flying Dutchman" in 2019 and in Beethoven's "Fidelio" in 2020. Melbourne Opera's production of Verdi's "Macbeth" was staged at her Majesty's Theatre in May this year, and performed to critical acclaim!

It may have been considered a rather gloomy choice given the COVID pandemic, which continues to cripple the music industry.

Singing in particular is recognised as being many times worse in spreading COVID compared with speaking quietly. Why had Melbourne Opera chosen to put on such a long opera, demanding a large chorus of witches, soldiers and peasants at this time?

As you can see from the photograph above, it was indeed a large chorus. My head and left shoulder can just be seen at the left hand end of the back row!

COVID aside, Macbeth provides a wonderful vehicle to showcase an outstanding coloratura singing actress, who has an impeccable vocal technique and can convey the treacherous and manipulative character of Lady Macbeth, a role that few sopranos on the international stage have conquered over the years.

Melbourne Opera is also gaining a reputation for their fine chorus work. So, despite COVID travel restrictions, and with fortuitous access to local Australian opera singers -usually engaged in singing roles overseas or otherwise unavailable - to sing the 11 principal and various minor roles, and the large chorus required to stage this opera successfully, Melbourne Opera was in a strong position to perform this demanding work.

Returning to the role of Lady Macbeth, an absolutely stunning and spellbinding performance was provided by Melbourne's Helena Dix, with the role of Macbeth magnificently sung by baritone and fellow Melbournian, Simon Meadows. Macbeth, the manipulated and tormented husband who Lady Macbeth wants to be King of Scotland at all costs, is utterly conflicted about these ambitions.

This drama was convincingly played out by these two throughout, in their solos and duets, and on a shared the stage with the chorus.

As an opera singer, Helena Dix has spent recent years at the Metropolitan Opera House in New York and last year in London, where in April she tragically developed life-threatening COVID complicated by a large pulmonary embolus.

After some time in an Intensive Care Unit, Helena slowly rehabilitated at her home in London, initially hardly able to sustain even a note or two.

A year later, after her successful rehabilitation, Miss Dix returned to Australia and the operatic stage to sing the role of Vitella in Mozart's "La Clemenza di Tito" in the ACT. Meanwhile the chorus started working on Macbeth, and given the demands of this opera, I was grateful that my retirement as paediatric endocrinologist at Sunshine Hospital coincided with commencement of chorus rehearsals.

At our first rehearsal the excitement was palpable, being able to sing together again after more than a year.

The last occasion had been in Beethoven's "Fidelio" in February 2020, just before Melbourne's first COVID lockdown. However, I must confess, even though there was no COVID in the community at that time, to feeling a little nervous about singing with so many other singers without masks, and relieved that due to warmer weather at the time, we were able to achieve good cross ventilation by keeping a couple of strategic external doors open at the rehearsal venue.

Some of the chorus members, including myself, had also received their first COVID vaccinations. However the level of professional responsibility required remained high with regard to OH&S. This meant strict adherence to QR code sign in, not attending rehearsals or performances if unwell, getting COVID tested if unwell, and not attending rehearsals or performances until negative tests were obtained.

Production week was also extremely demanding for all, with consolidation of all the Italian lyrics together with

at times challenging choreography and several costume changes, particularly for many of the chorus members. Yet it was all worthwhile when it came to the actual performances, singing such glorious choruses, and hearing the wonderful soloists.

Helena Dix's performance would have been considered stunning pre-pandemic, but for me as someone also medically trained, I was absolutely awestruck by her performance and so grateful to modern medicine that enabled her to survive and to return to the operatic stage.

The final performance was recorded by Melbourne Digital Concert Hall, which was established during Melbourne's 2020 COVID lockdowns to support online enjoyment of quality music performed with or without audiences, and with all proceeds going to support the performing artists.

This last performance was also particularly poignant at it was Helena's 41st birthday, and following the curtain calls, the entire cast sang the most wonderful "Happy birthday" to her on stage – may she have many, many happy returns!

Returning to the original choice of Verdi's opera "Macbeth", it is rarely performed in its entirety due to the demanding role of Lady Macbeth and the large chorus required.

Yet despite the gloomy subject matter of Macbeth, its themes of politics and treachery, and their impact on ordinary people remain remarkably contemporary. Macbeth was also a personal favourite of Verdi's throughout his long lifetime, and indeed Verdi had greatly admired Shakespeare from his youth.

Macbeth was the first of his three Shakespearian operas, and to construct the necessarily streamlined dramatic interpretation required for opera, he simplified Shakespeare's original dense and complex script, and focussed on Macbeth, Lady Macbeth and the witches (expanding Shakespeare's original number of three by tenfold!).

Verdi himself established the dramatic construction of this opera before giving it to his librettists to develop further.

The opera successfully premièred in Florence in 1847, however an 1865 revised version performed in Paris was very poorly received.

Verdi was criticised by many that he did not understand Shakespeare, and this wounded him greatly. Yet as an opera, Macbeth has stood the test of time to convey "theatre, patriotism and character" as Verdi intended.

Melbourne went into lockdown immediately following that memorable final performance, but even COVID had not been able to prevent this production of Macbeth!

Turning points in Physiotherapy at RCH

Anne T McCoy AM

Many turning points have influenced the development of the physiotherapy profession in Victoria since the early twentieth century. Whilst highlighting many of them, I will reflect particularly on those that have personally affected me since my relationship with physiotherapy commenced in the mid-sixties.

The first physiotherapists (then masseuses) were honorary positions and began in 1902. Formal education of physiotherapists with the University of Melbourne (UOM) commenced in 1906 with the Children's and Melbourne Hospitals. The course involved medical theory and clinical practice at the University and a 12-month placement in physiotherapy practice in recognized hospitals.

The essential contribution of physiotherapists to adult rehabilitation, through electrical modalities, exercise, massage and baths, was recognised during The Great War, but the particular needs of physiotherapy for children was highlighted with the polio epidemics beginning in 1908.

In 1928, Dame Jean Macnamara, a medical practitioner, was appointed to oversee the Children's Hospital's new physiotherapy department. Three decades later a turning point occurred when Dame Jean appointed Val Irwin as the first physiotherapist to head the physiotherapy department. The service was predominately outpatients with a focus on children with disabilities and respiratory conditions.

The relationship of physiotherapy to the UOM continued to grow until the 1960's with medical sciences taught within university departments and physiotherapy subjects at Fairfield Hospital which was the site of the first Physiotherapy School of Victoria, indeed another turning point in our professional development.

In 1964, following Matriculation, I was delighted to accept a place in the Physiotherapy Course which was then undertaken between UOM and Fairfield Hospital. In total we were 53 undergraduates, predominately women but included 5 men.

At the University I loved Anatomy, in particular dissection and its associated tutorials, along with other subjects, Pathology, Physiology and Psychology. A weekly session in Physical Education on Friday afternoons after meeting school friends in the Café, filled me with dread thinking about the vaulting horses! One of the disused wards



was the venue at Fairfield Hospital for our lectures, e.g. in medical electricity and practical sessions regarding the assessment of movement. We would elevate the iron beds on wooden blocks to undertake postural drainage. Massage techniques and graduated muscle strength exercises with and without gravity, developed in the polio era, were instrumental in our learning, holding us in good stead for our future careers.

The informal setting of Fairfield along with the small number in the course created a great camaraderie, yet the travel between the 2 sites and home could prove challenging. Thank goodness for Morgan Murphy and Marg Picking who owned cars!

At the completion of the 3-year Diploma Course, my registration to practice was granted by the Masseuse Registration Board of Victoria and I gratefully prepared to commence my preferred career in paediatrics with Val Irwin as Head of Department.

At a professional level, a further turning point occurred when Physiotherapy education was transferred from Fairfield Hospital to Lincoln Institute of Health Sciences. In 1975 it awarded physiotherapists with a 4-year degree qualification. The relationship with the University of Melbourne continued.

In 1970, whilst working for a brief time at Great Ormond Street in London I was informed that Val Irwin had resigned to establish services for children with physical



1989 - Physiotherapy students on Campaign March (courtesy of Jennifer Lake)

disability at the Queen Victoria Hospital. On my return to RCH, I was offered the Deputy Head position by Pam Crompton (nee Jones) who remained Head of Department till 1974 when she resigned to have a baby. At that time, I was appointed to the position.

The next two decades witnessed a growth in our professional identity. In 1976 a major step towards professional independence occurred when the medical referral ethics was rescinded. Interest in PT as a career grew. Consequently, the demand for undergraduate placements grew too.

The academic staff at Lincoln were concerned by a lack of career path, heavy teaching commitments, without support or a vision for research. Decisions were being made by academic men, not members of the profession, often without consultation of the physiotherapists themselves¹.

Their colleagues, the hospital clinicians accepted their professional responsibility to educate undergraduates, as our senior colleagues had done for us. Yet there was concern and perhaps even resentment that this significant commitment was not acknowledged, nor financially remunerated, in comparison to our medical colleagues.

The demand for greater professional autonomy became a potent force to drive change and initiate a major turning point for the profession. At that time there was a proposal for Lincoln to merge with La Trobe University. La Trobe did not have a Medical School and we believed that Anatomy and its associated subjects were a pivotal core of our physiotherapy education. From a personal viewpoint, I believed Melbourne was our rightful University home, following in the path of several family members.

The campaign for Physiotherapy at UOM became a very difficult, protracted, and political process. We were thankful for the dedicated members on our Campaign Committee who drove and guided us spending countless hours in negotiation and keeping us up to date with the current state of play. The profession received enormous support from numerous sources within the community in particular the medical and university fraternity, along with some politicians.

Each of us contributed in different ways to the Campaign, writing letters, speaking to our local members of Parliament, even talk-back radio!

Finally in late 1989 the Campaign involved a march of physiotherapists and students up Bourke Street to Parliament House (pictured above). Marching through the city was not considered lightly, however it indicated our frustration with the lack of government action with the process dragging on and on without resolution.

At the same time the strike and withdrawal of clinical education also indicated the seriousness of our

profession's determination. It was a troubling time for students concerned about their clinical placements and the impact on their ability to graduate. This situation was resolved through mediation involving the relevant parties and the bans were lifted.

Finally in mid-1990 Minister for Education, Joan Kirner announced that a 4-year Bachelor of Physiotherapy course would be established at the University of Melbourne. This turning point ultimately meant that for the first time Victoria would have two Schools of Physiotherapy one at La Trobe, the other at UOM.

In 1991 the establishment of the School of Physiotherapy at the University of Melbourne heralded a new beginning and a major turning point for the development of Physiotherapy in Victoria.



At that time Joan McMeeken (left) was appointed Foundation Professor and Head of School, a position she held till 2007. Joan had undertaken the initial development of the curriculum and the rapid transformation of a large building in Berkley St Parkville which required an urgent refurbishment to accept the first intake of 40 students in the School of Physiotherapy. Joan was RCH Board member 1995 – 2000.

Under Joan's wise direction a collaborative partnership regarding Clinical Education occurred. It was heartening to attend the Clinical Education Committee (CEC) where decisions were made in consultation with the academics and clinicians in the Clinical Schools and the affiliated rural, rehabilitation and community agencies. For the first time physiotherapy at RCH was funded for clinical education.

Elizabeth (Liz) Williams, a highly regarded and experienced paediatric physiotherapist, was appointed Co-ordinator of Paediatrics. Through Liz's commitment and organization, all students undertook a clinical paediatric placement in a hospital, community or rural setting.

The acquisition of post graduate qualifications to undertake evidence base practice through research became a department priority. In the early nineties my concern regarding the variable outcomes of lower limb surgery in children with cerebral palsy was the driver to establish a Working Party at RCH.

A proposal to the Executive RCH was submitted regarding the need to provide a Paediatric Gait Laboratory to ensure surgical decisions were based on objective measures. In 1992, with the support of medical colleagues, Bob Dickens, Malcolm Menelaus and Jeff Rosenfeld, I was fortunate to receive a Churchill Fellowship to travel to centres in UK and USA where Paediatric Gait Laboratories were pivotal to surgical decision making. The knowledge gained through the Fellowship contributed to the first Paediatric Gait Laboratory in Australia.

In 1995, Professor Mary Galea was appointed as Professor, Clinical Physiotherapy UOM which led to a Joint Appointment at RCH. Mary had a strong connection with RCH having worked in her early clinical years at RCH and was a determined advocate for research.

Mary's appointment was a further turning point. She became the catalyst and guide for a significant number of staff to undertake Master degrees and PhDs in various areas of paediatric practice. Brenda Button was the first to complete her PhD which demonstrated that the accepted postural drainage position to remove lung secretions was associated with a significant increase in gastro-oesophageal reflux in infants.

The strengthening of the relationship with UOM resulted in the acquisition of more post graduate qualifications leading to world recognized physiotherapy research and clinical specialist roles when Senior Clinician Physiotherapists were appointed to Triage Clinics. Professor Alicia Spittle (right) was recently appointed Associate Dean of Research for the Faculty of Medicine Dentistry and Health Sciences. Alicia was a physiotherapist at RCH and did her PhD at UOM.



In summary, it has been salutary to reflect on the turning points that have influenced my career as a paediatric physiotherapist, along with the significant developments that have occurred in Victoria since the early twentieth century.



From left: Rachel Kennedy, Anne McCoy, Jane Bartlett (standing) and Liz Williams.

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Turning point

A paediatric endocrinology outpatient clinic on a morning in May 1985: The day the British Press published CJD in previous recipients of human derived growth hormone.

Christine Rodda

In 1985 I spent a year as a paediatric endocrinology registrar at Great Ormond Street Hospital for Sick Children. Having started this position in February that year, by May I had got to know Dr David Grant and Professor Michael Preece, and had already learnt so much from them. They were both wonderful clinical teachers. However, I vividly remember the morning when I was in David Grant's Endocrinology Clinic, and Michael Preece, looking ashen and distressed, interrupted David's consulting, asking David if he had seen the morning papers which had lead stories about CJD occurring in adults who had previously received human derived growth hormone as children (this was essentially growth hormone extracted and purified from human cadaveric pituitary glands). They were both clearly devastated by the news. Human derived growth hormone had been approved for clinical use since the 1950's, and they were all too aware that they were both major prescribers of growth hormone for growth hormone deficient children in the UK.

Not surprisingly both UK and Australia immediately withdrew growth hormone from clinical use following this announcement. At that time, there were 4 adults who had previously received human derived growth hormone and had subsequently developed CJD. Three of these adults were diagnosed in the USA and one in the UK, and they had all died of CJD within a 5 month period from November 1984 to April 1985. Fears of a CJD "epidemic" in those who had previously received human derived GH fortunately did not eventuate, although over the following 7 years a further 19 adults previously treated with human derived growth hormone were diagnosed, an additional seven cases in those receiving USA produced growth hormone (which included a patient from New Zealand and one from Brazil), an additional seven UK cases and five cases in France, with the ongoing expectation that small numbers of at risk patients would still be expected to develop CJD over the ensuing several decades after receiving CJD infected human derived growth hormone.

One unanticipated benefit to a pharmaceutical company at that time called Kabi, was that they had been persistently trying, unsuccessfully, to initiate a clinical trial of a growth hormone releasing hormone analogue [(1-29)NH2] in growth hormone deficient children, under principal investigator Professor Michael Besser



at St Bartholomew's Hospital. Although recombinant growth hormone was being developed for clinical use, UK Government approval for its use was still awaited in mid-1985. With the immediate withdrawal of human derived growth hormone from clinical use and the unavailability of recombinant growth hormone for clinical use being foreshadowed for at least many months or more, these circumstances offered a "window of opportunity" to conduct this trial in growth hormone deficient children. However, the analogue for this clinical trial was at St Bartholomew's Hospital and the growth hormone deficient children were at Great Ormond Street Hospital. Consequently I had the unique opportunity of collaborating with Professor Bessor's then senior registrar in endocrinology, Richard Ross (now Professor of Endocrinology at the University of Sheffield) to participate in undertaking this clinical trial. This work was subsequently published in The Lancet in 1987 (ROSS, R.J.M., RODDA, C., TSAGARAKIS, S., DAVIES, P.S.W., GROSSMAN, A., REES, L.H., PREECE, M.A., SAVAGE, M.O. & BESSER, G.M.(1987). Treatment of growth hormone deficiency with growth hormone-releasing hormone. The Lancet i: 5-8.)

Almost 40 years on, I still find this CJD story very sobering, as it highlights the courage doctors need to have in advancing medical treatments in good faith, for the benefit of their patients, with an acknowledgement that occasionally as in this case, something quite unanticipated with serious consequences to patients may occur.

Our experience in Australia

Garry Warne

In Australia, the Department of Health took advice on the Human Pituitary Hormone Program from the Human Pituitary Advisory Committee (HPAC), which had several subcommittees - the Fractionation, FSH and Human Growth Hormone (HGH) subcommittees. In 1985, I was the Chairman of the HGH Subcommittee. On Tuesday May 29th that year I received a phone call from Professor Les Lazarus, the Chairman of the HPAC, informing me that the HGH program and the FSH program were suspended with immediate effect. This was a very dramatic piece of news to hear because it meant that no child with GH deficiency would receive any further treatment. When the announcement was relayed to the parents, there was a great deal of concern and we were inundated with enquiries. Not only were the children not going to get any treatment, but there was fear that some of them would have been infected with CJD, an untreatable and fatal condition.

Fortunately, 1985 was a year when in the Endocrine Department, we were establishing the first parent and patient support groups. I had established one for congenital adrenal hyperplasia families and another for families of girls and women with Turner syndrome, and by good fortune, George Werther had not long before chosen to establish one for the families of children receiving growth hormone treatment. This meant that we had a ready-made mailing list and that we could readily call the parents to a meeting at the hospital where we could brief them on the situation and answer their questions. Over subsequent months, having this means of communication proved enormously beneficial as we could keep everyone informed of developments and retain their confidence. No child in Australia was ever diagnosed with CJD as a result of GH treatment, but we didn't know that at the time. Sadly, three adult recipients of pituitary FSH did contract CJD and all died.

During the same year, the pharmaceutical companies began testing recombinant biosynthetic growth hormone (rGH), but of course it had not been approved for use by the Pharmaceutical Benefits Advisory Committee. Some parents, particularly in Sydney, began agitating to have rGH approved by a short cut. I was asked by a politician, an assistant Minister of Health, to appear with him on the Ray Martin Show, which was broadcast live from Channel 9. The Minister was jubilant about being on a program



with very high ratings and about being interviewed by Ray Martin. We were held in a side room while Ray warmed up the live studio audience. When we were brought out onto the stage, however, Ray informed the Minister that the parent of a child who was being denied growth hormone in Sydney was on a monitor and wanted to ask some questions. This proved disastrous for the Minister because the parent was (a) a barrister (b) heavily out of pocket because he had chosen to buy growth hormone and (c) aggrieved because his child had leukaemia as well as GH deficiency. He tore the Minister to pieces (figuratively speaking) and didn't let him get a word in edgewise. As we were being farewelled from the stage, the audience actually hissed us! The Minister's media adviser said "Well, you lost that one, boys!"

Eventually synthetic growth hormone became available, much to everyone's relief, and not only was it more readily available, but it was also possible for us to prescribe larger doses and to prescribe it for a wider group of conditions than before. It was the end of one era and the beginning of another.

Vale Helen Rae Noblett

BM BS, FRACS, FRCS Eng. 21/01/1933 -25/12/2020

E Durham Smith

Helen was a pioneering and innovative paediatric surgeon, with outstanding careers in both Australia and the United Kingdom. She was born in Terowie, South Australia, and the family then moved to Queensland, where Helen excelled at the Roma primary and Secondary schools, winning a scholarship to the University of Queensland Medical School, graduating BM BS in 1957. After residency and General Surgery at the Royal Brisbane Hospital, she commenced paediatric training at the Brisbane Royal Children's Hospital, under Mr Des McGuckin until 1963. In that year she moved to the Royal Children's Hospital in Melbourne, Victoria, where she continued training as Registrar to the General Surgical Units of Douglas Stephens (Robert Fowler, Durham Smith) and Russell Howard (Nate Myers, Max Kent). She obtained the FRACS in 1964.

In 1967-68, she gained further experience as a research fellow at the Columbus Children's Hospital in USA, with William Clatworthy and James O'Neill. Returning to Australia she progressed to senior consultancy at the RCH in 1972, in the Russell Howard Unit. This unit specialised in thoracic surgery, including diaphragmatic surgery, oesophageal surgery, etc.

During her time in Melbourne from 1963-1976, Helen pursued research interests in gastrointestinal diseases. In parallel with her clinical commitments in surgery, she worked with Ruth Bishop's pioneering group (who described the Rotavirus, in 1973), and it was at this time Helen devised a device for sampling ganglion cells in rats. It was the basis of the rectal suction biopsy instrument she later designed for the diagnosis of Hirschsprung Disease, an invention in regular use world-wide to this day. She made other contributions to clinical management. In the operative management of oesophageal atresia, she fashioned a gastrostomy with a trans-pyloric feeding tube to enable immediate enteral feeding without the complication of G-O reflux. In long gap atresia she favoured a reversed gastric tube, but later was open to other methods. In 1969 she published two landmark papers — the rectal biopsy suction instrument described above, and the non-operative management of meconium ileus by Gastrografin enema, recognising the value of specific properties in this enema.



In 1976, Helen left Melbourne to become the first paediatric surgeon to be appointed to the Royal Hospital for Children, Bristol UK.

For her career in Bristol, we are indebted to Richard Spicer, a retired paediatric surgeon who worked with Helen, and who wrote the following obituary after her death in 2020:

"Helen arrived in Bristol and had to establish by her expertise and strength of character that she was taking over care of all children with paediatric surgical conditions. Helen was a very strong character and she needed to be resilient. The entrenched views of some senior surgeons and paediatricians in Bristol and the District General Hospitals (DGHs) in the South West were very deep and the task would have been more difficult for a woman in the Seventies. However, within a short time she had demonstrated that her outcomes were as good as any centre in the country and the first battle was won. The next battle was to get Helen a colleague, but it was not until 1982 that David Frank was appointed to share the large workload and develop Paediatric Urology in Bristol. It is difficult to understand how one person coped for 5 years with the workload generated by a population of 4 million, but she did, and to an extremely high standard.

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There is an interesting connection between Melbourne and Bristol concerning oesophageal atresia. The first attempted operation for oesophageal atresia was in 1888 at the Bristol Hospital for Sick Children. Helen performed the first successful primary' repair operation in Bristol 88 years later in 1976. The first successful repair was performed at Ann Arbor, Michigan in 1941. The first in the UK in 1947. Russell Howard performed the first in Australia in 1949.

In Bristol, before Helen Noblett arrived, children with oesophageal atresia were treated by an adult thoracic surgeon, Ronald Belsey. He never attempted primary repair and treated 24 patients by colonic interposition. Presumably, some babies from the South West of England must have bypassed Bristol and been referred to other centres in the UK. It seems extraordinary that Bristol Clinicians did not refer all cases to another centre before she was appointed but it is a measure of her that once appointed all babies were referred to her.

Helen was a scholarly and cerebral surgeon. She published 22 papers on a variety of topics after 1976 and was always innovative and up to date. She served as examiner for the newly introduced FRCS (Paed). She had little taste for managerial or administrative duties and concentrated on her patents, who were the driving force behind her extraordinary energy and stamina. Her patients and their families appreciated how fortunate they were to be under her care and spoke of her with affection and respect.

Helen had exceptional technical expertise and clinical judgement. She cherished the concept of a strong team and glowed in the company of her favourite colleagues and trainees. She took her responsibility as trainer very seriously and many distinguished surgeons from a variety of countries regard her as the formative figure in their careers. These connections live on in Bristol with an arrangement for registrar exchange with Australia.

There was steely side to Helen which was apparent whenever anything threatened to interfere with patient care. 'Tough but fair' was how one trainee described her. Other comments from trainees include 'a hard taskmaster', 'did not take any nonsense', had no time for sycophants or weaklings, but all emphasise how supportive she was to those who she assessed as sensible, competent, and hard-working though they could be sharply corrected when necessary. She was free of prejudice and was a shrewd judge of trainees. She was uncompromising. If a trainee did not come up to her high standards, she made sure they went into a different branch of medicine. Valued colleagues were not immune from her scrutiny. A now eminent professor of paediatric pathology examining a frozen section was surprised to find her at his side. With her eye to the microscope she said "Are you sure you know what a ganglion cell looks like?" When she had reassured herself that he did she did not question his opinion again.

Helen could be seen as eccentric, but her eccentricities had purpose. She carried a large handbag at all times. If it was mislaid that was the junior trainee's responsibility. Its contents included menthol cigarettes (with characteristic fortitude she decided to give up one day and never smoked again), arrowroot biscuits and a tool kit. The biscuits were so that she could work through mealtimes and get on with the next operation, The tool kit (which tended to cause problems at airports) ensured that if there was an equipment failure, she could attend to it herself and get on with the work promptly.

Away from work Helen was cultured and sociable, warm and humorous. She could discuss art, literature and music knowledgeably - Mozart was a particular favourite.

Her annual Christmas party was eagerly anticipated; the food and drink were lavish, and all gathered round the piano (Helen playing) to sing carols. Her relaxation often centred round her canal narrowboat Katkin and she had many amusing anecdotes concerning boating mishaps to tell between operations in the theatre coffee room.

Helen was proud, but reticent about her achievements, not given to self-promotion. Jesus said that "A prophet is not without honour save in his own country" and Helen exemplified this proverb. Carachi in his book "The History of Surgical Paediatrics 2009", makes no mention of Noblett or Bristol in his 14-page chapter on Great Britain. E. Durham Smith, in his chapter on Australia, does, however give her credit.

She was much revered in other countries. In a recent publication, "Vignettes from the History of Paediatric Surgery" (Journal of Paediatric Surgery 2020) which almost entirely concerns USA surgeons, she merits a full section devoted to her achievements. Helen is survived by Dr Maria Spyt her friend and companion for over 30 years, and by her cousin Peter who was born on the same day as her and is still living in Australia.

Helen Noblett deserves to be remembered as a great character and a paediatric surgeon of the highest calibre. Her legacies are her innovations in field, the many departments around the world which she inspired, the large number of children (now adults) who owe their lives to her exceptional abilities and the large and thriving department of paediatric surgery in Bristol today.

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murdoch children's 🗧 🗬 📕 research institute

Research Brief COVID-19 and Child and Adolescent Health

Executive Summary

Why is this issue important?

Global data is constantly emerging about the direct effects of COVID-19 on child and adolescent health. A concise but comprehensive summary is required to enable the best decision making about their health in the context of the global pandemic.

What does the research tell us?

Disease severity

- COVID-19 disease in children and adolescents is rarely severe, and very rarely causes death
- Children and adolescents who have COVID-19 will commonly have no, or only mild symptoms, similar to a cold
- Severe disease is characterised by pneumonia and respiratory distress, and may lead to admission to hospital or intensive care
- Children and adolescents living with pre-existing health conditions, disadvantage, low socioeconomic or minority ethnic status have a greater risk of severe disease from COVID-19.

Delta variant

- The Delta strain does not appear to cause more severe disease than previous variants, but because it spreads faster, the number of children who will develop severe disease and go to hospital will be greater
- More data are needed to describe the burden of COVID-19 that children and adolescents will carry as older cohorts are vaccinated

Medical complications

- Multisystem inflammatory syndrome in children (MIS-C, or • PIMS-TS) is a very rare but serious condition. In Australia there have been four confirmed cases.
- Long COVID in children is not well described, studies have generally been of poor quality. Commonly reported physical symptoms of long COVID are also found to affect children without COVID-19

Indirect effects

The main risks to children and adolescents' health in this • pandemic continues to be due to indirect effects on mental health, wellbeing and education, which are worsened by continued lockdowns and school closures.

This document outlines information about how COVID-19 directly affects children and adolescents, to inform decisions in Australia.









In partnership with

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COVID-19 and Child and Adolescent Health

Why is this important?

With new global data emerging every week, better understanding of COVID-19 among children and adolescents will help inform policies that impact this group, including vaccination and school re-opening.

Children and adolescents who have COVID-19 commonly have no symptoms, or only mild symptoms, similar to a cold. Severe disease can occur among children and adolescents, which may result in admission to hospital or intensive care, but this is uncommon. To date in Australia, there have been no deaths from COVID-19 among children aged less than 10 years, and one death in an adolescent.

The Delta variant does not appear to cause more severe disease among children and adolescents compared to previous variants. However, the total number of children and adolescents who develop severe disease is likely to increase with the Delta variant, as Delta is more transmissible. Numbers of children and adolecents getting COVID-19 will also likely increase as restrictions are eased and more adults become vaccinated, compared to children and adolescents.

The main risks to the health of children and adolescents in this pandemic continues to be from indirect effects on mental health, wellbeing and education, which are worsened by continued lockdowns and school closures.

What does the research tell us?

COVID-19 in children and adolescents is mild, and severe disease is rare.

Most children and adolescents with COVID-19 have no, or only mild, symptoms. Typical symptoms include fever, cough, a sore throat, blocked or runny nose, sneezing, muscle aches, and fatigue. Changes in smell or taste, diarrhoea and vomiting are less common.¹ Severe disease typically manifests as pneumonia with respiratory distress, and may require admission to hospital or intensive care.² Severe COVID-19 disease in children and adolescents is very uncommon, and only very rarely causes death.³ The Delta strain does not appear to cause more severe disease than previous variants, but because it spreads faster, the number of children who will develop severe disease will be greater.

The Delta variant is more transmissible than other variants, which means there is more COVID-19 among all age groups, including children and adolescents.⁴ After 10 months of circulating globally,⁵ the Delta strain does not appear to cause more serious disease than previous variants.⁶⁻⁸ This means we would expect the proportion of children and adolescents that will develop serious illness will be the same as previous variants. Although the proportion of them having severe disease remains the same, the number of children infected will be higher, so therefore the number of children who will develop severe disease will be higher too.⁹ Additionally, as the majority of older age groups are now vaccinated, there are likely to be relatively more infections among children and adolescents, who are largely unvaccinated at this stage.

Some specific groups of children and adolescents are at greater risk of severe COVID-19.

Children living with disadvantage, low socioeconomic or minority ethnic status,^{10, 11} and those with pre-existing health conditions (referred to as comorbidities) are at greater risk. These comorbidities include, but are not limited to: cancer, obesity, chronic respiratory disease, chronic kidney disease, cardiovascular disease, neurological disorders, immune disorders, metabolic disease and hematologic disorders.¹²⁻¹⁴ A systematic review of children and adolescents analysing 42 studies that included 275,661 without comorbidities and 9,353 with comorbidities found that severe COVID-19 occurred in 5.1% of those with comorbidities, and in 0.2% without.¹²









COVID-19 Infections, hospitalisations and deaths in children and adolescents.

In Australia: As of 5 September 2021, 22% of all COVID-19 cases have been among children or adolescents aged less than 19 years. Of these, 5374 (43%) were among children aged 9 years or younger, and 7223 (57%) were among those aged 10-19 years (Table 1). Some children and adolescents have been admitted to hospital due to COVID-19, but admissions are uncommon, often precautionary and brief.^{15,16} In Australia in 2020, with considerable lockdowns and infection mitigation measures in place, there were about 50 children admitted to hospital with COVID-19.¹⁵ This number will likely be higher for 2021. There has been one death in an adolescent who also had another serious infection in addition to COVID-19.¹⁷ There have been many more infections and deaths among adults.

Table 1: COVID-19 Cases and Deaths among Children and Adolescents, compared to Adults, in Australia (as of 5 September 2021).¹⁷

Age Group	Cases	Deaths (% of cases)
0 - 9 years	5,374	0 (0%)
10 - 19 years	7,223	1(0.01%)
20 - 59 years	36,707	35 (0.1%)
60+ years	8,515	995 (12%)
Total	57,819	1031

New South Wales outbreak, winter 2021: During the recent outbreak between 16 June and 19 August 2021, while the Delta variant was circulating, there were 2,864 COVID-19 cases in children and adolescents aged less than 19 years (27% of all cases).¹³ Of these, 810 (28%) were 0-5 years, 945 (33%) were 6-12 years, and 1,109 (39%) were 13-18 years. Of the 2864, 70 (2.4%) were admitted to hospital - 43 of these were for medical reasons (1.5%). There were 5 admissions to intensive care (0.2%), all aged 15-18 years and all unvaccinated, and some admitted because of comorbid conditions. There were no deaths.

In the United Kingdom: Between February 2020 and March 2021 (pre-Delta), there were around 470,000 infections among those aged 0-17 years old, around 6000 hospital admissions, around 250 admissions to intensive care, and 25 deaths (Table 2).¹⁹⁻²¹ Between 1 March 2021 and 10 September 2021, there have been 52 deaths among those aged 0-19 years, yet there has been no increase in the death rate overall for children due to COVID-19.22,23 It is important to note that in the United Kingdom there is a relatively high level of immunity to COVID-19 among children and adolescents acquired as a result of natural infection over the course of the pandemic (between 40 to 70% of children and adolescents are thought to be immune) - this is different to the situation in Australia where very few children have been exposed to SARS-CoV-2 because of the success of public health interventions.

Table 2: COVID-19 Infections, Hospitalisations and Deaths among those aged 0-17 years in the United Kingdom (February 2020 - March 2021)¹⁹⁻²¹

Age Group	Cases (% of infections)
Infections	469,982
Hospital Admissions	6338 (1.3%)
Intensive Care Admissions	259 (0.055%)
Deaths	25 (0.005%)

In the United States: There have been increasing numbers of hospitalisations among children and adolescents since the Delta variant became predominant, with 5-10 times more children and adolescents admitted to hospital.⁷ Those who are unvaccinated, or those who are 0-4 years old, were more likely to be admitted to hospital in the United States. Importantly, among all hospitalised children and adolescents, the proportion with severe disease due to Delta is similar to that earlier in the pandemic.









MIS-C is a serious condition that occurs rarely in children and adolescents.

Multisystem inflammatory syndrome in children (MIS-C) (also known as Paediatric Inflammatory Multisystem Syndrome, temporally associated with SARS-CoV-2, or PIMS-TS) is a rare but serious condition that occurs approximately one month after exposure to COVID-19.24 MIS-C can occur even in those with no symptoms from initial COVID-19 infection. MIS-C can cause inflammation in different parts of the body. Children and adolescents with MIS-C usually have a fever, rash and abdominal pain. Severe MIS-C may cause inflammation of the heart muscle, and this may result in low blood pressure. Some MIS-C patients do not require treatment, but patients with more severe disease often need admission to an intensive care unit. MIS-C has caused deaths among a small proportion of children overseas, mainly early in the pandemic. However, increased awareness of MIS-Chas allowed for earlier diagnosis, more appropriate treatments and improved outcomes. In 2021, almost all children with MIS-C have recovered fully, and the long-term outcomes appear good, with resolution of the inflammation of the heart.

MIS-C is very rare. In Australia, there have been four confirmed cases and two possible cases of MIS-C since the start of the pandemic. In the United States to date, there have been 4,661 cases of MIS-C out of around 5,000,000 COVID-19 cases in children and adolescents. 41 patients have died of MIS-C in the United States.^{25, 26}

Table 3: MIS-C in Children and Adolescents, in the United States.^{25, 26}

Туре	Cases (% of infections)
Infections	5,049,465
MIS-C	4,661 (0.09%)
MIS-C Deaths	41 (0.0008%)

Total infections as of 2 September 2021, noting the numbers are collated from state-based reports, and the definition of "child" case varied in age ranges across states. Last MIS-C case reported on 22 August 2021.

Long COVID in children and adolescents is rare, more data is needed.

There is no agreed definition of long COVID, which makes it difficult to be certain about how common, severe or persistent it is. Data describing long COVID in children and adolescents are scarce.²⁷ Persistent symptoms reported following COVID-19 among children and adolescents include fatigue, headache, anosmia, and sore throat. Some studies have found that children who tested negative for COVID-19 have had similar symptoms, which are common after other viral infections, and could also be due to the experience of lockdown and other social restrictions.^{28, 29}

A study in Melbourne in 2020 (pre-Delta) observed no cases of long COVID among 136 children who presented to the Royal Children's Hospital, noting they were a young cohort (median age three years).¹⁶

There are other common respiratory viruses in children and adolescents, such as RSV and flu.

It is very common to have multiple respiratory viruses in childhood. Some of the most common childhood respiratory viruses are respiratory syncytial virus (RSV) and influenza (the flu).³⁰ About 6000 children in Australia are admitted to hospital every year from RSV, and this can have long-term complications.³¹ There is no vaccine for RSV. Around 800 children in Australia are admitted to hospital with the flu every year.^{32, 33} There is a seasonal influenza vaccine available for those six months and older.

There are significant indirect effects of the pandemic on the mental health, learning and wellbeing of children and adolescents.

Prolonged school closures and lockdowns exacerbate these impacts, differentially affecting those living with disadvantage, diminishing social mobility and impacting economic productivity.³⁴⁻³⁷ There have been substantial increases in admissions to paediatric hospitals for mental health, substance use, self-harm and suicide attempts.³⁸ Studies are continuing to emerge that highlight the negative effects of the pandemic on the mental health of children and adolescents.³⁹⁻⁴¹



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Where are the research gaps?

Long COVID in children and adolescents is not well understood

At this stage, long COVID does not appear to be common in children and adolescents, but existing studies are generally of poor quality with no consistent definition used. The studies have found that long COVID symptoms are difficult to distinguish from those attributable to the pandemic, such as the impact of school closures, deprivation of seeing friends or being unable to participate in sports and social activities. We need to understand this better to factor long-term effects into decision making. If long COVID is found to be common in children and adolescents, prevention and treatment strategies will be needed. At this stage, we do not know if vaccination prevents long COVID in children and adolescents.

More evidence about the role of the Delta variant in COVID-19 disease in children and adolescents is needed

The Delta variant is more transmissible than other variants, and makes the control of outbreaks more challenging, even when public health measures are in place. More data are needed to describe the burden of COVID-19 that children and adolescents will carry as the pandemic evolves, given the emergence of the Delta variant and as older populations achieve high rates of vaccination. More information is needed as to how the changing number of infections will impact children's medical services. As restrictions are eased and other respiratory viruses increase in circulation, we will also need to understand whether co-infection with other respiratory viruses, such as RSV or influenza, increases severity of infection in children and adolescents.

More evidence is needed regarding the vaccination of children and adolescents, including those with underlying special risk conditions

Whilst there is emerging evidence around the immune response to the COVID-19 vaccines in adults with immunosuppression (e.g. cancer, solid organ transplant recipients and biologic medications), very little is known about the response in those 12-17 years of age. More data are needed to know if the vaccines work well in these populations and whether additional third doses, or 'boosters' may be required to optimise their protection. There are also some rare adverse events following immunisation that require further investigation to support completion of the two dose COVID-19 vaccination schedule, including allergic reactions and myo- or pericarditis. A vaccine for children aged less than 12 years is not yet available. Safety and efficacy data from two phase 3 clinical trials are expected in the last quarter of 2021, and there will be a need to review these and other data for children aged less than 12 years as they become available.

This report was prepared by members of the MCRI COVID-19 Governance Group which draws on experts in paediatrics, mental health, epidemiology, public health, infectious disease, immunity, child development, and vaccine development and communication.

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